

The Institute of Chartered Accountants of Bangladesh (ICAB)

# STRATEGIC BUSINESS MANAGEMENT AND LEADERSHIP

## Volume II

Workbook  
For CA Advanced Level Exams

**CA**  
BANGLADESH



THE INSTITUTE OF  
**CHARTERED  
ACCOUNTANTS**  
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**Strategic Business Management and Leadership**  
**The Institute of Chartered Accountants of Bangladesh**

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Questions within the Workbook should be treated as preparation questions, providing you with a firm foundation before you attempt the exam-standard questions. The exam-standard questions are found in the Question Bank.



# Chapter 11

## Finance awareness

### Introduction

Learning outcomes  
Knowledge brought forward  
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Chapter study guidance

### Learning topics

- 1 Financial strategy
- 2 Impact of financial crises
- 3 Developments in the Eurozone
- 4 Other current issues in finance
- 5 Social responsibility and environmental matters

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# Introduction

## Learning outcomes

- Demonstrate and explain the financing alternatives for projects and assets, and make informed choices as to which alternative is the most compatible with the overall financial strategy of the entity, showing the corporate reporting consequences relating to presentation, disclosure, recognition and measurement of projects and their financing
- Assess and explain current and emerging issues in finance
- Identify social responsibility, sustainability and environmental factors for a range of financial stakeholders, including UN sustainable development goals, natural capital and green finance, and assess assurance and corporate reporting issues relating to such factors
- Explain how financial crises, which have occurred in the past over a long time period, may impact on approaches and attitudes to financial risk and may inform corporate reporting practice
- Explain the role of boards in determining and evaluating an entity's policy for social responsibility, sustainability and environmental matters and advise on corporate reporting disclosures relating to these policies
- Explain the role and impact of the finance function as a business partner

## Knowledge brought forward

We start with a reminder of the key finance decisions that a business needs to make.

### Syllabus links

The last part of section 1 is a very important part of the financial strategy section of this Workbook, since it relates the main requirements of financial reporting standards to their business context. This reflects one of the main themes of the syllabus, which is to cover the implications for corporate reporting of business decisions.

### Examination context

The quick list of factors affecting the choice of financial strategy at the start of section 1 may be a useful checklist for questions.

Scenarios will include real-life issues and concerns related to finance, and also new developments in finance; the middle sections in this chapter set these scenarios in context.

The final section brings together corporate social responsibility issues that range across all aspects of the syllabus. You were introduced to these issues in Business Strategy & Technology, and some of them are mentioned briefly earlier in this Workbook, while certain topics receive more coverage in the chapters Investment appraisal and Ethics. Section 5 of this chapter addresses the possibility that a question could focus on social responsibility, including business strategy, costs, corporate reporting and assurance issues.



## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>Financial Strategy</b></p> <p>This chapter covers many of the major influences on financial strategy. They include recent developments, particularly the economic problems encountered in recent years.</p> <p>As an accountant, you will be expected to synthesise the different areas of knowledge you have, linking business and financial strategy decisions with their impact on corporate reporting.</p>	<p><b>Approach</b></p> <p>Go quite slowly through the first few paragraphs of section 1 as a lot of the themes about financial strategy and financial objectives summarised here will be developed later in the manual.</p> <p>Also remember that the SBM&amp;L syllabus specification indicates that around 15–20% of the marks in the exam will relate to the corporate reporting implications of an entity's strategic decisions. This makes the sections on corporate reporting in the later part of section 1 particularly important, as they highlight the links between corporate reporting and strategic decision making. Being up to date with current developments in reporting standards is important.</p>	<p>In the examination, you may be required to advise organisations on the financial strategy decisions they have to make, taking into account the most significant influences on those decisions. You may also be required to demonstrate the consequences for corporate reporting of the financial strategy decisions that organisations take. Finally, from this section you may be asked to explain the role and impact of the finance function as a business partner</p>	<p><b>IQ1: Financial Strategy</b></p> <p>This question considers the impact of business expansion on a company's financial strategy.</p> <p><b>IQ2: Developments in financial reporting</b></p> <p>This brief question asks you to consider the general impact that developments in financial reporting have on financial strategy.</p>
		<b>Stop and think</b>		
		What are the three key financial management decisions?		

Topic	Practical significance	Study approach	Exam approach	Interactive questions
2	<p><b>Impact of financial crises</b></p> <p>Financial crises impact on all businesses as financial institutions reduce lending to limit their own exposures and comply with stricter regulations. Businesses may be able to learn lessons from history to limit the damage to their own position.</p>	<p><b>Approach</b></p> <p>You can go through this section more quickly, focusing on the impacts that the economic environment has on business.</p> <p><b>Stop and think</b></p> <p>How much can businesses do to mitigate the consequences of a long-term economic slowdown?</p>	<p>You may be asked to discuss how organisations can respond to the current economic environment and the difficulties it places upon them.</p>	
3	<p><b>Developments in the Eurozone</b></p> <p>The financial position of many firms has been affected by the credit crunch and problems in the Eurozone, particularly the debt crisis.</p> <p>You will need to be aware of the business environment and how developments in the Eurozone are affecting (or will affect) the businesses you deal with.</p>	<p><b>Approach</b></p> <p>You can cover this brief section quickly.</p> <p>Further developments in the euro and the Eurozone is inevitable. You should monitor the financial news for developments.</p> <p><b>Stop and think</b></p> <p>Are you up to date with recent events? Make sure that you review the business press and other suitable sources to ensure that you are aware of topical developments in the global economic environment.</p>	<p>Scenarios in the exam will include real-life issues and concerns related to finance.</p>	
4	<p><b>Other current issues in finance</b></p> <p>This section covers some of the current issues in finance such as the credit crunch, dark pool trading and Islamic finance.</p>	<p><b>Approach</b></p> <p>Cover this brief section quickly, focussing mainly on understanding any new terminology.</p>	<p>Scenarios in the exam may include some new developments in finance.</p>	
		<b>Stop and think</b>		

Topic	Practical significance	Study approach	Exam approach	Interactive questions
		What are the main advantages of Islamic finance?		
5	<p><b>Social responsibility and environmental matters</b></p> <p>It is now very difficult to avoid businesses facing up to their responsibilities as corporate citizens, particularly in regard to carrying on business in a sustainable way. The UN Sustainable Development Goals are a notable example of how business activities will be closely scrutinised. Issues around accounting for 'natural capital' are also a highly topical area.</p> <p>The financial decisions businesses make will have often very significant impacts on the content of their corporate reports. This includes effects on the information disclosed in the accounts, as well as the additional reports that businesses publish. Today's accountants need to be fully versed in green finance, they need to be able to consider and report on the impact that strategic decisions may have on the environment.</p>	<p><b>Approach</b></p> <p>Corporate social responsibility is significant to this syllabus. You need a good awareness of how stakeholder pressures may influence business decisions and the impact of sustainability on management control systems and corporate reporting. This was also examined in the chapter Strategic performance management. The examples of how companies are reporting CSR issues should aid your understanding in this area. Make sure that you note the developments in relation to natural capital. Note the links between this and Chapter 4: the attention being given to environmental and social responsibility means that entities are placing emphasis on their performance.</p> <p><b>Stop and think</b></p> <p>To what extent are the decisions of finance providers influenced by a business's corporate social responsibility stance?</p>	In the exam you may be asked to discuss the impacts on financial stakeholders of the corporate social responsibility stances that organisations take and evaluate an organisation's corporate social responsibility policies.	

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 Financial strategy



## Section overview

- We begin coverage of the financial strategy element of the syllabus by briefly revising the key financial decisions a business must make and the interaction between them. All these decisions will be covered in more detail in later chapters, but you should keep them in mind throughout this section of the Manual.
  - We also begin looking at the financial standards that cover areas affected by financial strategy decisions. Coverage of the standards is selective – we only include relevant financial reporting issues. Comprehensive coverage of all standards is contained in the Corporate Reporting Manual.
- 

## 1.1 Financial strategy decisions



### Definition

**Strategic financial management:** The identification of the possible strategies capable of maximising an organisation's net present value, the allocation of scarce capital resources among the competing opportunities and the implementation and monitoring of the chosen strategy so as to achieve stated objectives.

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We discussed strategic objectives generally in the chapter Strategic analysis, but here we focus on financial objectives and the strategies for achieving them.

### 1.1.1 Financial objectives

It is often assumed that the overall financial objective of a company should be to increase, or even maximise, the wealth of its shareholders.

The financial strategies for achieving this objective involve strategies for investing and returns, and for dividends. If a company's shares are **traded on a stock market**, the wealth of shareholders is increased when the **share price goes up**. The price of a company's shares should go up when the company is expected to make **additional profits**, which it will pay out as dividends or reinvest in the business to achieve future profit growth and dividend growth.

**Maximising the wealth** of shareholders generally implies maximising profits consistent with long-term stability. Sometimes short-term gains must be sacrificed in the interests of the company's long-term prospects. In addition, to increase the share price the company should achieve its profits without taking excessive **business risks** and financial **risks** that worry shareholders.

### 1.1.2 Non-financial objectives

Non-financial objectives that may significantly impact on financial strategy include the following:

Non-financial objectives	
<b>Customer satisfaction</b>	A key target, because of the adverse financial consequences if businesses switch suppliers
<b>Welfare of employees</b>	Competitive wages and salaries, comfortable and safe working conditions, good training and career development
<b>Welfare of management</b>	Competitive salaries, company cars and other benefits
<b>Welfare of society</b>	Concern for environment
<b>Provision of service to minimum standard</b>	For example, regulations affecting utility companies (water, electricity providers)
<b>Responsibilities to suppliers</b>	Not unscrupulously exploiting power as buyer
<b>Leadership in research and development</b>	Failure to innovate may have adverse long-term financial consequences
<b>Maintaining competitive position and market share</b>	Preventing rivals from becoming too large and enjoying benefits of size such as economies of scale



### Professional skills focus: Concluding, recommending and communicating

You are expected to be able to make evidence-based recommendations which can be justified by reference to supporting data and other information. When recommending an appropriate financial strategy, you must consider both the company's financial and non-financial objectives.

## 1.2 Factors affecting choice of financial strategy

The following general considerations will have significant impacts on the strategies chosen.

### 1.2.1 Profits

The effect of **strategies chosen on profits** will be a critical influence on how strategies are perceived, as a business's accounts present the public face of its financial strategies.

### 1.2.2 Cash

Though financial strategies should hopefully enhance long-term profitability, **cash flow considerations** will often be shorter term but possibly more pressing. It is easy to just concentrate on operating and investing cash flows and ignore financing cash flows (interest and dividends).

However, a critical, and often finely balanced, question will be whether operating cash flows will be sufficient to pay the servicing costs of finance.

### 1.2.3 Shareholders

Enhancing shareholder value is of course a key objective. Although this is connected with dividend policy, you also need to assess the effect on **value of shares** (which we shall see later is not just a function of current and future dividends).

### 1.2.4 Other stakeholders

Many financial strategies will have major impacts on stakeholders other than shareholders with whom the organisation wishes to maintain good relations. These include:

- (a) **Managers and employees**, who will be affected by any fundamental decision about a business's direction such as a merger or acquisition.
- (b) **Other suppliers of finance**, who will be affected by decisions on capital structure. Suppliers of finance such as banks and bondholders, together with the company's shareholders, are the main financial **stakeholders** in a company.
- (c) The **Government**, who might be concerned that major investment decisions have an adverse impact on the outside environment (not just the natural environment but also the competitive environment).
- (d) **Customers**. Businesses need to be sensitive not only to actions which directly affect customers (product pricing) but how other actions may indirectly impact (for example redundancies meaning that fewer staff are available to deal with customer demands).

### 1.2.5 Economic and market considerations

Business decisions are never taken in isolation in a perfect world. Therefore you have to evaluate the impact of factors such as **key economic indicators**. For this paper you also need to consider the **international implications**, including exchange rates and conditions for investment abroad.

In addition, the organisation's achievements may be assessed from distorted viewpoints that place excessive emphasis on certain factors and do not have all the necessary information. Thus an assessment of **market efficiency** will often be helpful. Assessing market efficiency involves considering the information to which the market is responding.

### 1.2.6 Restrictions

Bear in mind that a business may not always be able to do what it wants. **Legal** restrictions may be a powerful restraining force, as may restrictions imposed by **suppliers of finance** (restrictions imposed by loan arrangements, or the need to maintain dividend levels to keep shareholders happy).

Particularly for small companies, there may also be **restrictions** on the **funds available** to the business.

### 1.2.7 Risks

Remember that it is not necessarily just financial risk you are considering. Another area where risks should be considered is investment in information technology.

Firms also need to be aware of **risk issues** such as **limited data** and how the **changing environment** can be **measured**, and also the impact of **uncertainty** (how difficult it is to measure the likelihood of outcomes). **Various measures** of risk may need to be considered (possible outcomes, likelihood of an unsatisfactory outcome, worst possible outcome).

The organisation's (and its directors') **attitude to risk** will also be important. It may be a good textbook answer to say that the business should obtain debt finance, but the current directors may be unwilling to put the business at risk by taking on extra debt.

### 1.2.8 Timescale

We've already mentioned timescale, but it's worth considering separately:

- (a) Strategy is primarily concerned with long-term direction. **Businesses** have to maximise shareholder value in the **long term**. However, you also should consider what objectives or conditions have to be fulfilled in the **short term** (such as making enough money to carry on trading!).

- (b) Decisions relating to a particular strategy are not always made at a single time. In the chapter Investment appraisal, we shall look at **real option theory**, which takes into account that businesses may choose one course, and then later decide on a different course of action depending on how the first course of action has gone.



### Professional skills focus: Assimilating and using information

When suggesting an appropriate source of finance, you will need to make an informed choice as to which alternative is most compatible with the overall financial strategy of the entity. You will also need to consider the corporate reporting consequences of the various financing options. It is important that you can filter the information provided in the scenario and select the most appropriate source of finance while giving consideration to the impact on the entity's various stakeholders.

## 1.3 Financial management decisions

We discussed the main decisions (**investment** financing and **dividend** decisions) in the chapter Strategic analysis. We shall look at investment decisions in greater detail in Chapters 16 and 17, sources of finance and financing decisions in chapters Financial instruments and financial markets and Financial structure and financial reconstruction and dividend strategy in the chapter Financial structure and financial reconstruction.

## 1.4 Financial strategy decision making

In the chapter Strategic choice, we revised the checklist for assessing strategic options, provided by Johnson, Scholes and Whittington:

- **Suitability:** Is this option appropriate considering the strategic position and outlook of the business?
- **Acceptability:** Will the option gain stakeholder support?
- **Feasibility:** Does the firm have the resources and competences required to carry out the strategy? Are the assumptions of the strategy realistic?

Here we shall look briefly at how these elements apply to financial strategy decisions. In the chapter Financial structure and financial reconstruction, we discuss in detail their application to the capital structure decision.

### 1.4.1 Suitability

Suitability relates to the **strategic logic** of decisions. Financial strategy should fit the situation of the business. The financial decisions taken should help businesses **generate and maintain competitive advantages, seize opportunities** and **exploit company strengths and distinctive competences**.

When considering the suitability of an option, you might also think about whether there are any better **alternatives** not specified in the question. For example, if a business is looking to acquire another, would it be better off trying to grow internally instead? It may be necessary to create a **framework** for ranking alternatives.

### 1.4.2 Acceptability

Shareholders will obviously be concerned with how far the chosen strategy contributes to meeting the dominant objective of increasing shareholder wealth. Other suppliers of finance will be concerned with whether the organisation is able to meet its commitments to them.

All stakeholders may be concerned with the potential **risks** of the strategies.

**Financial acceptability** will need to be **demonstrated** by **investment appraisal** and by **analysis** of the effect on **profitability, liquidity** and **gearing** indicators. These may need to be supplemented by risk analysis.

Do not forget the other conditions (legal, loan covenant etc) imposed by other stakeholders. Acceptability may not be just a matter of fulfilling a set of rules, but also being a good citizen (acting sensitively towards the natural environment, paying suppliers on time).

### 1.4.3 Feasibility

Specification of required **resources** is a key aspect of clear strategy exposition. These resources have to be available in order for strategies to be **feasible**. Obviously for financial strategy decisions, financial resources will be critical, but businesses will also need to have access to **technology, materials** and **other natural resources**.

Businesses must also be able to **generate sufficient returns** to compensate resource providers for the resources consumed. They will need to be able to **supply sufficient goods and services** and be able to withstand competitor threats.

Again it will be important to demonstrate financial **feasibility** with supporting financial data. **Cash and funds flow forecasts** will be central to this.

Feasibility also relates to the **conditions** that must be fulfilled if a strategic decision is to be successful. If, for example, the success of an acquisition depends on the key staff of the acquired company staying, how feasible is it that they will?

### 1.4.4 Clarity

Financial strategies must also be clear, which means they need to specify certain things.

#### Benefits

The benefits to the **organisation** and **principal stakeholders** of strategies need to be spelt out - for example, higher revenues or falling interest commitments meaning more funds available for distribution to shareholders.

#### Direction

The activities required to **implement the strategy** must be **directed** towards providing the benefits. Direction also means setting financial **targets**, enabling better control when the strategy is implemented.

#### Resource specification and management

The financial **resources needed** to implement investment strategies should be specified in detail. Remember also the need to ensure that **resources** are **managed carefully**. In your previous studies you encountered the concept of **overtrading**, where a business expands too quickly and fails to manage its working capital and cash flows properly.

#### Changes in the environment

The strategy chosen should enable the business to cope with **environmental changes** and **complexity**. If environmental changes are likely to be a significant factor, it may be important to specify the responses that may be required, for example obtaining contingency funding.

#### Timescale

The strategy chosen should be **relevant for the long term** that is going beyond short-term profit targets. What constitutes long term will vary, but for an investing strategy it is likely to



mean the **lifetime of the investment**, and for a financing strategy perhaps the **duration of long-term debt instruments**.



### Professional skills focus: Applying judgement

There is unlikely to be a financial strategy that is acceptable to all stakeholders. Use your judgement to identify the key stakeholders and recommend the most appropriate strategy to satisfy their needs, whilst recognising any stakeholder conflict that may arise as a consequence.



### Interactive question 1: Financial strategy

As a general illustration of the principles we've just discussed, consider the following outline scenario.

Getfitquick operates leisure clubs in a number of countries in Europe. The company is a major presence in the leisure club market, specialising in high care, good facility operations. However, this market is highly competitive and over the last few years a number of chains that have not been growing have been taken over. Getfitquick's performance over the last couple of years has been stagnant, with falling membership in existing clubs and newly opened clubs taking time to become profitable.

The company is listed on a major European stock exchange, with a significant percentage of its shares being held both by its founders and by institutional investors. It also has significant loan finance, with loan creditors holding title deeds to some of the clubs, and in the past some of its loan commitments have had to be rescheduled.

#### Requirement

Getfitquick is considering whether to open a number of new clubs over the next few years. Draft notes suggesting how an expansion strategy would be judged against the criteria outlined above.

See **Answer** at the end of this chapter.

## 1.5 Strategic cash flow planning

**Strategic cash flow planning** ensures that **sufficient funds** are available for investment and that **surplus funds** are used to best advantage.

In order to survive, any business must have an adequate inflow of cash. Cash flow planning at a strategic level is similar to normal cash budgeting, with the following exceptions:

- The **planning horizon** (the furthest time ahead plans can be quantified) is longer.
- The **uncertainties** about future cash inflows and cash outflows are much greater.
- The business should be able to respond, if necessary, to an **unexpected need** for cash. Where could extra cash be raised, and in what amounts?
- A company should have planned cash flows that are consistent with:
  - its dividend payment policy
  - its policy for financial structuring, debt and gearing

### 1.5.1 New investments and product developments

Investments in new projects, such as new product developments, use up cash in the short term. It will not be for some years perhaps that good profits and cash inflows are earned from them.

One aspect of strategic cash flow planning is to try to achieve a balance between the following:

- (a) **Making and selling products** that are still in their **early stages of development**, and are still 'soaking up' cash
- (b) **Making and selling products** that are **cash cows** - ie, established products that are earning good profits and good cash inflows

### 1.5.2 Cash surpluses

A company should try to plan for adequate cash inflows and be able to call on 'emergency' sources of cash in the event of an unforeseen need, but it might be unwise to hold too much cash.

When a company is **cash rich** it can invest the money, usually in short-term investments or deposits such as the money market, to earn interest. However, for companies which are not in financial services or banking, the main function of money is to be spent. A cash-rich company could do one of the following:

- (a) **plan to use the cash**, for example for a project investment or a takeover bid for another company
- (b) **pay out the cash** to shareholders as **dividends** and let the shareholders decide how best to use the cash for themselves
- (c) **repurchase its own shares**

## 1.6 Strategic fund management

**Strategic fund management** involves asset management to make assets available for sale if cash deficiencies arise.

Strategic fund management is an extension of cash flow planning that takes into consideration the ability of a business to overcome unforeseen problems with cash flows, recognising that the assets of a business can be divided into three categories:

- (a) Assets that are needed to carry out the **'core' activities** of the business. A group of companies will often have **one or several main activities**, and in addition will carry on several peripheral activities. The group's strategy should be primarily to develop its main activities. There has to be enough cash to maintain those activities and to finance their growth.
- (b) Assets that are **not essential for carrying out** the main activities of the business and could be **sold off at fairly short notice**. These assets will mainly consist of short-term marketable investments.
- (c) Assets that are not essential for carrying out the main activities of the business and could be **sold off to raise cash**, although it would probably take time to arrange the sale and the amount of cash obtainable from the sale might be uncertain. These assets would include: long-term investments (for example, substantial shareholdings in other companies); subsidiary companies engaged in 'peripheral' activities, which might be sold off to another company or in a management buyout; and land and buildings.

If an unexpected event takes place which threatens a company's cash position, the company could also meet the threat by:

- (a) **working capital management to improve cash** flows by reducing stocks and debtors, taking more credit, or negotiating a higher bank overdraft facility
- (b) **changes to dividend policy**

## 1.7 The finance function as a business partner

Business partnering is about contributing to organisational performance. The involvement of finance professionals in business decision making, strategy development and driving performance is not something that is new. However, involving the finance function as a business partner looks at whether finance professionals can make a valuable contribution to decision making and successfully contribute to organisational performance outside of core work such as financial reporting. In smaller organisations it is almost impossible for the most senior finance professional not to be a business partner. They will be directly involved in making sound finance, investment and dividend decisions with the focus of increasing shareholder wealth. In larger organisations, finance professionals are more likely to be centralised at headquarters and are often regarded as collators of reports and restrictors of innovation by imposing controls on capital spending and setting budgets.

Decentralising the finance function and locating accountants close to operational managers can increase the acceptance of the finance function as a business partner. Embedding finance in all functions will lead to accountants taking a more active role and becoming involved in decision making and strategy development. Business partners are better positioned to support businesses

when they report to local managers and are located alongside them; they will bring an expert financial perspective which may challenge other perspectives.

Finance business partners will need to understand the organisation's strategy, competitive environment, commercial drivers, systems and culture. Labelling the finance function as a business partner can help to break down the stereotypes of what accountants and the finance department do. For example, rather than simply identifying that a proposed investment project does not reach the required hurdle rate to be accepted, finance business partners will work with the business to find ways of increasing the return and keeping an organisation focussed on its strategy. The finance function as a business partner will consider the key problems facing an organisation and use financial knowledge and techniques to suggest solutions. For example, activity-based costing and customer profitability analysis to look for cost efficiencies, target costing to make products more competitive and consideration of all available sources of finance to overcome financial constraints. To be successful, finance business partners will need to constantly adapt to the needs of the organisation and consistently demonstrate a positive impact on organisational performance.

Source: <https://www.icaew.com/-/media/corporate/files/technical/business-and-financial-management/finance-direction/business-partnering.ashx?la=en> [Accessed 10 July 2019]

## 1.8 Corporate reporting implications of investment and financing decisions

The investment and financing decisions will have a number of consequences for the contents of its accounts. In this chapter we provide an overview of how investment and financing decisions relate to the requirements of financial reporting standards. In later chapters, where relevant, we will cover some of the corporate reporting consequences in more detail. The consequences of many decisions will be significant for the financial statements, equity and profits of a company, affecting in turn analysts' measures of return and gearing that investors will use to make financial decisions themselves.

As mentioned in the Section overview at the start of this section, the Corporate Reporting Workbook discusses fully the accounting issues that this Strategic Business Management Workbook treats selectively. This section also revises topics that were covered in the Financial Accounting and Financial Reporting *Workbooks*.

For the purposes of this chapter, we shall group the accounting requirements under the following headings:

- Investment in entities
- Other investment issues
- Financing
- Other issues



### Professional skills focus: Structuring problems and solutions

One of the professional skills assessed in the CA exams considers your ability to identify and apply relevant technical knowledge and skills to analyse a specific problem. The SBM&L syllabus specification indicates that around 15–20% of the marks in the exam will relate to the corporate reporting implications of an entity's strategic decisions. It is therefore important that you can identify relevant corporate reporting issues from a given scenario and apply your technical knowledge to resolve any financial reporting issues you are presented with.

## 1.9 Investment in entities

The economic reality is that many businesses take on complex forms, often establishing themselves as a number of companies that act coherently, or are centrally directed and managed. Large groups of companies emerge. Investors need to know, if their investments are at group level, exactly how the group as a whole is performing. Financial statements normally set out the financial position and performance of a single entity. If that entity is controlled by another entity (its parent) and there are intragroup transactions, then its financial statements may not reveal a true picture of its activities. As a consequence, consolidated financial statements are prepared by aggregating the transactions, assets and liabilities of the parent and all its subsidiaries on the basis that the group is a single economic entity.

Without consolidated financial statements, the shareholders in the parent entity would receive its single entity financial statements, which would recognise the income of subsidiaries only to the extent of the dividends receivable from them. The information provided to such shareholders would not reflect the economic realities. Consolidated financial statements provide useful information about all the activities carried out by the management of the parent entity. Their preparation is an application of the IASB's *Conceptual Framework* requirement that transactions are accounted for in accordance with their substance, not just their legal form.

The introduction to IFRS 12, *Disclosure of Interests in Other Entities* highlights the importance that financial statement users place on disclosure of interests in other entities to help identify the profit or loss and cash flows available to the investor company.

As you will remember from earlier studies, the extent of **control** that an investor has over its investment will determine how it is treated in the investor's accounts.

### 1.9.1 Subsidiaries

If an investment has subsidiaries, it is subject to the requirement of IFRS 10, *Consolidated Financial Statements* to prepare consolidated financial statements. A parent-subsidiary relationship is based on control, which an investor has if it has:

- (a) **power over the investment** - existing rights that give the investor the ability to direct the activities of the investment that significantly affect its returns; these may come through voting rights, the power to govern financial and operating policies or the power to appoint and remove a majority of the board of directors
- (b) **exposure or rights to variable returns** from the investment
- (c) **ability to use the power over the investment to affect the returns it obtains**

### 1.9.2 Joint arrangements

Investments can take a number of different forms. It is not always appropriate to acquire the majority of the voting rights of another entity in order to gain control. In some industries and in particular circumstances, it is more beneficial to share such investment and control with other parties. By sharing the investment each investor brings with them different skills. Consequently the arrangement may benefit all parties through reduced costs. Such arrangements are commonly known as joint ventures.

If a firm makes an investment jointly with another party, it may be subject to the requirements of IFRS 11, *Joint Arrangements* to recognise the rights and obligations arising from the investment.

The standard only applies to **joint arrangements** where the parties have **joint control**. Joint control is the contractually agreed sharing of control where strategic decisions require the unanimous consent of the parties sharing control (majority control, where decisions require the consent of a majority of owners, is not joint control).

Joint arrangements are of two types, depending on the rights each party has:

- (a) **Joint operations** include, but are not confined to, arrangements that are not structured through a separate entity (a separately identifiable financial structure, for example a limited liability company). The parties share their activities and pool their resources. In joint operations the parties provide and have rights to their own assets, and obligations for the liabilities relating to the arrangement. The accounts include the reporting entity's own assets and liabilities, its share of the revenues and the expenses it incurs relating to its interest in the joint operation (known as gross accounting).
- (b) **Joint ventures** are arrangements where the parties that have joint control have rights to the net assets of the arrangement. The arrangement holds assets and incurs liabilities on its own account and the parties to the arrangement are only liable to the extent of their investment. Each party treats its interest in the joint venture as an investment in the arrangement using the equity method of accounting, in accordance with the requirements of IAS 28, *Investments in Associates and Joint Ventures*.

### 1.9.3 Associates

Outright control is not always the most appropriate form of investment for an entity to have. There may be circumstances where although an entity does not control another entity, the business operated by that other entity is still of significant importance to it. In such circumstances an investor may obtain sufficient ownership of the entity to have the power to **influence** decisions of its governing body (eg, its board of directors) but not to have control over it.

Investments that meet these criteria will generally be classed as associates. As the investor has significant influence over such an investee, it is appropriate to report its share of the investee's results rather than just the dividends receivable. After all, it is partly answerable for the investee's performance. Such accounting requirements provide more useful information about the financial performance and position of the investor.

Interests in associates are common in real life, particularly where a controlling interest is built up over time rather than being purchased in one step. As you will remember, the accounting treatment of associates differs from subsidiaries, even if the investor eventually wishes to gain control.

IAS 28 also applies to investments in associates. Remember that holding 20% of voting power creates a presumption of significant influence.

The equity method means that the investment will be recognised initially at cost and then adjusted for the **post-acquisition change** in the share of the investment's net assets. Distributions will reduce the carrying value of the investment.

A firm may make an associate investment in a business whose viability and success will play an integral part in an entity's own success. For example, where an entity uses distributors or agents in foreign countries, it may wish to take an equity stake in them. This strengthens the relationship between the parties and allows a level of influence and communication greater than could be obtained through a contractual agreement alone. Alternatively, a non-controlling stake may be the initial stage of a larger plan to obtain control of the target entity. The investor is able to gain board representation and strengthen its business relationships with the target. If the relationship is successful, further investment can be facilitated.

#### 1.9.4 Business combinations

Entities may increase their market share, diversify their business or improve vertical integration of their activities in a number of ways, including by organic growth and through acquisitions. The acquisition of a competitor may offer rapid expansion or access to new markets and is often seen as more attractive than expansion through organic growth.

To ensure that users of financial statements are able to distinguish between organic growth and growth through acquisition, detailed financial reporting requirements should be applied and comprehensive disclosures should be presented.

The process of acquisition will mean that the investor is subject to IFRS 3, *Business Combinations*. The accounting consequences will be that the investor recognises the assets acquired and liabilities assumed, including those that may not have been recognised by the entity being acquired, such as brand names. Since the assets and liabilities being acquired are recognised at **fair value**, the investment is included at an amount that reflects the market's expectation of the value of its future cash flows.

We shall look at the requirements of this standard in more detail in the chapter Business and security valuation.

#### 1.9.5 Discontinued operations

A key business event arises when an entity closes or discontinues a part of its overall business activity. Management will have assessed the impact of the closure on its future profitability, but users of the financial statements, be they investors or other stakeholders, will want to make their own assessment. IFRS 5, *Non-current Assets Held for Sale and Discontinued Operations* provides an analysis not of future profit but of the contribution of the discontinued element to the current year's profit (or loss), ie, the part that will not be included in future years' profits.

Showing separate information about discontinued operations allows users of financial statements to make relevant future projections of cash flows, financial position and earnings-generating capacity.

In addition, an asset is held for sale when the entity does not intend to use it as part of its ongoing business, but instead intends to sell it. The separate identification of assets that are held for sale, rather than to generate continuing economic benefits for the entity on an ongoing basis, substantially improves the information made available to users as it provides information on the entity's plans and likely future performance.

If at the end of the accounting period some business assets are no longer needed, they will be classified as held for sale in accordance with IFRS 5 if their carrying amount will be recovered principally through a sale transaction, they are available for immediate sale and the sale is highly probable. Abandoned assets cannot be classified as held for sale. If the assets fulfil the definition of held for sale, they will be subject to the requirements of IFRS 5 and not depreciated. They will be held at the lower of fair value less costs to sell and carrying amount.

### 1.9.6 Disclosure of interests

Investments in any subsidiaries, joint arrangements, associates or unconsolidated structured entities will mean that the investor has to apply the requirements of IFRS 12. As well as interests (including non-controlling interests in subsidiaries) IFRS 12 has other disclosure requirements depending on the nature of the investments. These include disclosure of restrictions on assets, liabilities and the movement of funds and details about the nature of, and changes in, risks associated with the investments.

### 1.9.7 Separate financial statements

In jurisdictions where an entity must present separate financial statements in addition to the consolidated financial statements, or if an entity chooses to do so voluntarily, the requirements of IAS 27, *Separate Financial Statements* apply. The entity making the investment in subsidiaries, joint ventures or associates must account for these:

- at cost;
- in accordance with IFRS 9, *Financial Instruments*; or
- using the equity method specified in IAS 28

### 1.9.8 Segments

Most large entities sell different products and services in a number of different markets or geographical locations, which may be regarded as different business segments. The total profitability of the entity will depend on the performance of each of these segments. For some entities the key segments will be based on products and services; for others it will be by geographical area. In each case, the separate management and performance measurement of individual segments is essential, as while one product or geographical area may be performing well, another may be failing.

While management will have access to management accounting performance data on each separate part of the business, the published accounts, in the absence of segmental reporting, would only report the aggregate performance of the entity. Overall profitability is important, but additional information is needed by external users to fully understand the separate businesses hidden below this top-level reporting.

IFRS 8, *Operating Segments* provides a link between the business operations and the main components of the financial statements by requiring information to be disaggregated. Investors can therefore make better assessments of the performance of each part of the business, leading to a better understanding of the business as a whole.



## Definition

**Operating segment:** This is a component of an entity:

- (a) That engages in business activities from which it may earn revenues and incur expenses (including revenues and expenses relating to transactions with other components of the same entity)
- (b) Whose operating results are regularly reviewed by the entity's chief operating decision maker to make decisions about resources to be allocated to the segment and assess its performance
- (c) for which discrete financial information is available

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Significant new investments, for example a large diversification into a new geographical area or product, may mean that a listed company becomes subject to the requirements of IFRS 8. The standard will apply if there is separate financial information available about the investment and senior management regularly evaluates it as part of the overall process of deciding how to allocate resources and also when assessing performance.

Under IFRS 8 information must be given about determination of the operating segments, the products and services they provide, profit or loss, significant income and expense items and segment assets and liabilities.

### 1.10 Other investment issues

Even if a company does not invest in another entity, a major investment may include substantial investment in non-current assets.

#### 1.10.1 Tangible assets

Businesses operating in certain industries, for example manufacturing, typically have ownership of substantial property, plant and equipment (PPE). PPE is tangible assets such as freehold and leasehold land and buildings, plant and machinery, fixtures and fittings, which are held for use in the production or supply of goods or services or for administrative purposes. The management of these resources underpins the continued viability of businesses and therefore represents a key feature of business prosperity. It is important that users of financial statements understand how businesses use their PPE and how such assets are accounted for.

Any investment in tangible assets will be subject to the requirements of IAS 16, *Property, Plant and Equipment* relating to capitalisation, depreciation, revaluation and measurement of fair value and impairment. In order to be capitalised, it has to be probable that future economic benefits associated with the item will flow to the entity. Therefore if the asset purchase is part of a project, the entity has to expect that the project will be successful.

Under IAS 16 costs include:

- **purchase price**
- **costs directly attributable to bringing the asset to the location and condition required for operation** including employee costs in construction or acquisition, site preparation costs, initial delivery and handling costs, installation and assembly costs, testing costs and professional fees
- **costs of dismantling and removing the item and site restoration costs**

Depreciation policy will depend on the use to which the asset is put, based on the expectations of how economic benefits will be derived from it. Factors that will determine the useful life that is used in calculating depreciation include:



- expected usage of the asset
- expected physical wear and tear
- possible technical or commercial obsolescence
- limits on the use of the asset

### 1.10.2 Intangible assets

Brand names, such as Coca-Cola and Microsoft, are in many cases an entity's most valuable asset but they are extremely difficult to value when they have been generated internally and over a long period of time. Brands are one example of an intangible asset. If they cannot be reliably measured, they cannot be recognised in the financial statements. Such a problem calls into question the quality of information financial statements contain and, consequently, potentially diminishes the power of financial statements in providing information for a business on which economic and investment decisions are made.

However, an entity that has acquired, as opposed to internally generated, an equally valuable brand will recognise it, since a fair value can be attributed to it. An intangible asset may be recognised by the acquirer **that was not recognised by the acquiree**, for example an internally generated brand may be recognised by the acquirer. This is because the acquisition provides sufficient evidence that:

- There will be future economic benefits attributable to it – otherwise, why would the acquirer buy it?
- The cost can be measured reliably; the acquirer will have built up the total purchase consideration by estimating values (= costs) for each asset.

This inconsistent treatment has led to difficulties in valuing entities and assessing their performance.

An investment in a major IT project, for example, may involve investment in intangibles such as computer software and licences. These will be subject to the requirements of IAS 38, *Intangible Assets*. They can only be carried on the statement of financial position if it is probable there will be future economic benefits from the assets.

Their useful life may be determined by the life of the investment. It may be difficult to decide whether the firm has control of some intangible assets and it may also be problematic to assess their fair value or impairment, particularly if there is no active market for them and they are part of a specific investment.

### 1.10.3 Impairment of assets

Asset availability and usage in a business is one of the key drivers in business success. Any assessment of assets, therefore, should consistently reflect their worth to the business and financial reporting of their value should be accurate, particularly when there exists the possibility that an asset may have diminished in value. At the very least, an asset recognised in the statement of financial position should not be reported at a value above the amount that could be recovered from it. During periods where general prices increase there is an assumption that recoverability of the reported value of such assets will not be an issue. However, it is important that all the assets are considered in relation to business decisions that are made by the entity. For example, some intangible assets which are highly technical in nature may attract premium valuations which may not be recoverable as technology continues to be developed or competitors enter the market.

Assets will be subject to the requirements of IAS 36 *Impairment of Assets* if their carrying amounts exceed the amount expected to be recovered from their use or sale. The firm must reduce the carrying amount of the asset to its recoverable amount and recognise an impairment loss.

The recoverable amount is the higher of fair value less costs of disposal and value in use.



## Definition

**Value in use:** The present value of the future cash flows expected to be derived from an asset or cash-generating unit.

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The following elements should be reflected in the calculation of an asset's value in use:

- An **estimate of the future cash flows** the entity expects to derive from the asset
- Expectations about **possible variations in the amount or timing** of those future cash flows
- The **time value of money** (represented by the current market risk-free rate of interest)
- The price for bearing the **uncertainty inherent in the asset**
- **other factors** that market participants would reflect in pricing the future cash flows the entity expects to derive from the asset

The standard could therefore apply if the expected future cash flows associated with the asset are worse than was forecast when the initial investment was made. The cash flow projections used to assess whether impairment has occurred should be the most recent management-approved budgets or forecasts, generally covering a maximum period of five years. The net cash flows expected to arise on the asset's ultimate disposal should be taken into account. Indicators of impairment include the following:

### External

- Significant decline in market value of the asset below that expected due to normal passage of time or normal use
- Significant changes with an adverse effect on the entity in:
  - technological or market environment
  - economic or legal environment
- Increased market interest rates or other market rates of return affecting discount rates and thus reducing value in use
- Carrying amount of net assets of the entity exceeds market capitalisation

### Internal

- Evidence of obsolescence or physical damage
- Significant changes with an adverse effect on the entity include:
  - the asset becoming idle
  - plans to discontinue/restructure the operation to which the asset belongs
  - plans to dispose of an asset before the previously expected date
  - reassessing an asset's useful life as finite rather than indefinite
- Internal evidence available that asset performance will be worse than expected

## 1.11 Financing

A number of standards are linked to the decisions managers make about how operations and investments should be financed.

### 1.11.1 Financial instruments

All companies have financial instruments in their statements of financial position. Receivables and cash are, after all, financial instruments. In particular, there are trillions of dollars of financial instruments outstanding in the financial markets. Prior to the standards on financial instruments, many were off balance sheet until the gain or loss became

realised. Users can now better judge the impacts on future profits and liquidity and the risks businesses face as a result of the following standards being implemented:

- IAS 32, *Financial Instruments: Presentation*
- IAS 39, *Financial Instruments: Recognition and Measurement\**
- IFRS 7, *Financial Instruments: Disclosures*
- IFRS 9, *Financial Instruments*

**Note:** IFRS 9 is now the examinable standard, but an awareness is needed of the hedging requirements of its predecessor, IAS 39, as these hedging rules can be applied for a portfolio of financial assets and liabilities and as an accounting policy choice.

Relevant requirements of these standards are covered in more detail in chapters Financial structure and financial reconstruction to International financial management, but for now you should keep the following principal points in mind.

- The **requirement to split financial instruments into financial assets, financial liabilities and equity instruments**, with the distinction between liabilities and equity being that liabilities are instruments that embody an obligation to deliver cash whereas equity instruments contain residual interests in net assets.
- Classification as a liability or equity** determines whether interest, dividends, losses or gains are treated as income and expense (liability) or as changes in equity.
- Special hedge accounting requirements**, recognising the offsetting effects of changes in value of a hedged item and an instrument that hedges it may apply to hedges of asset or liability fair value, hedges of variable cash flows and hedges of net investments.
- Under IFRS 7, the firm needs to explain the **significance of financial instruments** for its financial position and performance, and provide qualitative and quantitative disclosures about exposures to risk and risk management.

### 1.11.2 Foreign investment and finance

Business is becoming increasingly international in terms of trading goods and services and in the operation of capital markets. One measure of the significance of globalisation is that most developed countries have external trade in the range 15% to 30% of their gross domestic product.

International activity can vary enormously from relatively straightforward import and export transactions through to financing arrangements in multiple currencies or maintaining operations overseas, for example, in the form of a subsidiary or branch.

Operating in multi-currency locations presents a number of accounting challenges, including:

- **conversion** – accounting for transactions where one currency has been physically changed into another currency
- **translation** – restating assets/liabilities initially recognised in more than one currency into a common currency
- **exchange gains and losses** – where relative currency values change, gains and losses arise which need to be appropriately measured and accounted for

**Carrying on any trade abroad**, making investments or seeking finance in other currencies will mean that the firm is subject to IAS 21, *The Effects of Changes in Foreign Exchange Rates*. We looked at some requirements of this standard in the chapter Strategic choice and will return to it again in the chapter International financial management. For now, the standard allows exchange differences on monetary items (loans) relating to a net investment in a foreign operation to be treated as other comprehensive income in the statement of comprehensive income. They are treated as a component of equity and only taken to profit or loss on disposal of the investment.

### 1.11.3 Borrowing costs

Inventories that require a number of manufacturing processes and the construction of non-current assets such as manufacturing plant and investment properties can take a significant time to complete. These activities may be financed by borrowings on which the entity incurs finance costs during the manufacturing/construction periods. These finance costs can be considered as part of the cost of the asset.

The requirements of IAS 23, *Borrowing Costs* may apply to this type of investment (qualifying asset). If borrowing costs can be directly attributed to the acquisition, construction or production of a qualifying asset, then the borrowing costs should be **capitalised**. Borrowing costs eligible for capitalisation are those that would have been **avoided** otherwise. Judgement will be required when the firm uses a range of debt instruments for general finance. In these circumstances the amount of borrowing costs to be capitalised should be calculated by reference to the weighted average cost of the general borrowings. When the qualifying asset is ready for its intended use or sale, any remaining borrowing costs intended to finance it are treated as part of the general borrowings pool.

### 1.11.4 Leasing

Businesses may obtain financing from a number of different sources. Such financing arrangements may vary significantly in nature, from a simple bank overdraft to a complex sale and leaseback transaction.

Leases can be a major source of finance to a business. The accounting treatment adopted must provide sufficient information for users of the financial statements to be able to understand the substance of such transactions. The accounting treatment for leases previously caused much debate among national standard setters, with important issues such as gearing and off balance sheet (ie, unrecognised) financing at the centre of the debate.

IFRS 16 abolished the distinction between finance leases (where substantially all the risks and rewards of ownership of an asset are transferred to the lessee) and operating leases (where those risks and rewards remain with the lessor) for lessees, although not for lessors. Previously, when a lease was deemed to be a finance lease, the asset and liability were recognised in the financial statements of the lessee. When a lease was deemed to be an operating lease, lease payments were recognised in profit or loss, but no lease obligation was recognised – making the transaction ‘off- balance sheet’. IFRS 16 introduced a single lessee accounting model and requires a lessee to recognise assets and liabilities for all leases with a term of more than 12 months, unless the underlying asset is of low value.

Leasing is covered in more detail in the chapter Financial instruments and financial markets.

## 1.12 Other issues

A number of other standards may be of general relevance, whatever strategic decisions the firm makes.

### 1.12.1 Fair values

Investments and financial liabilities are now subject to the requirements of IFRS 13, *Fair Value Measurement*.

Generally fair value should be determined on a market basis, making maximum use of observable market prices. It may alternatively be determined using a cost approach or income approach. The cost approach reflects the amount that would currently be required to replace the service capacity of an asset. A number of techniques could be employed if the income approach is used, for example present value techniques, option pricing models and the multi-period excess earnings model.

### 1.12.2 Events after the reporting period

In assessing business performance, pertinent information sometimes arises following the cut-off date for which financial statements are prepared and may have important implications for judging financial position and performance in the year just gone. The end of the reporting period is a cut-off date and events that happen after this point in time should not generally be recognised in the financial statements of the period just ended. However, information that comes to light after the reporting date sometimes provides additional information about events that actually occurred before the end of the reporting period, in which case it is appropriate to recognise it.

The objective is to prepare a set of financial statements that reflect the most up to date information about events that existed at the end of the reporting period. However, it is sometimes difficult to establish whether the event happening after the end of the reporting period is new information about an existing event or a new event. Guidance is therefore provided to ensure there is consistency of treatment of such events across all financial statements.

IAS 10, *Events After the Reporting Period* includes a number of examples of investment and financing issues for which accounts would need to be adjusted or for which disclosure would need to be made. These disclosures provide investors with additional important information that may significantly impact on investment decisions.

#### **Examples of issues which would require accounts to be adjusted include:**

- subsequent evidence of impairment of assets
- subsequent determination of the costs of assets

#### **Examples of events requiring disclosure include:**

- a major business combination
- announcing a plan to discontinue an operation
- major purchases of assets
- destruction of assets
- abnormally large changes in asset prices or foreign exchange rates

### 1.12.3 Provisions and contingencies

One of the key creative accounting devices used in the past by businesses that wish to manipulate their financial results has been to 'smooth' earnings and thus provide a false indication that the business was more stable than was the case. One way this has been undertaken in the past has been through the creation of a provision. For example, in periods where performance exceeded expectations an entity might be tempted to make what has been commonly referred to as a 'rainy day' provision. The provision set up during prosperous times would be released in periods where results were not quite up to expectations. This provided management with some flexibility over the smoothing of results. Also a number of unrelated provisions could be grouped together to form a 'big bath' provision which provided some flexibility over its release or reversal.

As a consequence IAS 37, *Provisions, Contingent Liabilities and Contingent Assets* restricted entities from making large 'general' provisions which can have a significant impact on the results of an entity. Guidance is provided on the type of provisions that can be made and on the general principles surrounding recognition. In so doing, the requirements of IAS 37 limit the provisions that can be made.

No provision can be made for future losses of an investment, as these do not represent obligations of the firm at the period end. However, expectations of losses may be an indication of an impairment of value of assets used in an investment.

If the firm is to undertake a major restructuring of an investment, it can only make a provision for that restructuring if it has a detailed formal plan and has either started to implement the plan or announced its main features to those affected.

Contingent liabilities or assets that relate to investments should be disclosed in the accounts.



### **Interactive question 2: Developments in financial reporting**

What general impacts might developments in financial reporting have on financial strategy?  
See **Answer** at the end of this chapter.

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## 2 Impact of financial crises



### Section overview

Inevitably, financial crises impact on other businesses as financial institutions reduce lending to limit their own exposures and comply with stricter regulations. However, businesses may be able to learn lessons from history to limit the damage to their own position.

### 2.1 Impact of financial crises

Many financial crises are not only followed by a period of retrenchment but a period of increased regulation, reining back what has become regarded as excesses, particularly in the financial sector. The Wall Street crash resulted in the Glass-Steagall Act of 1933, limiting commercial bank activities in securities markets and affiliations between commercial banks and securities firms. The Enron crisis prompted the Sarbanes-Oxley Act of 2002 in the US, increasing compliance costs for internal controls and, some argue, reducing flexibility in corporate decision making. In the UK, the financial crisis of 2007-2008 prompted the Vickers report (2011) and subsequent legislation, the Banking Reform Act 2013.

The Banking Reform Act:

- (a) introduces a 'ring-fence' around the deposits of individuals and small businesses, to separate retail banking from their wholesale and investment operations, including the trading floor (and in doing so, protecting taxpayers when things go wrong)
- (b) imposes higher standards of conduct on banks by means of a criminal sanction for reckless misconduct that leads to bank failure

### 2.2 Impact on business of the global financial crisis

As banks became uncertain about the credit status of other banks during the financial crisis of 2007-2008, they became reluctant to lend to each other without security, even short term, and the interbank market - which had been very liquid - dried up for a time.

Banks also came under pressure from financial regulators to strengthen their balance sheets and improve their capital base. A consequence was that banks became more reluctant to lend to business, contributing to economic recession.



### Context example: The impact of low interest rates

Even though the Bank of England raised interest rates in early August 2018 by 0.25% to 0.75%, a report from the Institute for Public Policy Research (IPPR) had already suggested that monetary policy would be unable to fulfil its normal function should the economy falter. In all three of the last recessions dating back to the early 1980s, interest rates were cut by 4.5%-5% in order to sustain economic demand. In the downturn following the most recent financial crisis, the Bank had to go a step further with additional stimulus from quantitative easing, pumping £445 billion into the economy by buying government bonds from the financial industry to help consumers and companies keep on spending. The effect of QE is to create new money and increase the money supply in the UK, in the hope of stimulating spending and encouraging banks to lend money.

The IPPR said an interest rate cut of that size would not be available now, given the current low level of rates. Meanwhile, quantitative easing would be unreliable because it boosted the wealth of homeowners and shareholders at the expense of pensioners and young people renting homes.

Source: <https://www.theguardian.com/business/2018/apr/22/bank-of-england-dangerously-ill-equipped-for-next-recession-says-ippor> [Accessed 10 August 2018]

## 3 Developments in the Eurozone



### Section overview

The problems faced by various countries in the Eurozone have led to speculation about whether it can survive in its current form.

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### 3.1 Introduction of the euro

#### 3.1.1 Maastricht treaty 1991

The main points of the Maastricht Treaty on Economic and Monetary Union (EMU) were:

- Agreement to EMU by 1999 for countries which fulfilled the economic criteria
- The establishment of the European Central Bank (ECB)

The Maastricht Treaty established three basic principles regarding fiscal policy:

- (a) No excessive budget deficits
- (b) No monetary financing of budget deficits, ie, unlimited credit from the central bank
- (c) No bailouts of bankrupt governments

These principles were intended to ensure that fiscal mismanagement by one or more member states did not happen in the future. It was accepted that fiscal profligacy could undermine the monetary union.

### 3.2 Brexit

On 23 June 2016, the British electorate voted to leave the European Union. The so-called 'Leave' campaign highlighted concerns about levels of immigration and what it saw as excessive bureaucracy as key reasons for Britain to leave the EU and negotiate its own way in the world. Those who supported the 'Remain' campaign pointed out the benefits of EU membership, such as the easier selling of goods and services to other EU countries, and the economic benefits provided by the migrant workforce. Staying in the EU made it easier for UK businesses to send money, people, products and services around the world.

'Remainers' also claimed that Britain's status would be damaged by leaving, and that being forced to 'go it alone' would only cause economic harm.

Immediately following the Brexit vote, there was a fall in the value of the pound against the dollar, and in share prices. Britain lost its last AAA credit rating. However, since then share prices in the UK have recovered, with the FTSE 100 trading higher than before the referendum. The biggest effect of Brexit has probably been a strong sense of uncertainty about the economic future of Britain, and the future of the European Union itself, if more member states seek to leave.

The effect on sterling was more obvious, with it having fallen in value against both the euro and the dollar. Firms have pointed out that some goods become more expensive. On the other hand, UK exporters may see increased orders because of the fall in the value of the pound.

The British government invoked Article 50 of the Treaty on European Union on 29 March 2017, giving formal notification of the UK's intention to quit the EU. The UK left the EU on



31 January 2020. The transition period that was in place – during which nothing changed – ended on 31 December 2020. The rules governing the new relationship between the EU and UK took effect on 1 January 2021.

### 3.3 The future of the euro

#### 3.3.1 Possible developments

Perhaps the central flaw in the euro and Eurozone is the exchange rate and interest rate philosophy/policy of 'one size fits all', which was always going to pose a problem among diverse member states. The reality has been that unit labour costs have risen much less in most countries of northern Europe (most notably Germany) than they have in southern countries such as Italy, Spain, Portugal and Greece. Without the possibility of exchange rate depreciation, Germany's wealth increased whereas Greece and other southern European countries became poorer through their deteriorating balance of payments current account positions.

At the moment, Eurozone countries share the same monetary policy, controlled by the ECB. The only ways in which governments can control their economy are through fiscal policy (which differs between countries) and through austerity measures.

#### 3.3.2 Exit from the Eurozone

With large external debts, a lack of competitiveness and a decline in economic activity, some peripheral Eurozone countries have two options: stay in, which means austerity and high unemployment for the foreseeable future with all important economic decisions affecting them taken in Brussels or Berlin, or default on their debt, exit the euro and go back to their own national currency.

At the moment it seems more likely that countries will remain within the euro, in spite of the short-term problems.

However, the situation is by no means settled, and further developments in the euro and the Eurozone are inevitable. You should monitor the financial news for developments.

## 4 Other current issues in finance



### Section overview

- Most companies have faced the ramifications of the credit crunch over recent years, with banks being too nervous to lend money and charging a higher rate of interest if they do.
- Other recent developments include dark pool trading (trading without displaying quotes publicly) and the increased availability of Islamic finance.

#### 4.1 Access to credit

The problems in the banking sector that began in 2007 resulted in banks themselves finding it more difficult to borrow money, with the result that they have had less money to lend. Regulators require UK banks to hold more than twice the capital they were holding before the credit crunch.

Small businesses have faced particular problems in accessing bank finance in recent years, and these are discussed further in the chapter Financial structure and financial reconstruction.

## 4.2 Dark pool trading

Dark pools are off-exchange facilities, operated by banks, that allow secondary market trading of large blocks of shares. They allow brokers and fund managers to place and match large orders anonymously to avoid influencing the share price. The transactions are only made public after the trades have been completed. Their popularity has increased as electronic trading has resulted in the reduction of the average size of trades. Traders placing large orders on the transparent exchanges risk signalling that they are large buyers or sellers. Such signals could cause the markets to move against them and put the order at risk.

The main problem with dark pool trading is that the regulated exchanges do not know about the transactions taking place until the trades have been completed. As a result, the prices at which these trades are executed remain unknown until after the event.

Such a lack of information on significant trades makes the regulated exchanges less efficient. Although the prices in dark pools are based on those in the regulated exchanges, the dark pool trades do not contribute to the changes in prices as their liquidity is not displayed.

Transactions in dark pools can almost be viewed as 'over the counter' as prices are not reported and financial risks are not effectively managed. There is the danger that such risks spread in a manner similar to those attached to credit default swaps and collateralised debt obligations, which triggered the global financial crisis.

Dark pools and their lack of transparency arguably defeat the purpose of fair and regulated markets with large numbers of participants and threaten the healthy and transparent development of these markets. They could lead to a two-tier system whereby the public would not have fair access to information regarding prices and volumes of shares that is available to dark pool participants.

## 4.3 Islamic finance

Islamic finance has undergone rapid growth over recent years up to the point today where it is an industry worth more than \$1 trillion. Islamic financing is not only the preserve of Islamic banks, but is becoming an important revenue stream for some of the world's biggest lenders. Many of the major conventional banks, including HSBC and Standard Chartered, have Islamic banking arms also known as 'Islamic Windows'.

Islamic finance may be used for either cultural/religious or commercial reasons. Commercial reasons include the fact that Islamic finance may be available when other sources of finance are not. Islamic finance may also appeal to companies due to its more prudent investment and risk philosophy.

Conventional banks aim to profit by taking in money deposits in return for the payment of interest (**Riba**) and then lending money out in return for the payment of a higher level of interest. Islamic finance does not permit the charging of interest and instead invests under arrangements which share the profits and losses of the enterprises.

Taken from the perspective of Sharia'a (Islamic religious law and moral code), the taking of deposits which are subsequently lent out for interest which is paid whether or not the project is profitable is not justifiable. The Islamic bank arranges its business in such a way that the bank's profitability is closely tied to that of the client. The bank stands to take profit or make loss in line with the projects it is financing and as such must be more involved in the investment decision making. The bank acts in some ways more like a fund manager than

a conventional lending institution. Speculation is not allowed and conventional derivative products are deemed to be un-Islamic.

The main advantages of Islamic finance are as follows:

- (a) Gharar (uncertainty, risk or speculation) is not allowed, reducing the risk of losses.
- (b) Excessive profiteering is also not allowed; only reasonable mark-ups are allowed.
- (c) Banks cannot use excessive leverage and are therefore less likely to collapse.

The use of Islamic finance does not remove all commercial risk. Indeed there may even be additional risk from the use of Islamic finance. There are the following drawbacks from the use of Islamic finance:

- (a) There is no international consensus on Sharia'a interpretations, particularly with innovative financial products.
- (b) There is no standard Sharia'a model for the Islamic finance market, meaning that documentation is often tailor-made for the transaction, leading to higher transaction costs than for the conventional finance alternative.
- (c) Due to governmental and Sharia'a restrictions, Islamic finance institutions are subject to additional compliance work which can also increase transaction costs.
- (d) Islamic banks cannot minimise their risks in the same way as conventional banks as hedging is prohibited.

## 5 Social responsibility and environmental matters



### Section overview

- The interaction of financing decisions and corporate responsibility is stressed in the Strategic Business Management syllabus. Directors must be aware of their legal responsibilities and the interests of stakeholders.
- Social and environmental issues may have a number of impacts on management and financial accounts. We have already discussed (in the chapters Strategic analysis and Strategic performance management) the increasing importance of social responsibility and sustainability in relation to corporate performance and performance reporting, including the significance of the United Nations (UN) 2030 Agenda for Sustainable Development, and its global sustainable development goals. We will also consider (in the chapter Investment appraisal) how social and environment costs may affect investment appraisal decisions.

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The UK Companies Act requires that:

[...] A director of a company must act in the way he considers, in good faith, would be most likely to promote the success of the company for the benefit of its members as a whole, and in doing so have (amongst other matters) regard to [...] the impact of the company's operations on the community and the environment.

### 5.1 Corporate responsibility

Businesses face a number of pressures to widen the scope of their accountability. A key challenge is encouraging senior managers to evaluate the extent to which their business objectives create societal value.

(a) **Stakeholder pressures**

Businesses face pressures from different stakeholder groups to consider their wider responsibilities. Stakeholders include communities (particularly where operations are based), customers (product safety issues), suppliers and supply chain participants and competitors. Issues such as plant closures, pollution, job creation and sourcing can have powerful **social effects** for good or ill on these stakeholders. Without the support of stakeholders a business will find that its ability to operate is impaired and this will damage performance. Stakeholders also include governments facing political pressures, and international organisations (such as the UN) which emphasise the importance of organisations considering the environmental and social context within which they operate. Adopting corporate responsibility voluntarily may be more flexible, and in the end less costly, than having it imposed by statute.

(b) **Corporate reputation**

Increasingly a business must have the reputation of being a **responsible business** that enhances long-term shareholder value by addressing the needs of its **stakeholders** - employees, customers, suppliers, the community and the environment. Sponsorship and community involvement can reflect well on the business and attract ethical customers.

(c) **Staff motivation**

A commitment to corporate responsibility helps establish values and mission within the organisation, which may help attract and retain staff.

(d) **Business issues**

Corporate responsibility initiatives may provide opportunities to enter new markets or build new core competences. Businesses can achieve lower costs through using resources more efficiently, and not having to incur costs of remediation if they have negatively affected the environment.

### 5.1.1 Scope of corporate responsibility

The scope of corporate responsibility varies from business to business. Factors frequently included are:

- (a) **Health and safety** - this includes workplace injury, customer and supplier injury and harm to third parties.
- (b) **Environmental protection** - energy use, emissions (notably carbon dioxide), water use and pollution, impact of product on environment, recycling of materials and heat.
- (c) **Staff welfare** - issues such as stress at work, personal development, achieving work/life balances through flexibility, equal opportunities for disadvantaged or minority groups.
- (d) **Customer welfare** - through content and description of products, non-exclusion of customer groups, fair dealing and treatment.
- (e) **Supply-chain management** - insisting that providers of bought-in supplies also have appropriate corporate responsibility policies, ethical trading, elimination of pollution and unrecycled packaging, eliminating exploitative labour practices among contractors.
- (f) **Ethical conduct** - staff codes for interpersonal behaviour, prohibitions on uses of data and IT, management forbidden from offering bribes to win contracts, ensuring non-exploitation of staff.
- (g) **Engagement with social causes** - this includes secondment of management and staff, charitable donations, provision of free products to the needy, involvement in the local community, support for outreach projects such as cultural improvement and education.

### 5.1.2 Strategic approaches to corporate responsibility

An organisation can adopt different strategic approaches to corporate responsibility:

<b>Proactive strategy</b>	A business is prepared to take full responsibility for its actions. For example, a company which discovers a fault in a product and recalls the product without being forced to, before any injury or damage is caused, acts in a proactive way.
<b>Reactive strategy</b>	This involves allowing a situation to continue unresolved until the public, Government or consumer groups find out about it.
<b>Defensive strategy</b>	This involves minimising or attempting to avoid additional obligations arising from a particular problem.
<b>Accommodation strategy</b>	This approach involves taking responsibility for actions, perhaps when one of the following occurs: Encouragement from special interest groups Perception that a failure to act will result in government intervention

### 5.1.3 Corporate responsibility and stakeholders

Pressures on organisations to widen the scope of their corporate public accountability come from **increasing expectations of stakeholders** and **knowledge about the consequences of ignoring such pressures**. The South African King report stresses the importance of engagement with external stakeholders, and individual workers and stakeholders being able to communicate openly.

Whatever the organisation's view of its stakeholders, certain problems in dealing with them on corporate social responsibility may have to be addressed.

- Collaborating with stakeholders may be **time consuming** and **expensive**.
- There may be **culture clashes** between the company and certain groups of stakeholders, or between the values of different groups of stakeholders with companies caught in the middle.
- There may be **conflict between company and stakeholders** on certain issues when they are trying to collaborate on other issues.
- Consensus** between different groups of stakeholders may be difficult or impossible to achieve, and the solution may not be economically or strategically desirable.
- Influential stakeholders' **independence** (and hence ability to provide necessary criticism) may be compromised if they become too closely involved with companies.
- Dealing with certain stakeholders (eg, public sector organisations) may be complicated by their being **accountable to the wider public**.



#### Context example: Solar power

For many companies, adoption of renewable energy sources plays a large part in sustainability goals. Offsetting energy costs through increased use of renewables is not only cost effective, but promotes companies' CSR credentials.

According to a 2015 study conducted by Cone Communications/Ebiquity, '91 percent of global consumers expect companies to do more than make a profit', such as 'operate responsibly to address social and environmental issues'. The study notes that companies that support social and environmental issues maintain large numbers of consumers that perceive said companies in a positive light (93%), self-identify as loyal to the company (88%), and generally trust the company and its purposes (90%).

As an example, the cloud-based software company Salesforce made headlines for achieving

its net-zero carbon emissions' goal decades before its goal date of 2050. Salesforce worked on increasing the energy efficiency of its infrastructure, servers, and buildings and finally reached its goal after purchasing power through wind farms in Texas and West Virginia.

Solar power is one of the cheapest and easiest forms of renewable energy available. A 200-kW solar array can offset carbon emissions by roughly 250 tons per year: the equivalent of taking 47 passenger vehicles off the road for one year, or not burning 120 tons of coal.

Asics, the popular footwear company, recently announced the installation of a solar array at one of its distribution centres, which will power 20% of the energy usage at the location.

MGM Resorts International has the largest rooftop solar array in the US, with 8.3 MW spanning 23 acres on the roof of the Mandalay Bay resort. The system will be able to account for 25% of the hotel's total energy usage. As well as installing the system, it paid US\$87 million to stop purchasing electricity from its previous supplier, a cost which is expected to be recouped within seven years.

Source: <https://www.renewableenergyworld.com/ugc/articles/2017/05/23/corporate-social-responsibility-how-renewables-have-expanded-the-field.html> [Accessed 13 August 2018]

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## 5.2 Corporate citizenship



### Definition

**Corporate citizenship:** is: 'Business strategy that shapes the values underpinning a company's mission and the choices made each day by its executives, managers and employees as they engage with society. Three core principles define the essence of corporate citizenship, and every company should apply them in a manner appropriate to its distinct needs: minimising harm, maximising benefit, and being accountable and responsive to stakeholders.' (Boston College Carroll School of Management Center for Corporate Citizenship)

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However, some argue that corporate citizenship should neither be seen as a business strategy nor a way of developing the business. Instead, it should be seen as a matter of fact. A corporation has a legal personality and operates within a society which places rights and obligations on its members (recognising them as citizens). Consequently, these rights and obligations also extend to corporate members.

Much of the debate in recent years about corporate responsibility has been framed in terms of corporate citizenship, partly because of unease about using words like ethics and responsibility in the context of business decisions. Discussion of corporate citizenship also often has political undertones, with corporations acting instead of governments that cannot - or will not - act to deal effectively with problems.



### Context example: Corporate citizenship at The Carlyle Group

From The Carlyle Group's 2018 Corporate Citizenship Report:

At Carlyle, we possess strong internal capabilities, including a Chief Sustainability Officer and external specialists in specific Environmental, Social and Governance (ESG) issues who help us identify the material types of ESG issues and provide insight for our investment teams during the due diligence process. In the last year, we augmented our existing investment process by adding the Sustainability Accounting Standards Board (SASB) sector

guidelines as a resource.

These guidelines identify material factors likely to create or destroy value in 11 sectors and 79 industries. For example, if we explore an investment in an agricultural products company, SASB points to several material sustainability issues to consider including water use, fertilizer consumption and food safety. These sector guidelines, combined with our in-house expertise, allow us to approach ESG strategically and focus on those issues that matter.

The second pillar of our ESG strategy – governance and transparency – ensures alignment between Carlyle’s interests and those of our investors, and places a premium on effective communication with our investors and other stakeholders. We follow a rigorous process around ESG issues, with mandatory inclusion of these issues in Investment Committee materials in most asset classes, and annual board-level review of our Guidelines for Responsible Investment at all of our controlled Corporate Private Equity companies. We also publish this annual citizenship report and regularly brief and consult with investors on ESG issues. We are excited to announce that in 2017, one of our largest fund families, Carlyle Europe Partners, further advanced Carlyle’s ESG policies and practices by moving from fund-level reporting to reporting, on a company-by- company basis, ESG Key Performance Indicators (KPIs). This enhanced framework gives our investors greater insight into the true ESG performance of our portfolio companies.

Carlyle’s third ESG pillar is to continue providing leadership on ESG issues, as we have for ten years. In 2008, we created our Guidelines for Responsible Investment, which also became the basis of the American Investment Council’s guidelines in 2009. We published the first sustainability report in the sector in 2010 and hired our first Chief Sustainability Officer in 2014.

We are pleased to announce that Carlyle, across our 31 global offices and the activities of our roughly 1,600 employees, is now carbon neutral. Over the past year, we conducted our first-ever carbon footprint analysis with the assistance of environmental consultants with expertise in carbon measurement and estimation, and continued efforts to reduce our carbon emissions through efficiency projects. We then used our carbon data to invest in an offset project with The Carbon Fund focused on reducing emissions from long-haul trucks, a service used by many of our portfolio companies. We are not aware of any other global private equity firm that has taken this step.

Another area in which we aim to provide leadership is diversity and inclusion. Pursuing a diverse workplace not only reflects our values as a firm, but also enables us to better serve our investors because teams with diverse perspectives and experiences make better decisions.

Source: <https://www.carlyle.com/sites/default/files/reports/carlyleccr2018.pdf> [Accessed 13 August 2018]

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### 5.3 Sustainability

Much of the discussion about corporate responsibility has focused on businesses’ commitment to sustainability, ensuring that development meets the needs of the present without compromising the ability of future generations to meet their own needs.

The influential Brundtland report of 1987 emphasised that sustainability should involve developing strategies so that the organisation only uses resources at a rate that allows them to be replenished (in order to ensure that they will continue to be available). At the same time, emissions of waste should be confined to levels that do not exceed the capacity of the environment to absorb them.

The Brundtland report defined sustainable development as ‘not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are made consistent with future as well as present needs’.

A key challenge facing businesses is being able to demonstrate the links between ‘sustainability’ and business success.

### 5.3.1 The triple bottom line

One approach to sustainability is known as the **triple bottom line** (or TBL, 3BL, or People, Planet, Profit) approach.

- **People** means balancing up the interests of different stakeholders and not automatically prioritising shareholder needs.
- **Planet** means ensuring that the business’s activities are environmentally sustainable.
- **Profit** is the accounting measure of the returns of the business.

A similar approach to thinking about sustainability issues is to differentiate three different types of sustainability:

Issues	Examples
<b>Social</b>	Health and safety, workers’ rights (in the business itself and its supply chain), pay and benefits, diversity and equal opportunities, impacts of product use, responsible marketing, data protection and privacy, community investment and bribery/corruption
<b>Environmental</b>	Climate change, pollution, emissions levels, waste, use of natural resources, impacts of product use, compliance with environmental legislation, air quality
<b>Economic</b>	Economic stability and growth, job provision, local economic development, healthy competition, compliance with governance structures, transparency, long-term viability of businesses, investment in innovation/new product development

### 5.3.2 The United Nations Sustainable Development Goals

The UN Sustainable Development Goals (SDGs), described in the chapter Strategic performance management, constitute 17 global goals for sustainable development, with the aims of ending poverty, combatting climate change, and fighting injustice and inequality. Overall goals are supported by a range of targets and indicators, which provide a quantifiable framework for assessing whether or not the goals are being achieved.

### 5.3.3 Natural capital

As we first saw in in the chapter Strategic performance management, natural capital will become a prominent business concern and in order for organisations to incorporate ‘natural capital’ into their business cases and decision making they need to be able to measure and value it. PwC highlight three key steps in the valuation process:

- Quantify resource use (dependency) or environmental emissions (impacts) in biophysical units (kilograms, litres, etc.)
- understand how the resource use or environmental emissions cause changes in the natural environment (for example, through water pollution or changes in air quality)
- value the impacts on people associated with these changes in the natural environment - also called outcomes (eg, impacts on health, or on agriculture or fisheries)

### 5.3.4 Managing natural capital



Various methodologies have been proposed for managing the value of natural capital elements. When valuing natural capital, it is important to consider the **value perspective**:

Value perspective	Typically used to
Business value	Assess how natural capital impacts positively or negatively, the financial performance of the company.
Societal value	Understand the significance of the entity's natural capital impacts on external stakeholders
Both value perspectives	A comprehensive natural capital assessment. Assessing societal values, in particular the entity's future impacts on society. This will enable all business values to be considered as well.

The valuation can be done with a specific **business application** or a combination of them:

- assess risks and opportunities
- compare option
- assess impacts on stakeholders
- estimate total value and/or net impact
- communicate internally or externally

An appropriate valuation technique will be selected based on whether the intention is to assess values in qualitative, quantitative or monetary terms.

- **Qualitative valuation techniques** are used to inform the potential scale of costs and/or benefits expressed through qualitative, non-numerical terms (eg, increase in air emissions, decrease in social benefits of recreation)
- **Quantitative valuation techniques** focus on numerical data which are used as indicators for the costs and/or benefits (eg, changes in tons of pollutants, decrease in number of people benefitting from recreation).
- **Monetary valuation techniques** translate quantitative estimates of costs and/or benefits into a single common currency.

The choice of valuation technique depends on the chosen value perspective (business, societal, or both), the ultimate objective of the assessment, and the time and resources available. There are various valuation techniques that can be used:

Technique	Description
Replacement costs	The cost of replacing natural capital with an artificial substitute
Damage costs avoided	The potential cost of property infrastructure, and production losses due to natural capital degradation, treated as a saving or a benefit from observing natural capital.
Hedonic pricing	Based on the observation that environmental factors are one of the determinants of the market price of certain goods (eg the environmental quality of a neighbourhood affects the prices of properties located there).
Contingent valuation	Infers ecosystem values by asking individuals their maximum willingness to pay (or willingness to accept compensation) for a specific change in the relevant non-market good or service from natural capital.

### Shadow pricing

Shadow pricing is one way to account for natural capital costs. Shadow pricing adds a hypothetical surcharge to market prices for goods or services that involve significant carbon

emissions in their supply chain. This can be seen as the cost on society or the social cost of carbon valuation technique. A growing number of companies are putting a shadow price on carbon to reduce their carbon footprint and inform business decisions.

### **Procurement and supply-chain management**

For many companies, most environmental risks lie in their supply chain rather than in the company's own operations. Practical ways to apply natural capital accounting could be through the use of supply-chain risk assessments, supplier relationship management, and the implementation of sustainable procurement strategies.

This could involve requesting data on suppliers' carbon emissions or water use, and rejecting those suppliers who do not comply with standards. Companies could switch to certified sustainable suppliers for commodities such as timber or cotton.

### **Product design**

Another way to use natural capital valuation is in the product development and design process. Life cycle analysis (LCA) can quantify and reduce impacts associated with sourcing, manufacturing, using and disposing of products.

### **Scenario planning**

Companies can use natural capital valuations to help with decisions on where to grow and invest capital, or withdraw, or for example when considering online retailing versus investing in bricks and mortar stores.

## **5.3.5 Role of assurance procedures for sustainability goals**

There is a significant role for the accountancy profession in providing high quality reporting, audit and assurance of organisations' performance in relation to sustainability goals, alongside 'traditional' business decisions. According to ICAEW, sustainability needs to be 'measured, reported and assured'. Organisations need to be proactive in this area, pre-empting sustainability issues and finding new business opportunities. Chartered Accountants are well-placed to assist with the availability of accurate and reliable information, and with assurance of non-financial data. They could expect to be involved in a range of activities:

- Implementing energy efficiency (and cost-saving) measures
- Formulating and implementing corporate responsibility policies
- Designing management information systems
- assurance of supply chain processes and procedures

## **5.4 Green Finance**

### **5.4.1 Need for green finance**

Many businesses that are at the forefront of innovation to develop solutions to climate change are financially constrained, and this potentially threatens the ability of society to achieve goals such as the Paris Agreements of 2015. As a result of this, a market for green finance has grown in the last decade, in some cases supported by governments. In particular, the market for green bonds, which is discussed in the chapter Financial instruments and financial markets. Financial constraints refers to a situation where firms' access to finance is limited and they cannot therefore obtain sufficient finance to achieve their objectives.

Green finance has many different definitions but can be thought of as the financing of investments that provide environmental benefits, as part of a broader context of encouraging environmentally sustainable development. This could include green crowdfunding for small-scale, community schemes or green bond issuance for major

infrastructure projects. Some areas are usually accepted as 'green' with little argument. These include renewable energy, energy efficiency in construction, green transport, recycling, pollution prevention and water conservation. Other areas are more controversial such as nuclear energy and fossil fuel efficiency.

When the UK government launched its Green Finance Strategy in July 2019, it described its green finance strategy as aiming 'to align investment and cashflows generated by the private sector with sustainable growth'. The Green Finance Strategy has two main objectives. Firstly, the strategy aims to align investment and cashflows generated by the private sector with sustainable growth. The second objective is to ensure that any green initiatives lead to a strengthening of UK financial sector competitiveness. There are three pillars to the government strategy;

- (a) Greening finance - ensuring that financial decision making takes account of the risks and opportunities generated by climate and environmental issues. For example, decisions need to take account of potential risk of asset damage, arising from an increase in extreme weather events.
- (b) Financing green - encouraging public and private investment in sustainable energy and other projects to help achieve carbon targets. For example, between 2015 and 2021 the UK government will have invested nearly £1.5 billion in schemes to provide charge point infrastructure for electric vehicles.
- (c) Capturing the opportunity - ensuring UK financial services capture the commercial opportunities generated by the increase in climate data and analytics as well as from new green financial products and services.

(Great Britain. Department for Business, Energy and Industrial strategy., (2019). Green Finance Strategy. Transforming Finance for a Greener Future. London: HMSO.)

In response to the government's strategy ICAEW has signed up to the Green Finance Education Charter to ensure that today's accountants are fully versed in green finance and are able to consider and report on the impact that strategic decisions may have on the environment.

#### 5.4.2 Types of green finance

The following table summarises the main types of green finance:

Methods of 'financing green'	
<b>Green loans</b>	Some banks, often with government backing, specialise in financing green projects. For example, in the UK the Green Investment Bank (GIB) was launched in 2012 to finance investment in projects that have a specific green purpose such as reducing greenhouse gas emissions, promoting efficiency in the use of natural resources, protection of the environment, and promoting environmental sustainability. The GIB was privatised in 2017, but retains the same goals.
	The market for green loans is growing rapidly, and often lenders offer better loan terms to borrowers that can show they are reducing their environmental impact. The Green Loan Principles (GLP) set out a clear framework, enabling all market participants to clearly understand the characteristics of a green loan.
<b>Sustainability linked loans</b>	Sustainability Linked Loans (SLLs) are not the same thing as green loans. They are loans for any purpose (whether 'green' or not), but with an in-built pricing mechanism meaning that the loan is cheaper if the borrower achieves certain sustainable or ESG (environmental, social and governance) related targets. The use of SLLs is growing rapidly.

Methods of 'financing green'	
<b>Green bonds</b>	<p>A green bond is a type of fixed-interest bond used to raise money for climate and environmental projects. These bonds are typically secured and have the same credit rating as a company's other debt obligations. Green bonds may come with tax incentives to enhance their attractiveness to investors.</p> <p>Over the past decade green bonds have increased in popularity dramatically. To qualify for green bond status, they are often verified by a third party such as the Climate Bonds Standard Board, which certifies that the bond will channel finance to environmentally beneficial projects.</p>
<b>Green funds</b>	<p>Many stock markets produce an index of firms that satisfy social and environmental criteria.</p> <p>For example in the UK the London Stock Market has the FTSE4Good index. Companies are excluded if, for example, they are involved in the tobacco, weapons or coal power industry. To be included in the FTSE4Good Index, companies must, for example, support human rights, make progress to become environmentally sustainable, and ensure good labour standards for their own company and for companies that supply them as well.</p> <p>This helps investors to target investments in companies with higher standards of behaviour in terms of social responsibility.</p>

## 5.5 Control systems

Many companies have been forced to act on environmental issues because of shocks such as environmental disasters and attention from pressure groups. To reduce the chances of these happening, organisations must not only monitor their internal performance, but also include within their monitoring of the external situation assessment of the impact of environmental issues. It will be particularly important to monitor:

- emerging environmental issues
- likely changes in legislation
- changes in industry best practice
- attitudes of suppliers, customers, media and the general public
- activities of environmental enforcement agencies
- activities of environmental pressure groups

In *Accounting for the Environment*, Gray and Bebbington listed the functions that environmental management systems should cover. These tie in with the aims of natural capital valuation described above.

<b>Environmental review and policy development</b>	A first review of environmental impacts of materials, issues and products and of business issues arising, also the development of a tailored in-house policy or measures to ensure adherence to external standards
<b>Objectives and target development</b>	As with all business objectives and targets, it is preferable that those set be unambiguous and achievable. Initiatives such as the World Wildlife Fund initiative encourage quantified targets within a specified time period eg, reducing carbon dioxide emissions by X% within a specified time period

<b>Life cycle assessment</b>	<p>This aims to identify all interactions between a product and its environment during its lifetime, including energy and material usage and environmental releases.</p> <ul style="list-style-type: none"> <li>• Raw materials used have to be traced back to the biosphere and the company recognise impact on habitat, gas balance, the energy used in the extraction and transportation and the energy used to produce the means of extraction</li> <li>• For intermediate stages, emissions, discharges and co-products</li> <li>• At the consumer purchase stage, the impact of manufacture and disposal of packaging, transport to shops and ultimately impacts of consumers using and disposing of the product</li> </ul>
<b>Establishment and maintenance of environmental management systems</b>	Key features of environmental management systems (as with other management systems) including information systems, budgeting, forecasting and management accounting systems, structure of responsibilities, establishment of an environmentally friendly culture, considering impact on human resource issues such as education and performance appraisal
<b>Regulatory compliance</b>	Making sure that current legal requirements are being fulfilled and keeping up to date with practical implications of likely changes in legislation
<b>Environmental impact assessment</b>	A regular review of interactions with the environment, the degree of impact and an environmental SWOT analysis, also the impact of forthcoming major investments
<b>Eco-label applications</b>	Eco-labelling allows organisations to publicly identify products and services that meet the highest environmental standards. To be awarded an eco-label requires the product to be the result of a reliable quality management system
<b>Waste minimisation</b>	Whether waste can be minimised (or better still eliminated), possibility of recycling or selling waste
<b>Pollution prevention programmes</b>	Deciding what to target
<b>Research, development and investment in cleaner technologies</b>	How to bring desirable features into product development, bearing in mind product development may take several years, and opinion and legal requirements may change during that period. Desirable features may include minimum resource usage, waste, emissions, packaging and transport, recycling, disassembly and longer product life
<b>Environmental performance and issues reporting</b>	Consideration of the benefits and costs of reporting, how to report and what to include (policies, plans, financial data, activities undertaken, sustainability)

## 5.6 Management accounting and performance issues

Most **conventional accounting systems** are unable to apportion **environmental costs** to products, processes and services and so they are simply **classed as general overheads**. Environmental management accounting (EMA), on the other hand, attempts to make all relevant significant costs visible so they can be considered when making business decisions.

The major areas for the application of EMA are 'in the assessment of annual environmental costs/expenditures, product pricing, budgeting, investment appraisal, calculating costs and savings of environmental projects, or setting quantified performance targets'.

### 5.6.1 Input/output analysis

Input/output analysis records material flows and balances them with outflows on the basis that what comes in must go out, or be stored. This approach is similar to process costing where all materials in a process are accounted for either as good output or as scrap/waste. This forces the business to look at how it uses its resources and focuses it on environmental cost.

The difficulty with adopting this technique is putting monetary values on waste, non-accounted materials and scrap if these previously haven't been accounted for. It also requires additional reporting of factors included, such as water use and energy, which may be difficult to attribute to individual units.

### 5.6.2 Flow cost accounting

Flow cost accounting takes material flows and combines them with the organisational structure. It evaluates material flows in terms of physical quantities, cost and value. Material flows are classified into material, system and delivery and disposal. The values and costs of each of these are then calculated. This system requires additional reporting which may be unavailable on existing systems and time consuming to accomplish.

### 5.6.3 Environmental activity-based costing

Traditional activity-based costing allocates all the internal costs of a business to cost centres and cost drivers on the basis of the activities that caused the costs. Environmental activity-based costing distinguishes between environment-related costs and environment-driven costs.

**Environment-related costs** are costs specifically attributed to joint environmental cost centres, such as a sewage plant, or a waste filtration plant.

By contrast, **environment-driven costs** are hidden in general overhead costs and do not relate specifically to a joint environmental cost centre, although they do relate to environmental drivers. For example, a company may shorten the working life of a piece of equipment in order to avoid excess pollution in the later years of its working life. As a result, the company's annual depreciation charge will increase. This is an environment-driven cost.

In order for environmental activity-based costing to provide 'correct' information, the choice of allocation basis is crucial. The difficulty in allocating costs correctly could be a major complication in using this method.

Four main bases of allocation are:

- volume of emissions or waste
- toxicity of emissions or waste
- environmental impact added volume of the emissions treated
- the relative costs of treating different kinds of emissions

### 5.6.4 Life cycle costing

**Life cycle costing** records the complete costs of a product 'from cradle to grave' taking into account the environmental consequences across the whole life of the product. Organisations need to have the recording systems to capture all costs, especially those incurred **prior to production** and **after production ceases** (for example, the costs of cleaning and decontaminating industrial sites when they are decommissioned). It is important that potential decommissioning costs and other post-production costs are identified at the start of a project, so that they can be included in the investment appraisal (or similar cost-benefit analysis) to determine whether or not to undertake the project.

### 5.6.5 Environmental concern and performance

Martin Bennett and Peter James (authors of *The Green Bottom Line: Management Accounting for Environmental Improvement and Business Benefit*) looked at the **ways in which a company's concern for the environment can impact on its performance**.

- (a) **Short-term savings** through waste minimisation and energy efficiency schemes can be substantial.
- (b) Companies with poor environmental performance may face **increased cost of capital** because investors and lenders demand a higher risk premium.
- (c) There are a number of **energy and environmental taxes**, such as the UK's landfill tax.
- (d) **Pressure group campaigns** can cause damage to reputation and/or additional costs.
- (e) Environmental legislation may cause the '**sunsetting**' of products and opportunities for '**sunrise**' replacements.
- (f) The cost of processing input which becomes **waste** is equivalent to 5–10% of some organisations' revenue.
- (g) The phasing out of CFCs has led to markets for alternative products.

### 5.6.6 Achieving business and environmental benefits

Bennett and James went on to suggest six main **ways in which business and environmental benefits can be achieved**.

- (a) **Integrating the environment into capital expenditure decisions** (by considering environmental opposition to projects which could affect cash flows, for example). There is a feeling that most companies do not know about the extent of their environmental costs, and so tend to underestimate them. This can lead to distorted calculations in investment decisions.
- (b) **Understanding and managing environmental costs**. Environmental costs are often 'hidden' in overheads and environmental and energy costs are often not allocated to the relevant budgets.
- (c) **Introducing waste minimisation schemes**.
- (d) **Understanding and managing life cycle costs**. For many products, the greatest environmental impact occurs upstream (such as mining raw materials) or downstream from production (such as energy to operate equipment). This has led to producers being made responsible for dealing with the disposal of products such as cars, and government and third-party measures to influence raw material choices. Organisations therefore need to identify, control and make provision for environmental life cycle costs and work with suppliers and customers to identify environmental cost reduction opportunities.
- (e) **Measuring environmental performance**. Business is under increasing pressure to measure all aspects of environmental performance, both for statutory disclosure reasons and due to demands for more environmental data from customers.
- (f) **Involving management accountants in a strategic approach to environment-related management accounting and performance evaluation**. A 'green accounting team' incorporating the key functions should analyse the strategic picture and identify opportunities for practical initiatives. It should analyse the short-, medium- and long-term impact of possible changes.

## 5.7 Corporate reporting implications

Businesses face legal requirements in many jurisdictions to report on environmental matters, and environmental issues may impact on a number of areas in their financial reports.

### 5.7.1 Business review in UK

The UK Companies Act 2006 requires directors to report on environmental issues in the business review within the directors' report. This should include reporting the impact of the company's business on the environment as well as information about the company's employees and social and community issues. The main aspects of these disclosures are risks and uncertainties, policies and effectiveness and key performance indicators, including non-financial indicators. Previous guidance has suggested disclosures on spillage, emissions and waste.

### 5.7.2 Tangible assets

The valuation of tangible assets may be reduced by contamination, physical damage or non-compliance with environmental regulations. Their carrying amounts should be reduced to value in use or net realisable value.

Measurement of an environmentally impaired asset can be affected by:

- delayed disposal of the asset, due to the need to decontaminate it, resulting in clean-up costs and interest charges
- uncertainties surrounding changes in technology or legislation
- reputation risks including the risks of deterring potential purchasers resulting in a restricted market

### 5.7.3 Intangible assets

Intangible assets are subject to an impairment test on their carrying value if they exceed the recoverable amount from use or realisation. Goodwill, for example, may be impaired by environmental issues.

IFRIC 3, *Emission Rights* required businesses to treat emission allowances as intangible assets, recorded at fair value. Actual emissions then would give rise to a liability. When allowances were given by the government for less than fair value, the difference would be treated as a government grant. IFRIC 3 was withdrawn by the IASB, but the accounting treatment it recommends remains acceptable. Other possible methods for accounting for emission rights include cost of settlement approach based on initial market value and cost of settlement approach where provision is only made for the costs of buying emission rights not covered by allowances. Whatever method is used, the market value of purchased emissions may become lower than their cost if there is a glut of allowances in the market.

### 5.7.4 Inventories

Inventories may be affected by environmental issues such as physical leakage and deterioration. Their valuation needs to be written down to net realisable value.

### 5.7.5 Provisions

Provisions may be required under IAS 37, *Provisions, Contingent Liabilities and Contingent Assets* as a result of activities connected with the environment, including waste disposal, pollution, decommissioning and restoration expenses. Companies in certain industries such as vehicle manufacture may be involved in activities relating to that industry that give rise to the need for provisions.

## 5.8 Environmental and social reporting

As well as legal requirements, businesses face peer pressure to provide increasing amounts of information about environmental and social performance. Organisations such as Trucost benchmark companies' environmental disclosures.



Environmental and social reports generally include narrative and numerical information about impact. Narrative information includes objectives, explanations and reasons why targets have or have not been achieved. Reports can also address concerns of specific internal or external stakeholders.

Useful numerical measures can include pollution amounts, resources consumed and land use.



### Context example: Environmental and social reporting

BT has established a number of key performance indicators (KPIs) for its sustainability policies. It reports on these each year, comparing targets for the KPI with actual performance, and whether the target has been reached. The KPIs include targets for:

- increasing accessibility to fibre-based products and services to over 9 in 10 people by 2020
- improvements in an employee engagement benchmark
- reducing the sickness absentee rate among employees
- improving supplier relationships
- reviewing ethical trading in the supply chain, with a target of 100% follow-up within three months of all suppliers considered medium to high risk
- reducing CO<sub>2</sub> emissions
- improving the quality of customer service

For each KPI, a measurable target is established and actual performance in each year is compared with the target, and reported.

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#### 5.8.1 Global Reporting Initiative

The Sustainability Reporting Standards issued by the Global Reporting Initiative (GRI) are the best-known example of a global, voluntary code for corporate responsibility and sustainability reporting. A GRI-based report typically includes economic, social and environmental performance information and sets out the organisation's direct and indirect impacts. An updated version of the standards was issued during the year 2021 and applies to reports published on or after 1 January 2023.

There are three 'universal' standards (GRI 1, GRI 2 and GRI 3) that apply to all organisations that choose to apply GRI standards. These are supported by various sector standards that help organisations to identify which topics are likely to be material to organisations operating in those industries (eg, GRI 11 relates to the oil and gas sector). Topic standards provide guidance on what disclosures should be made for topics that are material to the organisation (eg, GRI 204 deals with disclosures relating to the organisation's impact on biodiversity).

GRI 1 Foundation 2021 sets out the overall structure of GRI guidance and provides key concepts for sustainability reporting, such as the concept of a stakeholder.

GRI 2: General disclosures requires disclosure about the organisation, including information on the following topics:

- The organisation's legal name and form. Information should also be provided about all entities that are included in the sustainability report (eg, subsidiaries)
- The organisation's activities, value chain and other business relationships
- Information about the organisation's employees, giving details such as analysis by

gender, the proportion of employees who are not given guaranteed hours of work and the proportion of permanent and temporary employees

- Information about the governance arrangements of the organisation, such as structure of the board of directors, details of board committees, the role of the board with respect to sustainability and details of any conflicts of interest. It includes guidance about board remuneration
- Strategies of the organisation, including sustainable development strategies and processes to remediate the negative impacts that the organisation has

GRI 3: Material Topics 2021 provides guidance to organisations on identifying material topics that should be included in their sustainability report. A topic is material if the organisation's activities have a severe impact on it. Examples of topics include occupational health and safety or water and effluents. If a topic is material to an organisation, then it should apply the topic standard for that topic.

GRI 3 also provides its own disclosure requirements relating to material topics:

- The process used in determining its material topics
- A list of its material topics
- For each material topic:
  - the actual and potential negative impacts on the economy, environment and people (and whether the impact is through its own activities or as a result of business relationships)
  - its policies regarding the material topic
  - the actions taken to manage the topic (eg, actions to mitigate the potential impact and actions to manage positive impacts)
  - how the effectiveness of the actions is tracked and measured
  - how engagement with stakeholders has informed the actions taken

The following brief outlines give a flavour of two of the topic standards:

- GRI 302: Energy requires disclosure of the organisation's energy management (as per GRI 3). In addition, the organisation is required to disclose total fuel consumption from non-renewable and renewable sources, analysed by type of energy; energy consumption outside of the organisation, by upstream and downstream organisations, related to the main activity of the organisation (eg, energy consumption by businesses transporting the organisation's goods); and any reduction in energy consumption over time as a result of efficiency or conservation.
- GRI 304 Biodiversity requires organisations to provide information about how the organisation manages its biodiversity-related impacts. This includes details of sites located next to protected areas and significant impacts of the organisation's activities, products or services on the biodiversity. Organisations are also required to disclose any activities taken to protect or restore habitats. It should also disclose the impact that the organisation has on protected species.

### 5.8.2 Integrated reporting

An integrated report should explain, using both quantitative and qualitative information, how an organisation creates value.

The *Integrated Reporting Framework* looks at the way value is created, maintained and increased through the development of four 'capitals': economic; human; social and natural capital.

Integrated reporting was explained in more detail in the chapter Strategic performance management.

### 5.8.3 International Sustainability Standards Board (ISSB)

The International Sustainability Standards Board (ISSB) was set up in November 2021 by the IFRS foundation. Its objective is 'to deliver a comprehensive global baseline of sustainability-related disclosure standards that provide investors and other capital market participants with information about companies' sustainability-related risks and opportunities to help them make informed decisions'. (*IFRS org*)

It took over the work of two other bodies, the Climate Disclosure Standards Board (CDSB) and the Value Reporting Foundation, thereby taking over responsibility for the Integrated Reporting Framework. It has also signed a joint cooperation agreement with GRI in which the ISSB and GRI will seek to coordinate their work programmes and standard-setting objectives.

The ISSB issued two exposure drafts for comment in 2022: IFRS S1 – General disclosure requirements, and IFRS S2 – Climate related disclosures. These exposure drafts are expected to be updated for comments and issued at the end of 2022. Both standards build on the structure used in the TCFD standards (see the chapter Strategic performance management).

### 5.9 Auditing and assurance on environmental issues in UK

As well as audits and assurance reviews that focus specifically on environmental matters, auditors are likely to consider environmental matters in several areas of the audit of the financial statements.

Guidance on the audit work required has been provided by ICAEW and the Environment Agency in *Environmental issues and annual financial reporting*.

Environmental issues should be considered as part of audit planning if they are likely to have a significant impact on the financial statements. Environmental indicators may be used within initial analytical review processes. Potential impacts on the financial statements may arise from:

- the application of laws and regulations
- participation in a carbon trading scheme
- activities and processes of the business, particularly processes involving pollution, the use of hazardous substances or the avoidance of hazardous waste
- holding an interest in land or buildings that could have been contaminated by a previous user
- climate change and potential flood risks
- fines or penalties
- dependence on a major customer or segment whose business is threatened by environmental pressures

To obtain an understanding of the business, auditors may need to consider:

- extent to which business is based on the use of environmentally sensitive materials
- environmental obligations arising from laws and regulations affecting specific businesses
- risks of carrying out construction work in flood plains
- effects of market issues such as compliance with environmental legislation, customer perceptions of environmental performance and the impact of environmental pressures on suppliers

As part of the auditors' review of controls and systems, auditors should consider whether management is **competent** to deal with environmental issues and systems and processes designed to identify and monitor environmental risks. What constitutes adequate control systems will vary by company. Where exposure to environmental risk is high, companies may operate a specific environmental management system or deal with environmental issues within an integrated control system.

Although some environmental issues have clear financial outcomes, others will be dependent on the judgement of the directors. Work on **estimates** relating to environmental matters could therefore be a significant part of the audit.

Auditors will be particularly concerned with **environmental laws and regulations** if non-compliance would be central to the core operation of the business and irregularities could result in closure, either due to the loss of an operating licence or a huge fine.

If a company participates in an emissions trading scheme, the auditors will need to see that the company complies with the requirements of the scheme, systems are operating to measure emissions and process data and measurement and disclosures comply with international financial reporting standards.

Auditors may face a number of difficulties in assessing the effects of environmental matters in the financial statements:

- Delays between activities causing environmental issues such as contamination of a site due to industrial activity and its identification by the business or regulator.
- Accounting estimates not having an established pattern and exhibiting a wide range of reasonableness because of the number and nature of assumptions underlying them.
- Interpretation of evolving environmental laws may be difficult or ambiguous.
- Liabilities can arise out of voluntary agreements as well as legal or contractual obligations.

### 5.9.1 Environmental auditing

An environmental audit is an evaluation of how well an entity, its management and equipment are performing, with the aim of helping to safeguard the environment by facilitating management control of environmental practices and assessing compliance with entity policies and external regulations.

Environmental auditing is also used for auditing the truth and fairness of an environmental report rather than the organisation itself.

An environmental audit may be undertaken as part of obtaining or maintaining external accreditation, such as the BSI's ISO 14001 standard.

In practice, environmental audits may cover a number of different areas. The scope of the audit will depend on each individual organisation. Often the audit will be a general review of the organisation's environmental policy. On other occasions the audit will focus on specific aspects of environmental performance (waste disposal, emissions, water management, energy consumption) or particular locations, activities or processes.

There are other specific aspects of the approach to environmental auditing which are worth mentioning.

#### (a) Environmental Impact Assessments (EIAs)

These are required, under an EU directive, for all major projects which require planning permission and have a material effect on the environment. The EIA process can be incorporated into any environmental auditing strategy.

#### (b) Environmental surveys

These are a good way of starting the audit process, by looking at the organisation as a whole in environmental terms. This helps to identify areas for further development, problems, potential hazards and so forth.

#### (e) Environmental SWOT analysis

A 'strengths, weaknesses, opportunities, threats' analysis is useful as the environmental

audit strategy is being developed. This can only be done later in the process, when the organisation has been examined in more detail.

**(f) Environmental Quality Management (EQM)**

This is seen as part of Total Quality Management and it should be built into an environmental management system. Such a strategy has been adopted by companies such as IBM, Dow Chemicals and by the Rhone-Poulenc Environmental Index, which has indices for levels of water, air and other waste products.

**(e) Eco-audit**

The European Commission has adopted a proposal for regulation of a voluntary community environmental auditing scheme, known as the eco-audit scheme. The scheme aims to promote improvements in company environmental performance and to provide the public with information about these improvements. Once registered, a company will have to comply with certain ongoing obligations involving disclosure and audit.

**(f) Eco-labelling**

Developed in Germany, this voluntary scheme will indicate those EU products which meet the highest environmental standards, probably as the result of an EQM system. It is suggested that eco-audit must come before an eco-label can be given.

**(g) BS 7750 Environmental Management Systems**

BS 7750 also ties in with eco-audits and eco-labelling and with the quality BSI standard BS 5750. Achieving BS 7750 is likely to be a first step in the eco-audit process.

**(h) Supplier audits**

These ensure that goods and services bought in by an organisation meet the standards applied by that organisation.

### 5.9.2 Environmental audit stages

There are three main stages in most environmental audits.

#### Establishing the metrics

The greater the variety of metrics, the more information provided. However, measuring against a number of metrics could result in a costly audit.

#### Measuring planned or desirable performance against actual performance

This is an important aspect of a system. Some metrics will be objective, for example the level of carbon emissions or plastic bag issues can be measured. However, other aspects, for example public perceptions, cannot be measured objectively and may therefore be difficult to measure precisely.

#### Reporting the results of the audit

Important decisions will include the form of the report and how widely it should be distributed, in particular whether the organisation's annual report should include a report by the auditors.

### 5.9.3 Auditor concerns

- (a) Board and management having good understanding of the environmental impact and related legislation of the organisation's activities in areas such as buildings, transport, products, packaging and waste
- (b) Adoption and communication of adequate policies and procedures to ensure compliance with relevant standards and laws
- (c) Adoption of appropriate environmental information systems
- (d) adoption and review of progress against quantifiable targets

- (e) Assessment of whether progress is being made economically and efficiently
- (f) Implementation of previous recommendations of improvements to processes or systems
- (g) True, fair and complete reporting of environmental activities

# Summary

**Tick off**

Financial strategy is based around investment, financing and dividend decisions, with strategic cash flow and fund management ensuring sufficient funds are available.

Financial strategy decisions, particularly investments in other entities, can have numerous financial reporting consequences.

The financial position of many firms has been affected by the credit crunch and problems in the Eurozone, particularly the debt crisis.

Increasingly business strategy is determined by corporate responsibility and sustainability issues, with firms wishing to demonstrate in their corporate reporting that they are good corporate citizens.

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	Do you know what factors affect the choice of a company's financial strategy? (Topic 1)
2.	Do you know how to correctly account for investments in other entities? (Topic 1)
3.	Is your knowledge of the financial reporting implications of financial instruments up to date? (Topic 1)
4.	What are the main issues that should be covered in an environmental and social report? (Topic 5)
5.	Do you know the different strategic approaches to corporate responsibility? (Topic 5)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed to the next chapter.

Question	Learning benefit from attempting this question
1 Zelo	This is a good introductory question covering environmental and social reporting. Work through this question carefully before attempting exam standard questions.
2 Burtchester	This question covers corporate social responsibility and the corporate reporting implications of a possible legal action. Before attempting this question make sure you are aware of the main features to be included in a CSR report and the requirements of IAS 37.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development before you start the next chapter.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.



## 1 IFRS 12, *Disclosure of Interests in Other Entities*

- IFRS 12 is a disclosure standard requiring a wide range of disclosures about an entity's interests in subsidiaries, joint arrangements (joint operations or joint ventures), associates and other unconsolidated 'structured entities'. The objective of IFRS 12 to require an entity to disclose information which enables users of financial statements to evaluate the nature of, and risks associated with, its interests in other entities; and the effect of those interests on its financial position, financial performance, and cash flows.

## 2 IFRS 10, *Consolidated Financial Statements*

- Outlines the requirements for the preparation and presentation of consolidated financial statements, with entities being required to consolidate other entities they control.

## 3 IFRS 11, *Joint Arrangements*

- Details the issues which should be considered when determining the appropriate financial reporting treatment for joint ventures and joint operations and specifies the accounting treatment for both kinds of joint arrangements.

## 4 IAS 28, *Investments in Associates and Joint Ventures*

- Outlines the accounting for investments in associates, where an associate is an entity over which an investor has significant influence but not control or joint control or a joint venture as determined in IFRS 11.

## 5 IFRS 3, *Business Combinations*

- Outlines the accounting when an acquirer obtains control of a business through an acquisition. These business combinations are accounted for using the 'acquisition method' which generally requires the assets acquired, and the liabilities assumed, to be measured at their fair values at the acquisition date.

## 6 IFRS 5, *Non-current Assets Held for Sale and Discontinued Operations*

- Outlines the accounting required for non-current assets held for sale (or for distribution to owners). In general terms, assets (or disposal groups) held for sale are not depreciated, are measured at the lower of carrying amount and fair value less costs to sell, and are presented separately in the statement of financial position.

## 7 IAS 27, *Separate Financial Statements*

- Outlines the accounting and disclosure requirements for separate financial statements, which are financial statements prepared by a parent, or an investor in a joint venture or associate, where those investments are accounted for either at cost, in accordance with IFRS 9, or using the equity method in IAS 28. The standard also outlines the accounting requirements for dividends.

## **8 IAS 32, Financial Instruments: Presentation**

- IAS 32 outlines the requirements for the presentation of financial instruments, particularly the classification of such instruments into financial assets, financial liabilities and equity instruments. The standard also provides guidance on the classification of interest, dividends and gains or losses relating to the financial instruments.

## **9 IFRS 9, Financial Instruments**

- IFRS 9 sets out the recognition and measurement requirements for financial instruments and some contracts to buy or sell non-financial items. It replaced IAS 39 with effect for annual periods beginning on or after 1 January 2018.

## **10 IFRS 7, Financial Instruments: Disclosures**

- IFRS 7 prescribes disclosures about the significance of financial instruments to an entity's position and performance, and about the nature and extent of the risks arising from those financial instruments, in both quantitative and qualitative terms.

## **11 IFRS 8, Operating Segments**

- IFRS 8 requires entities with publicly traded securities to disclose information about their operating segments, products and services; the geographical areas in which they operate, and their major customers. Segment information is based on internal management reports, both in the identification of operating segments and the measurement of disclosed segment information.

## **12 IAS 16, Property, Plant and Equipment**

- Outlines the accounting treatment for most types of property, plant and equipment. The principal issues are the recognition of assets, the determination of their carrying amounts, and the depreciation charges and impairment losses to be recognised in relation to them.

## **13 IAS 38, Intangible Assets**

- Outlines the accounting requirements for intangible assets, which are non-monetary assets which are without physical substance but which are identifiable (either being separable or arising from contractual or other legal rights). Intangible assets are capitalised and amortised on a systematic basis over their useful lives, unless an asset has an indefinite useful life, in which case it is not amortised.

## **14 IAS 36, Impairment of Assets**

- Seeks to ensure that an entity's assets are not carried at more than their recoverable amount (being the higher of fair value less costs of disposal and value in use). An annual impairment test is required for goodwill and certain intangible assets, but for the majority of assets an impairment test is only required where there is an indication of impairment of an asset.

## **15 IAS 21, The Effects of Changes in Foreign Exchange Rates**

- IAS 21 prescribes how to include foreign currency transactions and foreign operations in the financial statements of an entity, and how to translate financial statements into a presentation currency. The principal issues are which exchange rate(s) to use, and how to report the effects of changes in exchange rates.

**16 IAS 23, Borrowing Costs**

- The objective of IAS 23 is to ensure that borrowing costs directly attributable to the acquisition or production of a qualifying asset are included in the cost of the asset. Other borrowing costs are to be recognised as an expense. Borrowing costs include interest on bank overdrafts and loans, finance charges on leases and exchange differences on foreign currency borrowing where they are regarded as an adjustment to interest costs.

**17 IFRS 16, Leases**

- Effective from 1 January 2019 IFRS 16 effectively abolishes the distinction between operating and finance leases for lessees, although not for lessors. It introduces a single lessee accounting model and requires a lessee to recognise assets and liabilities for all leases with a term of more than 12 months, unless the underlying asset is of low value.

**18 IFRS 13, Fair Value Measurement**

- Defines fair value as the price that would be received to sell an asset or would be paid to transfer a liability in an orderly transaction between market participants at the measurement date. IFRS 13 defines fair value on the basis of an 'exit price' notion and uses a 'fair value hierarchy' which results in a market-based measurement rather than an entity-specific one.

**19 IAS 10, Events After the Reporting Period**

- IAS 10 prescribes when events after the end of the reporting period should be adjusted in the financial statements for that period. Adjusting events are ones which provide evidence of conditions existing at the end of the reporting period, whereas non-adjusting events are ones which are indicative of conditions arising after the reporting period.

**20 IAS 37, Provisions, Contingent Liabilities and Contingent Assets**

- Outlines the accounting for provisions (liabilities of uncertain timing or amount), contingent assets (possible assets) and contingent liabilities (possible obligations or present obligations which are not probable or which cannot be measured reliably). Provisions are measured at the best estimate of the expenditure required to settle the present obligation. The objective of IAS 37 is to ensure that financial statements provide sufficient information to enable users to understand the nature, timing and amount of any provisions, contingent liabilities and contingent assets, but it is also underpinned by the key principle that a provision should only be recognised when a genuine liability exists.

# Self-test questions

Answer the following questions.

## 1 Zelo plc

Zelo plc is a publicly quoted company. Its products are based on raw materials grown in tropical countries and processed either in these countries or in the eventual sales markets. Processing is undertaken partly by Zelo plc and partly by sub-contractors. The products are branded and sold worldwide, but mainly in the UK and North America. They are sold to consumers through a very large number of outlets.

The non-executive directors have for some time expressed concern that the company has not developed any systems of environmental or social reporting to shareholders, although many comparable companies already publish such information as part of their Annual Report. A government minister has now stated that legislation will be considered if all companies do not make progress on reporting on social and environmental policies.

The chief executive has always regarded reporting as ideally never exceeding legal requirements.

### Requirements

- 1.1 Construct a case for including a report on environmental and social issues in the annual report.
- 1.2 Identify the main issues that could be covered in the environmental and social report.
- 1.3 Analyse the impact of business partners and other stakeholders on the content of the environmental and social report.

## 2 Burtchester

Burtchester is a privately owned company that manufactures chemicals. It is likely to seek a stock market listing in the next two years, and because of the higher profile that it will have once it is listed, its directors feel that the company must have a corporate social responsibility (CSR) programme. The chairman feels that the programme needs to concentrate in particular on manufacturing processes (which are noisy and smelly and produce a lot of waste), Burtchester's sourcing of raw materials from economically underdeveloped countries, the ethnic diversity of its workforce and compliance with the law.

Two years ago Burtchester acquired a manufacturing site, which now houses one of its largest plants. However, unlike its other factories which are situated on industrial estates, this factory is located in the middle of a residential area. Since it opened, there have been complaints from a group of local residents about the noise made by the factory's processes and by lorries loading and unloading at the start and end of the day. Two of the residents wrote to the Chief Executive three months ago to say that they intend to take legal action to stop the noise and claim compensation for distress previously caused. Nothing further has been heard from them since the original letter.

### Requirements

- 2.1 Advise Burtchester on what the main features of its CSR policy should be, dealing with its manufacturing process, procurement policy, labour force and compliance with the law.
- 2.2 Briefly describe the contents of an environmental report that would be appropriate for Burtchester and briefly explain the main elements of the assurance work that could be carried out to verify the contents of this report.
- 2.3 Discuss the corporate reporting implications of the claim by the residents.

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

## Answer to Interactive question 1

### Factors to consider

#### (1) Investment, finance and dividends

A major investment is planned. There may be financing problems, as equity holders may not subscribe if there is a prospect of low dividends.

#### (2) Profit effects

Growth in profit has to be sufficient to meet investor and market expectations. There may be problems initially with new clubs.

#### (3) Cash effects

There will be major expenditure on new clubs, paying finance providers, and possibly refurbishing old clubs. Again, new clubs may not generate very much cash flow just after opening.

#### (4) Shareholders

There may be conflicts between initial investors who will accept a long-term return and want to retain active involvement in the business, and institutional shareholders with shorter-term interests who may be willing to accept a reasonably priced takeover bid.

#### (5) Other stakeholders

Debt holders will be concerned whether investment will generate sufficient returns to guarantee sum lent and income. Managers will be worried about expansion/curtailment of their position. Employees will want to know how operational changes will affect their employment. Customers will be concerned with the fees charged and the services offered.

#### (6) Economic and market factors

The financial markets are not viewing the sector very positively. Investment in clubs that make initial losses may have an adverse effect on share price, if markets do not take potential long-term revenues into account.

#### (7) Restrictions

Takeover of another big sports chain may run into difficulties from competition authorities. Existing loan agreements may contain possible restrictions on taking on more debt or opening more clubs.

#### (8) Risks

Downturns in the economy may hit membership of sports clubs if it is perceived as a luxury item. The company may also be vulnerable to changes in property prices if it's investing in new sites, and changes in demand as leisure clubs become less popular. There may be some exposure to foreign exchange risks.

**(9) Time frame**

There is a potential conflict between the need for good short-term profits and cash flows, and longer-term returns.

**Generating strategy**

The strategy can be summed up as increasing profits and cash flows by opening X new clubs over the next X years throughout Europe.

**(1) Benefits**

Benefits may accrue to shareholders in terms of dividend and market price appreciation.

**(2) Directions**

Monitoring of investments should be by financial performance indicators for new and existing clubs and overall targets for returns on capital employed.

**(3) Resources**

The company will need to specify sources of finance, amounts expected to be raised and commitments (return to suppliers and security). Also the directors should consider the generation of increased returns from existing operations by increasing membership charges and savings in operating costs.

**(4) Environment changes**

The scale of investment in new clubs should be reconsidered if property prices rise beyond a certain level, or if demand for existing clubs falls beyond a certain level.

**(5) Timescale**

Short-term investments may be limited by current funding problems. Finance may be available on better terms only when the existing network has generated higher returns.

**Judging strategy**

**(1) Suitability**

A strategy of expansion will maintain the position as a market leader, necessary in a highly competitive market. Merely maintaining current position without any investment may leave the company vulnerable to takeover. However, there may be better ways of achieving its goals, taking over existing clubs or diversifying into other less costly areas.

**(2) Acceptability**

Will founder stakeholders maintain sufficient control, or will they prefer any combination of investment and financing to being taken over? Will institutional shareholders be satisfied with resultant dividend levels and movements in market prices? How will creditors view possible threats to their position? Will savings in operating costs adversely affect the service given to customers?

**(3) Feasibility**

Will required finance be available from all sources to support investments, or are the uncertainties or likely restrictions unacceptable? Will existing and new clubs generate enough cash flows to pay providers of finance and make their own contribution to future

investment? Does the company have the management, personnel and systems needed to run a much-expanded network of clubs?

### Answer to Interactive question 2

General impacts might include:

#### Relations with stakeholders

Companies have to consider how changes in standards will affect the key indicators for various stakeholders. Changes that affect the **calculation of profit** will **influence shareholders** if profits become significantly more volatile as a result. Shareholders and lenders who are concerned with financial stability will be influenced by changes in the **treatment and classification of capital instruments**, for example changes that force companies to include previously off balance sheet items.

Other stakeholders may be affected by **new forms of accounting** or **increased disclosures**. Employees will be interested in developments in human resource accounting. Pressure groups and other interested stakeholders ('ethical investors') will be interested in how the organisation is reporting its impact on the natural environment (considered further below).

#### Undertaking and form of transactions

Changes in standards may also mean companies do **not undertake transactions** or stop doing what they previously have been doing. The introduction of more **volatility into accounts** may make certain transactions less attractive, for example the granting of employee share options. Many companies in the UK have alleged that IAS 19, Employee Benefits which introduced more onerous rules for accounting for pension liabilities, has forced them to close their final salary pension schemes and offer less generous arrangements instead. However, other factors would have had a major influence on this decision as well.

Alterations to standards can also affect the **form transactions take**. For example, the difference in the accounting treatment of finance leases and operating leases under IAS 17 provided **opportunities to structure transactions so as to achieve a particular lease classification**. IFRS 16, the new standard on leasing, was developed to avoid this issue. All leases are now recognised in the lessee's statement of financial position, with a right-of-use asset and financial liability that recognise more expenses in profit or loss during the earlier life of a lease.

#### Investments

Having diverse requirements internationally arguably allows companies in some jurisdictions to shelter behind **doubtful arrangements**. Evidence from the US suggests that having one set of strict standards forces companies to be more efficient and more competitive. It also lowers the risks of investment, reducing the cost of capital and hence making previously unattractive overseas investments feasible.

#### Costs of compliance

In particular the costs of fundamental changes such as the introduction of international accounting standards may be significant. Not only will this impact on companies' financial **accounting function**, but also may affect the **management accounting function's work** if compatibility between financial and management accounting is to be maintained.

# Answers to Self-test questions

## 1 Zelo plc

### 1.1 Reasons for the inclusion of environment and social issues in the Annual Report Competitor disclosure

As the non-executive directors have observed, **many comparable companies** already **do include such issues** in their Annual Report and Zelo may attract adverse publicity if it does not follow this trend.

#### Attracting investments

There may be **positive benefits** to reporting such issues too. For example, an increasing amount of attention is devoted to environmental and social issues. **'Green' and 'ethical' fund managers** have more funds available for investment and Zelo may be able to demonstrate that it is suitable for such investment, thereby increasing its share price. Disclosure may also demonstrate that Zelo is concerned about **maintaining good relations with shareholders**. By providing lots of information, Zelo demonstrates its commitment to **transparency**.

Environmental disclosures can also give shareholders **greater assurance** by providing information about the **environmental risks** that Zelo faces and how it is managing them.

#### Strategic considerations

Moreover, the board should be constantly scanning the environment in which the organisation operates, including social and environmental areas, in order to assess the impact of any **changes on the future of the business**. Given that there is substantial interest among consumers and investment fund managers in doing business with companies which are environmentally and socially responsible, the board may intend to report on environmental and social issues as part of its competitive strategy.

#### Government pressure

There have also been recent comments by a government minister that 'if all companies do not make progress', legislation on environmental and social issues will be introduced. If Zelo was to include such issues in its Annual Report it would **avoid being forced into providing damaging disclosures required by a more stringent regime**.

### 1.2 The range of environmental and social issues to cover Consumption of raw materials

The greatest focus from an environmental point of view is likely to be on **consumption of raw materials from tropical areas**. The directors may wish to consider the concept of **'sustainability'**

- is Zelo replanting at a rate equal to or greater than that at which it is harvesting? If so, it is likely to be viewed favourably.

#### Costs of processing

The **costs of processing** should also be considered, in particular the percentage of **energy** coming from renewable and non-renewable sources and the steps taken to increase the efficiency with which Zelo uses energy.



## Packaging

**Packaging** is of increasing concern to many consumers. The proportion of both Zelo's products and its packaging made from recycled material should be measured, as should the ease with which they can be **recycled after use**.

## Social issues

**Social issues** to cover include minimum rates of pay, the minimum age of child labour, working conditions and living conditions, such as the availability of healthcare and education. The public's interest in consumer markets tends to focus on the **discrepancies between 'living standards' in their affluent market compared to those in less developed countries**. In setting standards the board needs to gather data about these issues in the source countries. Rates of pay expressed in relation to UK earnings may seem derisory but when expressed in relation to the local average they may seem much more acceptable. Using children aged just 14 as part of the labour force may seem less offensive if local schooling is provided up to the age of 12 and Zelo provides additional education as part of its benefits package.

## Nature and extent of reporting

**How well actual performance compares with what the board considers to be acceptable standards** will determine the nature and extent of any reporting on these issues. If the board believes Zelo's performance is above average it may well make extensive disclosures in order to gain maximum benefit. The poorer the performance, the less it may choose to disclose. If there are any single issues that would lead to adverse publicity were they disclosed, it may choose to make no disclosures until these issues are resolved to an acceptable level.

### 1.3 Business partners

Zelo also needs to consider **whether to report on the activities of Zelo alone or on those of all its business partners**, including those from whom Zelo sources its raw materials and the sub-contractors it employs during production. It could be argued that Zelo cannot control its sub-contractors, and therefore should not include their activities within its report. For example, it could be deemed unfair if Zelo was held responsible for contractors employing young children without the board's knowledge.

However, it is **unlikely that 'we didn't know' would be accepted as a defence were damaging information made public**. Once the range of performance benchmarks is established, Zelo should therefore provide it to all its sub-contractors and advise them that they are expected to conform to such standards. These could be included as a requirement in the **supplier tendering process**.

## Impact of other stakeholders

**Problems** are likely to centre on **identifying those issues that will be of concern in the future to stakeholders**. Zelo will also need to balance the demands of shareholders for maintaining a profitable activity with the concerns of pressure groups over the activity in question.

## Changing viewpoints

The **popularity** or otherwise of environmental and social issues moves constantly with **changes in public opinion and government policy**. The board should endeavour to **anticipate the demands of its stakeholders**, however, rather than appear to be simply reacting to the current 'popular' issues.

## 2 Burtchester

### 2.1 Burtchester's CSR policy needs to deal with the following matters:

#### Manufacturing process

**Waste** - The manufacturing process currently produces large quantities of waste, so Burtchester should aim to recycle as much of its waste as possible.

However, Burtchester should also try to reduce the levels of waste it produces, for example by making sure its manufacturing processes are as efficient as possible, and by reducing resource usage as far as possible.

**Noise** - The manufacturing process is currently very noisy, so the policy needs to identify how the noise levels may be reduced. In this respect, Burtchester needs to consider both the level of noise pollution for the local neighbourhoods around its manufacturing plants, and the noise levels within the plants where staff have to work.

**Smell** - The manufacturing process is smelly as well as noisy, so the policy needs to address smell in a similar way to noise.

#### Procurement policy

**Raw material procurement** - As Burtchester sources some of its materials from economically underdeveloped countries, its policy needs to define the basis on which it does business with companies in those countries. In particular, Burtchester needs to highlight the importance of ensuring that the price, terms and conditions it negotiates with suppliers are fair.

#### Labour force`

There are two issues in relation to the workforce which the CSR policy needs to address:

**Equality** - Ensuring that **all members** of the workforce are treated fairly and equally.

**Working conditions** - Improving the conditions the staff have to work under. As well as the manufacturing process being noisy and smelly, there will also be health and safety requirements. The CSR policy should therefore highlight Burtchester's commitment to workplace safety.

#### Compliance

Burtchester has always tried to comply with its country's laws, and it should continue to do so. However, CSR involves more than simply complying with basic legal requirements, so Burtchester's policy should establish its basic principle of complying with the law before going on to highlight the other principles that will enable it to be a good corporate citizen.

### 2.2 Reports

Reports are often referred to as 'triple bottom line reporting' on the following topics:

- **Economic** - Information provided should go beyond that required by law. It should demonstrate how Burtchester adds value in a wider sense, eg, by creating human capital.
- **Environmental matters** - The report should include information on how Burtchester's activities impact on the environment, eg, impact of sourcing chemicals, waste management, noise.
- **Social** - Information provided may be on a range of social issues - working hours, rates, policies on child employment, equal opportunities, disablement policies.

A number of companies are following the Global Reporting Initiative (GRI), which aims to deliver transparency, accountability, reporting and sustainable development.

### **Assurance**

Suitable measures to monitor policies would include checking the appropriate documentation of policies and evidence that they are circulated to staff. The policies should, for example, form part of staff's induction training.

Burtchester should initiate internal audit procedures or employ external assurance providers to monitor implementation and check accuracy of reporting mechanisms and key performance indicators.

External evidence of, for example, the effectiveness of environmental policies should be obtained from expert third parties where appropriate.

## **2.3 Requirements of IAS 37**

Although local residents have given notice that they would be taking legal action against Burtchester, no claim appears to have been made. As yet there is no present obligation on Burtchester to make reparations for the disturbance caused and so certainly no provision needs to be made. Whether disclosure is required is questionable. As no notice of a claim has yet been received, the probability of a claim can be regarded as remote and no disclosure required under IAS 37.



# Chapter 12

## Business and securities valuation

### Introduction

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- 5 International Valuation Standards (IVS)

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# Introduction

## Learning outcomes

- Explain, advise on and demonstrate appropriate valuation methods for businesses and equity securities using: asset-based; adjusted-earnings-based; and cash-based methods (for example SVA, EVA®, VBM, MVA and other appropriate techniques)
- Critically appraise business and securities valuation methods in the context of specified complex scenarios, including the consideration of natural capital
- Explain and demonstrate appropriate valuation techniques in the context of acquisitions and mergers; assess the contribution of due diligence procedures; and show the impact on corporate reports arising from acquisitions for groups in consolidated financial statements
- Determine the value of debt and explain the techniques used
- Analyse, structure and assimilate historic and forecast data provided to evaluate the impact on valuations using data analysis, relevant statistical tools and spreadsheets, recognising the sensitivity of valuations to underlying assumptions and changes in estimates

## Knowledge brought forward

This chapter contains more complex examples of valuation methods first covered in Financial Management.

## Syllabus links

In the chapter Strategic choice, we covered why companies acquire or merge with other companies. We shall go on to look at debt as a means of finance in more detail in the next chapter.

## Examination context

Particularly in the areas of acquisitions and mergers, a question on the material in this chapter could go right across the syllabus. You could be asked to value a target, but there may be various problems with the figures you are given, bringing in therefore the analysis skills covered in the chapter Data analysis or knowledge of accounting treatments. Due diligence work could well be required as part of the acquisition process. You may also need to discuss post-acquisition strategies and their associated risks, and also whether the governance arrangements for the combined entity appear to be workable.

## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>Valuation methods</b> Valuations are subjective and affected by many factors. Understanding the various available techniques and how to apply them to different situations is an important skill.</p>	<p><b>Approach</b> This chapter covers some quite complex techniques, although you should be familiar with the basic valuation methods from your Financial Management Studies. A key skill is to choose the most appropriate techniques to use in different circumstances. Read through all the sections carefully to make sure you understand the techniques and where their use may be appropriate. Make sure you understand which corporate reporting requirements are relevant to valuation and acquisition decisions. Fair value measurement, and the effect of acquisitions on group reporting, are important here. Note also the due diligence work that would be carried out, tying it in with what you've covered in the chapter Strategic choice</p> <p><b>Stop and think</b> Which method(s) of valuation are more appropriate for valuing a small holding of shares; and which method(s) are more appropriate for valuing the entire share capital of a company?</p>	<p>In the examination you may be required to advise directors on the possible value(s) of businesses.</p>	<p><b>IQ1: Dividend valuation models</b> This question asks you to value a company using the DVM with changing growth. It is a good question to revise your knowledge from your Financial Management studies.</p> <p><b>IQ2: Valuations</b> This is another good question to revise your knowledge of using the P/E ratio model to value a company.</p> <p><b>IQ3: DCF basis of valuations</b> This is a simple question that will allow you to revise the basics of the DCF basis of valuation.</p>

Topic	Practical significance	Study approach	Exam approach	Interactive questions
2	<p><b>Acquisitions and mergers</b></p> <p>There are many reasons for valuing companies, or components of companies. Acquisitions, mergers, probate and tax purposes are just some of the reasons for doing so.</p>	<p><b>Approach</b></p> <p>This section looks at the various ways in which the target company in an acquisition or merger situation can be valued, and how to value the combined company After the acquisition or merger takes place. The FCF model is important so make sure you work through this section carefully. Also pay particular attention to section 2.8 which covers the corporate reporting issues of business combinations.</p> <p><b>Stop and think</b></p> <p>Can you correctly identify when an entity should be consolidated using the principles of IFRS 10?</p>	<p>In the examination you may be required to recommend the due diligence work that should be carried out on an acquisition, recommend the most appropriate Method for a business to finance an acquisition and discuss the strengths and weaknesses of post- acquisition arrangements. You may also be asked to discuss the significance of differences between companies that are merging, for example their approaches to corporate social responsibility.</p>	<p><b>IQ4: Valuing an acquisition using FCF model</b></p> <p>This detailed question on FCF model is really good preparation before tackling exam standard questions.</p> <p><b>IQ5: APV of acquisition</b></p> <p>Make sure you go through the worked example on APV before tackling this question.</p>
3	<p><b>Unquoted companies and start-ups</b></p> <p>While it is possible to value quoted companies given the availability of vast quantities of information, unquoted companies are more difficult to value. Start-ups can be valued using the models we have previously described, although there may be problems related to the uncertainties surrounding forecast figures used.</p>	<p><b>Approach</b></p> <p>The same valuation methods covered in section 1 will be used here but make sure you are aware of the additional complications with valuing unquoted companies and start-ups.</p> <p><b>Stop and think</b></p> <p>How do you value a company that has made losses recently?</p> <p>How do you value a company that has never made any profits?</p>	<p>A scenario on the exam could include an unquoted company or a start-up.</p>	<p><b>IQ6: Valuation methods</b></p> <p>Go through the worked example on valuing a startup before attempting this question. The question includes a lot of information that you will need to filter through and is indicative of the type of question you could see in your exam.</p>



Topic	Practical significance	Study approach	Exam approach	Interactive questions
4	<p><b>Valuation of debt</b></p> <p>The basic idea behind debt valuation is that the value is the PV of all future cash flows to the investor, discounted at the debt investor's required rate of return.</p> <p>Different types of debt (irredeemable, redeemable and convertible) are valued in different ways.</p>	<p><b>Approach</b></p> <p>Cover this brief section quickly, focusing mainly on understanding any new terminology.</p> <p><b>Stop and think</b></p> <p>Do you know how to value convertible Debt?</p>	<p>In the examination you may be required to calculate the value of debt.</p>	<p><b>IQ7: Valuation of redeemable debt</b></p> <p>This brief question will test your understanding of the terminology covered in the final section of the chapter.</p>
5	<p><b>International Valuation Standards (IVS)</b></p> <p>Chartered Accountants should be aware of the valuation standards applicable for valuation assignment.</p>	<p><b>Approach</b></p> <p>Cover the Handbook on IVS published quickly, focusing mainly on broad level overview on valuation topics.</p>	<p>In the examination you may be required to apply IVS guidelines on valuation.</p>	

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 Valuation methods



## Section overview

- Accountants can be involved in the valuation of shares for numerous purposes.
  - The purpose for which a share is valued will determine the value that is placed on the share
- 

## 1.1 Why value a company and what is a company worth?

In the context of strategic business management, the need to value a company usually arises when:

- a would-be acquirer wants to take over another company: the would-be acquirer needs to decide on an offer price and the target company board and shareholders need to decide whether the offer price is worth accepting
- two companies are discussing a merger and so need to agree the relative value of each of the two companies
- a company is planning the sale of a part of its business, for example to a management buyout team

So what is a company worth? There is no precise answer to this question. The value of the company will often depend on the purpose for which it is valued.

Companies could be worth:

- the tangible assets
- the assets plus goodwill
- whatever someone is prepared to pay for them



## Context example: BizStats.com

BizStats.com is a website that provides useful financial ratios and statistics for company valuation. Industry statistics can be used for benchmarking purposes when undertaking valuations. Some rules of thumb for valuing companies in different industries are given by BizStats.com as follows:

Type of business	'Rule of Thumb' valuation
Accounting firms	100-125% of annual revenues
Law practices	90-100% of annual revenues
Veterinary practices	70% of annual revenues + inventory
Coffee shops	40% of annual sales + inventory
Petrol stations	15-20% of annual sales + equipment/inventory

See: <http://www.bizstats.com/reports/valuation-rule-thumb.php>

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### 1.1.1 What affects the value of a company?

Company valuations may be affected by asset valuations, or by estimates of future profits, dividends or cash flows.

Company value is not just affected by sales and profit forecasts. Value can be influenced by the type of industry the company operates in, the level of competition faced by the company and the customer base. If a company has a popular product or product range that the public will want to buy, its value will increase, provided of course that the people who want to buy it can actually afford to do so.

Remember also that valuations are affected by judgements and opinions. Views about what a company is worth can vary enormously due to differences of opinion or differences in expectations about future cash flows or earnings.

As we saw in the chapter Strategic performance management, the increasing focus on natural capital is starting to change the way in which organisations report on their activities, with many now attempting to place financial values on the natural assets that they use, to enable them to make more informed business decisions. This can be linked to materiality assessment. What is material to the business informs what should be measured, valued and taken into decisions.

The use of natural capital valuation (discussed further in the chapter Finance awareness) is likely to be increasingly significant in assessing a company's value, although at the moment the methodologies and approaches in this area are still evolving.

## 1.2 Distortions in accounting figures

Anyone undertaking a valuation using accounting figures will need to be aware of possible distortions in those figures. These may involve distortions in assets, liabilities, equity or earnings. Professional scepticism should be applied when reviewing data prepared for a valuation.

Scepticism does not mean that the users assume that the data or its conclusions must be wrong; rather it means being aware that data analysis is not always accurate for several reasons:

- There may be bias inherent in the data that is analysed. This may be intentional or unintentional.
- The data may have been intentionally manipulated during the analysis process.
- The data may have been analysed accurately, but the presentation of the data, or the conclusions drawn from it may be flawed or may have been designed to mislead the users.
- The data could be distorted due to omissions.

To combat problems with earnings, it may be necessary to produce a **normalised earnings** figure to reflect the sustainable earnings of a company. This figure excludes profits from discontinued operations, changes in estimates and fair values, profits/losses from the sale of non-current assets and start-ups, and restructuring and redundancy costs, among other adjustments.

## 1.3 Income and cash flow models

You should be familiar with the different methods of valuing the equity in a business and when they might be used. The rest of this section goes over some of the basic valuation methods briefly.

### 1.3.1 Dividend valuation model: constant annual dividends

This valuation model may be used to estimate a value of a small shareholding (minority shareholding) in a company where the shareholder has no influence over company profitability. This model assumes that to the shareholder, the share is worth the PV of all future dividends receivable in perpetuity.

There are two types of dividend valuation model – the constant annual dividends model and the constant growth model. The constant annual dividend model assumes that there will be no growth in dividends in the future, and annual dividend will be a constant amount in perpetuity.

$$P_0 = \frac{D}{k_e}$$

Where:  $P_0$  = Value of the share (ex dividend)

$D$  = Annual dividend per share

$k_e$  = Shareholders' required rate of return

### 1.3.2 Dividend valuation model: dividend growth model

The dividend growth model assumes that annual dividends will grow by a constant percentage amount,  $g$ , every year for the foreseeable future (in perpetuity).

Constant growth model

$$P_0 = \frac{D_1}{k_e - g}$$

Where:  $P_0$  = Share value (excluding any dividend currently payable)

$D_1$  =  $D_0(1 + g)$  = Expected dividend in one year's time

$D_0$  = Current year's dividend

$g$  = Growth rate in earnings and dividends

$k_e$  = Shareholders' required rate of return

### 1.3.3 Dividend valuation model: Gordon growth model

The Gordon growth model is a variation on the dividend growth model. It assumes that the value of  $g$  is the rate of return on capital employed applied to the proportion of earnings that is retained and reinvested in the business:

$$g = br$$

Where:  $b$  = the proportion of earnings (after-tax profits) that are retained in the business

$r$  = the rate of return on capital employed by the company

### 1.3.4 Variations on the dividend valuation model

The dividend valuation model assumes that the value of a share is the discounted value of expected future dividends in perpetuity, discounting at the shareholders' required rate of return on investment. A valuation can therefore be made when future rates of dividend growth are not constant.

For example, suppose that annual dividends are expected to increase by 5% next year, 3% the year after that and then to remain constant at that annual level in perpetuity. The estimated share value, using the dividend valuation model, would be:

$$P_0 = \frac{D_0(1.05)}{(1 + k_e)} + \frac{D_0(1.05)(1.03)}{(1 + k_e)^2} + \frac{D_0(1.05)(1.03) \times 1/k_e}{(1 + k_e)^2}$$



## Interactive question 1: Dividend valuation models

Target has just paid a dividend of £250,000. The current return to shareholders of companies in the same industry as Target is 12%, although it is expected that an additional risk premium of 2% will be applicable to Target, being a smaller and unquoted company. Compute the expected valuation of Target, if:

### Requirements

- 1.1 the current level of dividend is expected to continue into the foreseeable future
- 1.2 the dividend is expected to grow at a rate of 4% p.a. into the foreseeable future
- 1.3 the dividend is expected to grow by 4% per year for the next three years and then to remain constant thereafter

See **Answer** at the end of this chapter.

### 1.3.5 Income-based valuation: price/earnings (P/E) ratio model

With the price/earnings (P/E) ratio model, a share is valued at a multiple of its future expected annual earnings.

$$P_0 = \text{Annual earnings per share} \times \text{P/E ratio multiple}$$

The P/E ratio is simply the ratio between a share price and the earnings per share.

$$\frac{\text{Market price of share}}{\text{EPS}} = \frac{\text{Total market value of equity}}{\text{Total earnings}}$$

A P/E ratio can be calculated for every company with shares that are quoted on a stock market.

The value of the P/E ratio reflects the market's appraisal of the share's future prospects. It is an important ratio, as it relates two key considerations for investors – the market price of a share and its earnings capacity. An EPS ratio that changes substantially and frequently may indicate an earnings volatility issue that could increase the perceived risk of the company. This can also impact on periodic P/E ratios.

For the purpose of company share valuations, a P/E ratio valuation may be used to value:

- (a) The shares of a quoted company, where it is recognised that the offer price for the shares in a takeover must be higher than the current market price, in order to gain acceptance of the offer from the target company's shareholders
- (b) The shares of an unquoted company, where the P/E ratio multiple is derived from the current P/E ratios for similar quoted companies

IAS 33, *Earnings Per Share* prescribes principles for the determination and presentation of earnings per share (EPS). Before the EPS can be considered to be useful by analysts trying to value the company, the earnings figure must be adjusted to reflect the sustainable earnings of the company. The result of this process is a **normalised earnings** figure or **adjusted earnings** figure.

The P/E ratio valuation method for equity is conceptually very simple, but it has no 'scientific' rationale to justify its use. It is not a discounted cash flow (DCF) valuation, and there are many different assumptions that can be used to reach a valuation. As a result, many different valuations for a share can be estimated from the P/E ratio model.

- Earnings should be an estimate of future annual earnings, but how should future expected earnings be estimated?
- The valuation of shares is made by applying a P/E ratio to the earnings figure, but what is the appropriate P/E ratio figure?

**Note:** The P/E ratio is the reciprocal of the earnings yield. (The earnings yield = EPS/Share price, expressed as a percentage.) The earnings yield could possibly be used as a rough guide to the cost of equity when there is zero expected future dividends or earnings growth. In these circumstances, there would be a rational connection between a P/E ratio-based valuation and the dividend valuation model or a DCF-based valuation.



## Interactive question 2: Valuations

Flycatcher wishes to make a takeover bid for the shares of an unquoted company, Mayfly. The earnings of Mayfly over the past five years have been as follows.

20X0	£50,000	20X3	£71,000
20X1	£72,000	20X4	£75,000
20X2	£68,000		

The average P/E ratio of quoted companies in the industry in which Mayfly operates is 10. Quoted companies which are similar in many respects to Mayfly are:

Bumblebee, which has a P/E ratio of 15, but is a company with very good growth prospects  
Wasp, which has had a poor profit record for several years, and has a P/E ratio of 7

- (1) Bumblebee, which has a P/E ratio of 15, but is a company with very good growth prospects
- (2) Wasp, which has had a poor profit record for several years, and has a P/E ratio of 7

### Requirement

What would be a suitable range of valuations for the shares of Mayfly? See **Answer** at the end of this chapter.

### 1.3.6 Income-based valuation - discounted cash flow (DCF) method

This method of valuation is based on the present value (PV) of future cash flows generated by the company.

- (a) The value of a company is basically the PV of all its future expected cash flows, discounted at the company's weighted average cost of capital.
- (b) The value of a company's equity is the PV of all future cash flows attributable to equity shareholders, discounted at the cost of equity.

This method of valuation may be appropriate when one company intends to buy the assets of another company and to make further investments in order to improve cash flows in the future.

Problems with this method of valuation are:

- (a) Difficulties in estimating future cash flows, especially beyond the next few years: it may therefore be assumed that annual cash flows after a given future year will be constant.
- (b) The time period over which a valuation should be made. If expected annual cash flows in perpetuity are used for the valuation, most of the company's valuation will come from the (uncertain estimates) about cash flows beyond the next few years.

For example, suppose that a company is considering the acquisition of an all-equity company and it is expected that the annual cash flows from the acquisition will be £100,000. The company's cost of capital is 10% and it usually expects to achieve payback on its investments within five years.

- The PV of an annuity at 10% for Years 1–5 is 3.791, so the PV of expected future cash flows in Years 1–5 after the acquisition will be  $£100,000 \times 3.791 = £379,100$ .
- The PV of an annuity at 10% from Year 6 onwards in perpetuity is  $(1/0.10) - 3.791 = 6.209$ , so the PV of expected future cash flows from Year 6 onwards after the acquisition will be  $£100,000 \times 6.209 = £620,900$ .
- The total valuation of the company will be £1,000,000, of which about 62% is value attributed to expected earnings from Year 6 onwards, and this estimate may be unreliable.

Another method of DCF valuation is to estimate a future disposal value of the company at the end of a given investment period, and discount this to a PV for inclusion in the equity valuation. In the previous example, it might be estimated that the disposal value of the company at the end of the fifth year will be £500,000: if so, this value should be discounted to a PV and included in the equity valuation.



### Interactive question 3: DCF basis of valuation

Diversification plc wishes to make a bid for Tadpole Ltd. Tadpole makes after-tax profits of £40,000 a year. Diversification believes that if further money is spent on additional investments, the after-tax cash flows (ignoring the purchase consideration) could be as follows.

Year	Cash flow (net of tax) £
0	(100,000)
1	(80,000)
2	60,000
3	100,000
4	150,000
5	150,000

#### Requirement

The after-tax cost of capital of Diversification is 15% and the company expects all its investments to pay back, in discounted terms, within five years. What is the maximum price that the company should be willing to pay for the shares of Tadpole?

See **Answer** at the end of this chapter.

## 1.4 Asset-based valuation models

If the net asset method of valuation is used, the value of a share in a particular class is equal to the net tangible assets attributable to that class divided by the number of shares in the class.

The net assets basis of valuation might be used in the following circumstances:

- (a) As a **'floor value'** for a business that is up for sale – shareholders will be reluctant to sell for less than the net asset value (NAV). However, if the sale is essential for cash flow purposes or to realign with corporate strategy, even the asset value may not be realised. Similarly, a loss-making company that is close to insolvency, that cannot easily dispose of its assets separately, may struggle to sell the business for its NAV.
- (b) **As a measure of the 'security' in a share value.** The **asset backing** for shares provides a measure of the **possible loss** if the company fails to make the expected earnings or dividend payments. Valuable tangible assets may be a good reason for acquiring a company, especially freehold property which might be expected to increase in value over time.
- (c) **As a measure of comparison in a business combination.** For example, if company A, which has a low asset backing, is planning a merger with company B, which has a high asset backing, the shareholders of B might consider that their shares' value ought to reflect this. It might therefore be agreed that something should be added to the value of the company B shares to allow for this difference in asset backing.

There are a number of issues with the net asset basis of valuation that assurance work done on valuation will need to consider:

- (a) Do the assets need **professional valuation**? If so, how much will this cost?
- (b) Have the **liabilities** been accurately quantified, for example deferred taxation? Are there any contingent liabilities? Will any balancing tax charges arise on disposal?
- (c) How have the **current assets** been valued? Are all receivables collectable? Is all inventory realisable? Can all the assets be physically located and brought into a saleable condition? This may be difficult in certain circumstances where the assets are situated abroad.
- (d) Can any **hidden liabilities** be accurately assessed? Would there be redundancy payments and closure costs?
- (e) Is there an **available market** in which the assets can be realised (on a break-up basis)? If so, do the balance sheet values truly reflect these break-up values?
- (f) Are there any **prior charges** on the assets?
- (g) Does the business have a regular **revaluation and replacement** policy? What are the bases of the valuation? As a broad rule, valuations will be more useful the better they estimate the **future cash** flows that are derived from the asset.
- (h) Are there factors that might indicate that the **going concern valuation** of the business **as a whole** is **significantly higher** than the valuation of the individual assets?
- (i) **What shareholdings** are being sold? If a minority interest is being disposed of, realisable value is of limited relevance as the assets will not be sold.

#### 1.4.1 Impact of IFRS 13, *Fair Value Measurement*

The figure attached to an individual asset may vary considerably depending on the valuation basis that is used. One criticism of asset-based measures has been their reliance on historical cost, not representing market value and incorporating future earnings potential. Under the fair value measurement approach, assets and liabilities are revalued periodically to reflect changes in their value, with the resulting change impacting either net income or other comprehensive income for the period. The result is a balance sheet that better reflects the current value of assets and liabilities.

IFRS 13, *Fair Value Measurement* provides guidelines that may be used in assessing the fair values of assets (and which should be used for the purpose of financial reporting). Proponents argue that fair value accounting reflects current market conditions and provides more timely, relevant and forward- looking information.



IFRS 13 defines fair value as **'the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date'**.

The standard requires that the following are considered in measuring fair value:

- The asset or liability being measured
- The principal market for the asset (ie, that where the most activity takes place) or, where there is no principal market, the most advantageous market (ie, that in which the best price could be achieved) in which an orderly transaction would take place for the asset or liability
- The highest and best use of the asset or liability and whether it is used on a standalone basis or in conjunction with other assets or liabilities
- Assumptions that market participants would use when pricing the asset or liability

IFRS 13 states that valuation techniques must be those which are appropriate and for which sufficient data are available. Entities should maximise the use of relevant **observable inputs** and minimise the use of **unobservable inputs**.

The standard establishes a three-level hierarchy for the inputs that valuation techniques use to measure fair value:

<b>Level 1</b>	Quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity can access at the measurement date. Investments for which there is an exchange listed price will often fall into Level 1. An example would be a stock which is traded on the London Stock Exchange.
<b>Level 2</b>	Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly, eg, quoted prices for similar assets in active markets or for identical or similar assets in non-active markets. Other observable inputs that may be used for valuation include interest rates and yield curves, credit spreads and/or implied volatilities. Certain derivatives such as interest rate swaps or forward currency contracts, where inputs are mostly observable, might fall into Level 2.
<b>Level 3</b>	Unobservable inputs for the asset or liability, ie, using the best available information, which may include the entity's own data and assumptions about market exit value. Unquoted private equity or venture capital holdings might be expected to fall into Level 3.

**The IFRS identifies** three valuation approaches.

- Income approach.** Valuation techniques that convert future amounts (eg, cash flows and income and expenses) to a single current (ie, discounted) amount. The fair value measurement is determined on the basis of the value indicated by current market expectations about those future amounts.
- Market approach.** A valuation technique that uses prices and other relevant information generated by market transactions involving identical or comparable (ie, similar) assets, liabilities or a group of assets and liabilities, such as a business.
- Cost approach.** A valuation technique that reflects the amount that would be required currently to replace the service capacity of an asset (often referred to as current replacement cost).

The requirements of IFRS 13 are particularly relevant for valuing a business in a business combination, as discussed below.

## 1.5 Value-based models: shareholder value analysis (SVA)

### 1.5.1 Value-based management (VBM)

Value-based management (VBM) starts with the philosophy that the value of a company is measured by its discounted future cash flows. Value is created only when companies invest capital at returns that exceed the cost of that capital. VBM extends this philosophy by focusing on how companies use the idea of value creation to make both major strategic and everyday operating decisions. So VBM is an approach to management that aligns the strategic, operational and management processes to focus management decision-making on what activities create value.

### 1.5.2 Value drivers

A value driver is any variable that affects the value of the company. They should be ranked in terms of their impact on value and responsibility assigned to individuals who can help the organisation meet its targets. Value drivers can be difficult to identify, as an organisation has to think about its processes in a different way. Existing reporting systems are often not equipped to supply the necessary information. A good way of relating a range of value drivers is to use scenario analysis. It is a way of assessing the impact of different sets of mutually consistent assumptions on the value of a company or its business units.

### 1.5.3 SVA

The SVA method of valuation of a business is based on the PV of estimated future free cash flows earned by the business. There are seven factors or 'drivers' that affect the valuation:

- (a) **Sales growth.** Sales growth in the valuation model is usually expressed as a percentage annual revenue growth rate.
- (b) **Operating profit margin.** Expected operating profit is expressed as a percentage of sales revenue.
- (c) The **tax rate** on profits.
- (d) **Changes in working capital.** With sales growth, there is likely to be an increase in working capital each year, and the incremental working capital investment (IWCI) reduces free cash flow.
- (e) **Fixed capital investment.** This may be analysed into replacement fixed capital investment (RFCI) and incremental fixed capital investment (IFCI). RFCI is capital investment that is required to replace existing assets that have worn out and need replacement: it is often assumed that RFCI is equal to the annual depreciation charge. IFCI is incremental capital investment in addition to RFCI. Capital investment reduces free cash flow.
- (f) The **cost of capital.** This is the discount rate for converting free cash flows to a PV.
- (g) The **competitive advantage period.** This is the period of time in the future during which the business is expected to achieve growth in its current form or condition. After this period of time, which may be for three to five years or so, it is often assumed that annual free cash flows will be a constant amount.

Assumptions about all seven of these value drivers will affect the valuation of the business.

### 1.5.4 Steps in the SVA valuation method

There are three steps in the SVA valuation process.

**Step 1** Calculate the PV of estimated future annual free cash flows

**Step 2** Add the value of non-operational assets held by the business, such as short-term investments and cash

**Step 3** Subtract the value of the company's debt to obtain a valuation for the company's equity

Annual free cash flow may be calculated as follows:

	£
Operating profit	X
Less tax on this profit (at the tax rate)	(X)
Assumed profit after tax	X
Add back annual depreciation charge	X
	X
Deduct:	
IWCI	(X)
RFCI	(X)
IFCI	(X)
Equals: Free cash flow	X

If it is assumed that replacement fixed capital investment equals the annual depreciation charge, these two items can be omitted from the free cash flow calculation.



### Context example: SVA

The following information is available about a company. Current year annual sales: £10m

Competitive advantage period: 3 years. Cost of capital: 12%.

Information about other value drivers:

	A	B	C	D	E
1		Year 1	Year 2	Year 3	Year 4 onwards
2	Sales growth (%)	10	10	10	0
3	Operating profit margin (% of sales)	20	20	20	15
4	Tax rate (%)	20	20	20	20
5	IFCI (as a % of sales revenue growth)	10	10	10	0
6	IWCI (as a % of sales revenue growth)	5	5	5	0

The annual depreciation charge in the current year is £5 million and it is assumed that replacement fixed capital investment will equal the annual depreciation charge in every year.

The company has cash and short-term investments together worth £6 million, and its debt liabilities are £8.5 million.

An SVA valuation can be made as follows.

**Step 1:** Calculate the PV of future free cash flows.

B12 =NPV(0.12,B11:D11)					
	A	B	C	D	E
1		Year 1	Year 2	Year 3	Year 4 onwards
2		£m	£m	£m	£m
3	Sales revenue	11.000	12.100	13.310	13.310
4	Increase in sales revenue	1.000	1.100	1.21	
5					
6	Operating profit	2.200	2.420	2.662	1.997
7	Tax	0.440	(0.484)	(0.532)	(0.399)
8		1.760	1.936	2.130	1.597
9	IFCI	(0.100)	(0.110)	(0.121)	
10	IWCI	(0.050)	(0.055)	(0.061)	
11	Free cash flow	1.610	1.771	1.948	1.597
12	PV @12% T1-3	4.24 <sup>1</sup>			
13	Discount factor for perpetuity				0.712/0.12
14	PV year 4 onwards				£9.48m
15	Total PV of free cash flow (4.24 + 9.48)	13.72			

<sup>1</sup> =NPV(0.12,B11:D11)

Total valuation of free cash flows = £13.72m

**Note:** Depreciation charges and RFCI cancel each other out and so are ignored in the calculation.

Steps 2 and 3:	£m
Value of future free cash flows	13.72
Value of non-operational assets: cash and investments	6.00
Value of debt	(8.50)
Value of equity	11.22

The value of the company's equity is £11.22 million.



### Professional skills focus: Assimilating and using information

A question on business valuations will present you with a lot of information in the scenario. One of the professional skills assessed in the CA exams considers your ability to evaluate the relevance of information provided. When applying the different methods of valuations, it is important that you select the correct information from the scenario.

## 1.6 Value-based models: EVA<sup>®</sup> and MVA

### 1.6.1 Economic value added (EVA<sup>®</sup>)

Economic value added or EVA<sup>®</sup> is a trademark of the consultancy firm Stern Stewart & Co, now Stern Value Management. It is an alternative measure for calculating the value created in a given period of time (typically a year) by a business. It is based on the view that accounting measures are not a reliable measure of value creation, and value creation should be based on economic principles rather than accounting methods.

In practice, annual EVA<sup>®</sup> is calculated by making adjustments to accounting costs and values to obtain an estimate of economic cost and value. It is also based on the idea that a business must cover both its operating costs **and** its capital costs.

$$\text{EVA}^{\circledR} = \text{Net Operating Profit after Tax (NOPAT)} - \text{WACC} \times \text{Capital Employed OR}$$

$$\text{EVA}^{\circledR} = (\text{ROIC} - \text{WACC}) \times \text{Capital Employed (where ROIC} = \text{Return on invested capital)}$$

NOPAT should be a measure of economic profit, not accounting profit. The NOPAT figure is not therefore taken directly from the financial statements, but contains a number of adjustments to get to economic profit from accounting profit.

Capital employed should be the economic value of capital employed, not the accounting value of capital employed.

Examples of adjustments to accounting profit and asset values to derive economic profit and economic value of capital employed are as follows:

- (a) **Spending on some intangible assets** is typically written off against accounting profit in the year that the expenditure is incurred. Examples are research expenditure, training expenditure and advertising expenditure which develops the value of a brand name. The approach is to capitalise all such expenditures on intangibles that create long-term value, and charge against profit only an amount for the consumption of the asset's economic value in the year. This adjustment affects both profit and capital employed.
- (b) **Provisions or allowances** are not real costs and should be excluded from profit. For example, any increase in the allowance for irrecoverable receivables should be added back to both profit and capital employed.
- (c) **Leases** should not be capitalised. The lease rental is a measure of the economic cost of the lease in the reporting period. The charge against profit should therefore be the lease rental charge, not depreciation on the leased asset plus a finance charge.
- (d) The charge for **depreciation** should be an economic cost rather than an accounting charge. However, calculating economic depreciation from accounting figures can be a very complex process, and it is often assumed therefore that accounting depreciation is a reasonable approximation for economic depreciation; therefore no adjustment for depreciation charges is required.

It should be remembered that EVA<sup>®</sup> is not an estimate of cash flow. It includes non-cash items of cost in deriving NOPAT, and the cost of capital includes the cost of equity, which is not a cash flow item.



#### Context example: EVA<sup>®</sup>

The derivation of EVA<sup>®</sup> can be illustrated using an example.

The profits of a company in the year ended 31 December 20X5 were reported to management as follows:

	<b>£m</b>
Profit before interest and tax	20.0
Interest	<u>(7.0)</u>
	13.0
Tax at 20%	<u>(2.6)</u>
Profit after tax	<u>10.4</u>

The following information is also available:

- (a) Dividends paid in the year were £6.6 million.
- (b) During the year, the company invested in research and development (R&D) for the first time, spending £6 million. This cost was written off in full against profit. To measure EVA<sup>®</sup>, the spending should be capitalised and the amortisation charge for R&D in the year should be £2 million.
- (c) The company increased its allowance for irrecoverable debts from £3 million to £3.8 million.
- (d) The company's weighted average cost of capital is 9%.
- (e) At the beginning of the year the company's economic capital employed was £160 million.
- (f) Assume for the purpose of this calculation that the cost of capital is based on the value of capital employed at the beginning of the year.

NOPAT is calculated as follows:

	<b>£m</b>
Profit before interest and tax	20.0
Tax on profits	<u>(2.6)</u>
Tax relief on interest charge (20% × £7m)	<u>(1.4)</u>
	16.0
Adjustments to get to economic profit	
Increase in allowance for irrecoverable debts	0.8
R&D spending capitalised	6.0
R&D intangible asset amortised	<u>(2.0)</u>
NOPAT	<u>20.8</u>

EVA<sup>®</sup> is calculated as follows:

	<b>£m</b>
NOPAT	20.8
Capital employed × cost of capital (£160m × 9%)	<u>(14.4)</u>
EVA <sup>®</sup>	<u>6.4</u>

The economic value of capital employed at the beginning of the next financial year, 20X6, is as follows.

	<b>£m</b>
Economic value of capital employed at beginning of year	160.0
Adjustments for	
Increase in allowance for irrecoverable debts	0.8
R&D (£6m - £2m)	4.0
EVA <sup>®</sup>	6.4
Dividends	<u>(6.6)</u>
Economic value of capital employed at end of year	<u>164.6</u>

### 1.6.2 Market value added (MVA)

The market value added (MVA) of a company is a measure of how much the management of a company has added to the value of the capital contributed by the capital providers.

MVA may be measured for the company as a whole, or just from the perspective of the equity shareholders.

#### From the perspective of the company as a whole

MVA = Market value of the company (equity and debt) - Capital invested

Capital invested is measured as the book value of equity plus the book value of debt.

#### From the perspective of the company's equity shareholders

MVA = Market value of equity - Book value of equity

MVA is related to EVA because MVA is the PV of the future EVAs of the company.

If the market value and the book value of debt is the same, then the MVA simply measures the difference between the market value of common stock and the equity capital of the firm.

A firm's equity MVA is sometimes expressed as a market to book ratio:

$$\frac{\text{MVA}}{\text{book value of equity}}$$

The higher the MVA, the better for the company, as a high MVA indicates that the company has created wealth for its shareholders.

The main problem with MVA is that it does not take opportunity cost of capital into account, nor does it account for intermediate cash returns to shareholders.



#### Context example: MVA

A stock market company has issued 150 million shares which have a current market value of £4.50 per share as at the end of its financial year.

The company's statement of financial position shows that the book value of the company's shares and reserves at this date was £420 million.

The company has debt capital of £200 million which has a par market value.  $\text{MVA} = (150 \text{ million} \times £4.50) - £420\text{m} = £255\text{m}$ .

## 2 Acquisitions and mergers



### Section overview

This section looks at the various ways in which the target company in an acquisition or merger situation can be valued, and how to value the combined company after the acquisition or merger takes place.

## 2.1 Asset-based model

When a valuation of a company is made for the purpose of a merger or acquisition, it makes good sense to use a number of different valuation methods to obtain estimates of what a suitable valuation might be. The different estimated valuations can then be compared, to establish whether they are similar or whether they differ substantially. If they differ, the reasons for the differences may help to provide some insights into an appropriate valuation and give the buyer an idea of how high the offer price might reasonably be taken.

When making several valuations of a potential takeover target, a useful starting point is an assets-based valuation. Unless the target company is in serious financial difficulty, an assets-based valuation should indicate the absolute minimum price that shareholders in the target company are likely to accept.

The asset-based approach to valuation was reviewed above, but this section considers some issues in further detail.



### Worked example: Asset-based model

The summary statement of financial position of Cactus is as follows.

<b>Non-current assets</b>	£	£	£
Land and buildings			160,000
Plant and machinery			80,000
Motor vehicles			20,000
			260,000
Goodwill			20,000
<b>Current assets</b>			
<b>Non-current assets</b>	£	£	£
Inventory		80,000	
Receivables		60,000	
Short-term investments		15,000	
Cash		5,000	
		160,000	
<b>Current liabilities</b>	£	£	
Payables	80,000		
Taxation	20,000		
		(100,000)	
			60,000
			340,000
12% loan notes			(60,000)
Deferred taxation			(10,000)
			270,000
Ordinary shares of £1			80,000
Reserves			140,000
			220,000
4.9% preference shares of £1			50,000
			270,000



**Requirement**

What is the value of an ordinary share using a net assets basis of valuation?

**Solution**

If the figures given for asset values are not questioned, the valuation would be as follows.

	£	£
Total value of assets less current liabilities		340,000
Less non-identifiable asset (goodwill)		20,000
Total value of assets less current liabilities		320,000
Less: preference shares	50,000	
loan notes	60,000	
deferred taxation	10,000	
		120,000
NAV of equity		200,000
Number of ordinary shares		80,000
Value per share		£2.50

However, it may be inappropriate to accept without question the figures in the statement of financial position. So an initial question should be to ask how reliable are the valuations of assets and liabilities in the target company's accounts.

**2.1.1 Fair values**

The accounting rules affecting acquisitions are particularly important in the context of asset valuations.

The presumption in IFRS 3, *Business Combinations* is that:

- An acquirer carefully reviews the value of the net assets to be acquired as part of the process of deciding how much to offer for the acquiree.
- The purchase consideration is the result of a transaction between a willing buyer and a willing seller in an arm's length transaction, so it is at fair value.
- This fair value can be reliably allocated across the identifiable assets and liabilities assumed.

The general rule under IFRS 3 is that the subsidiary's assets and liabilities **must be measured at fair value** except in **limited, stated cases**. The assets and liabilities must:

- meet the definitions of assets and liabilities in the Conceptual Framework
- be part of what the acquiree (or its former owners) exchanged in the business combination rather than the result of separate transactions

As discussed above, IFRS 13 provides extensive guidance on how the fair value of assets and liabilities should be established.

**2.1.2 Examples of fair values and business combinations****Non-current assets**

For non-financial assets, fair value is decided based on the highest and best use of the asset as determined by a market participant.



## Worked example: Land

Anscome Co has acquired land in a business combination. The land is currently developed for industrial use as a site for a factory. The current use of land is presumed to be its highest and best use unless market or other factors suggest a different use. Nearby sites have recently been developed for residential use as sites for high-rise apartment buildings. On the basis of that development and recent zoning and other changes to facilitate that development, Anscome determines that the land currently used as a site for a factory could be developed as a site for residential use (ie, for high-rise apartment buildings) because market participants would take into account the potential to develop the site for residential use when pricing the land.

### Requirement

How would the highest and best use of the land be determined?

### Solution

- (1) The highest and best use of the land would be determined by comparing both of the following:
- (2) The value of the land as currently developed for industrial use (ie, the land would be used in combination with other assets, such as the factory, or with other assets and liabilities)

The value of the land as a vacant site for residential use, taking into account the costs of demolishing the factory and other costs (including the uncertainty about whether the entity would be able to convert the asset to the alternative use) necessary to convert the land to a vacant site (ie, the land is to be used by market participants on a standalone basis)

The highest and best use of the land would be determined on the basis of the higher of those values.

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### Restructuring and future losses

An acquirer **should not recognise liabilities for future losses** or other costs expected to be incurred as a result of the business combination.

IFRS 3 (revised) explains that a plan to restructure a subsidiary following an acquisition is not a present obligation of the acquiree at the acquisition date. Neither does it meet the definition of a contingent liability. Therefore, an acquirer **should not recognise a liability for a restructuring plan** as part of allocating the cost of the combination unless the subsidiary was already committed to the plan before the acquisition.

This **prevents creative accounting**. An acquirer cannot set up a provision for restructuring or future losses of a subsidiary and then release this to profit or loss in subsequent periods in order to reduce losses or smooth profits.

### Contingent liabilities

Contingent liabilities of the acquiree are **recognised** in a business combination if their **fair value can be measured reliably**. A **contingent liability** must be recognised even if the outflow is not probable, provided there is a present obligation.

This is a departure from the normal rules in IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*, under which contingent liabilities are not normally recognised, but only disclosed.

After their initial recognition, the acquirer should measure contingent liabilities that are recognised separately at the higher of:

- (a) the amount that would be recognised in accordance with IAS 37
- (b) the amount initially recognised

### 2.1.3 Intangible assets

The acquiree may have **intangible assets**. IFRS 3 states that these can be recognised separately from goodwill only if they are **identifiable**. An intangible asset is identifiable only if it:

- (a) is **separable**, ie, capable of being separated or divided from the entity and sold, transferred or exchanged, either individually or together with a related contract, asset or liability; or
- (b) arises from **contractual or other legal rights**.

The problem with these principles is that they may exclude many intangible assets that are important to the acquirer. This renders this method unsuitable for the valuation of most established businesses, particularly those in the **service industry or industries** where intellectual capital may be a significant feature, as we discussed in the chapter Strategic marketing and brand management.

Remember the business's intellectual capital will include:

- patents, trademarks and copyrights
- franchises and licensing agreements
- R&D
- brands
- technology, management and consulting processes
- know-how, education, vocational qualification
- customer loyalty
- distribution channels
- management philosophy

Some of these will fulfil the IFRS 3 definition of intangible assets. Others will not, although they may be considered as separate valuable assets by the parties to the acquisition.

The valuation of brands, which may have a big influence on acquisition price, was also discussed in depth in the chapter Strategic marketing and brand management.

### 2.1.4 Exceptions to the IFRS 13 principles

- (a) **Deferred tax**: Use IAS 12 values
- (b) **Employee benefits**: Use IAS 19 values
- (c) **Indemnification assets**: Measurement should be consistent with the measurement of the indemnified item, for example an employee benefit or a contingent liability
- (d) **Reacquired rights**: Value on the basis of the remaining contractual term of the related contract regardless of whether market participants would consider potential contractual renewals in determining its fair value
- (e) **Share-based payment**: Use IFRS 2 values
- (f) **Assets held for sale**: Use IFRS 5 values

## 2.2 Market relative model (the P/E ratio)

The P/E ratio method produces an earnings-based valuation of shares. This is done by deciding a suitable P/E ratio and multiplying this by the EPS for the shares which are being valued. The EPS could be a historical EPS or a prospective future EPS. For a given EPS figure, a higher P/E ratio will result in a higher price. A high P/E ratio may indicate:

### (a) Optimistic expectations

EPS is expected to grow rapidly in the years to come, such that a high price is being paid for future profit prospects. Many small but successful and fast-growing companies are valued on the stock market on a high P/E ratio. Some stocks (for example, those of some internet companies in the late 1990s) have reached high valuations before making any profits at all, on the strength of expected future earnings.

### (b) Security of earnings

A well-established low-risk company would be valued on a higher P/E ratio than a similar company whose earnings are subject to greater uncertainty.

### (c) Status

If a quoted company (the predator) made a share for share takeover bid for an unquoted company (the target), it would normally expect its own shares to be valued on a higher P/E ratio than the target company's shares. A quoted company ought to be a lower-risk company but, in addition, there is an advantage in having shares which are quoted on a stock market as the shares can be readily sold. The P/E ratio of an unquoted company's shares might be around 50% to 60% of the P/E ratio of a similar public company with a full stock exchange listing (and perhaps 70% of that of a company whose shares are traded on stock markets for smaller companies, such as the UK's Alternative Investment Market).



### Worked example: Takeover offer price

Spider plc is considering the takeover of an unquoted company, Fly Ltd. Spider's shares are quoted on the stock exchange at a price of £3.20 and since the most recent published EPS of the company is 20p, the company's P/E ratio is 16. Fly Ltd is a company with 100,000 shares and current earnings of £50,000, 50p per share.

#### Requirement

How might Spider plc decide on an offer price?

#### Solution

The decision about the offer price is likely to be preceded by the estimation of a 'reasonable' P/E ratio in the light of the particular circumstances.

- (1) If Fly Ltd is in the **same industry** as Spider plc, its P/E ratio ought to be lower because of its lower status as an unquoted company.
- (2) If Fly Ltd is thought to be **growing fast** so that its EPS will rise rapidly in the years to come, the P/E ratio that should be used for the share valuation will be higher.
- (3) If the acquisition of Fly Ltd would **contribute substantially to Spider's own profitability and growth**, or to any other strategic objective that Spider has, then Spider should be willing to offer a higher P/E ratio valuation in order to secure acceptance of the offer by Fly's shareholders.

Of course, the P/E ratio on which Spider bases its offer will probably be lower than the P/E ratio that Fly's shareholders think their shares ought to be valued on. Some haggling over the price might be necessary.

Spider might decide that Fly's shares ought to be valued on a P/E ratio of  $60\% \times 16 = 9.6$ , that is, at  $9.6 \times 50p = \text{£}4.80$  each.

Fly's shareholders might reject this offer and suggest a valuation based on a P/E ratio of, say, 12.5, that is,  $12.5 \times 50p = \text{£}6.25$ .

Spider's management might then come back with a revised offer, say valuation on a P/E ratio of 10.5, that is,  $10.5 \times 50p = \text{£}5.25$ .

The haggling will go on until the negotiations either break down or succeed in arriving at an agreed price.

## 2.3 Free cash flow model

The procedure for valuing a target company on the basis of its predicted free cash flow is similar to that used for investment appraisal. The free cash flow model was illustrated earlier in the explanation of the SVA valuation method.

### Step 1 Calculate the free cash flow (FCF)

The FCF to the firm is defined as:

FCF = Earnings before interest and taxes (EBIT)

Less tax on EBIT

Add back non-cash charges

Less capital expenditure

Less net working capital increases Plus net working capital decreases

Plus salvage values received **Example**

(Note: The tax rate is assumed to be 24% in this example.)

	£
Earnings before interest and taxes (EBIT)	80,000
Remove taxes (1 - Tax rate, T)	× 76%
Operating income after taxes	60,800
Depreciation (non-cash item)	14,000
Less capital expenditure	(9,000)
Less changes to working capital	(1,000)
FCF	64,800

### Step 2 Forecast FCF and terminal value

For a time horizon of six years, the following values need to be estimated:

FCF1	FCF2	FCF3	FCF4	FCF5	FCF6
					TERMINALVALUE

### Step 3 Calculate the weighted average cost of capital (WACC).

The WACC is calculated using the cost of equity ( $k_e$ ) and cost of debt ( $k_d$ ).

$$\text{WACC} = k_e \times \frac{E}{E+D} + k_d \times \frac{D}{E+D}$$

Where: D = the value of debt

E = the value of equity

(Note that  $k_d$  is the cost of debt **after** tax.)

**Step 4 Discount FCF at WACC to obtain value of the firm. Calculate equity value**

**Step 5** Equity value = Value of the firm - Value of debt



### Worked example: Calculating value per share

You have completed the following forecast of FCFs for an eight-year period, capturing the normal business cycle of Marathon plc.

Year	FCF
	£m
20X7	1,860
20X8	1,887.6
20X9	1,917.6
20Y0	1,951.2
20Y1	1,987.2
20Y2	2,016
20Y3	2,043.6
20Y4	2,070

Marathon has non-operating assets with an estimated PV of £400 million. Based on the PV of future interest payments, the PV of its outstanding debt is £3,000 million. FCFs are expected to grow at 3% beyond 20Y4. The WACC is assumed to be 12%. Marathon has 8,000 million shares in issue.

#### Requirement

What is Marathon's value per share?

#### Solution

B11 =NPV(0.12,B3:B10)		
	A	B
1		FCF
2	Year	£m
3	20X7	1,860.0
4	20X8	1,887.6
5	20X9	1,917.6
6	20Y0	1,951.2
7	20Y1	1,987.2
8	20Y2	2,016.0
9	20Y3	2,043.6
10	20Y4	2,070.0
11	<b>NPV</b>	<b><u>9,680</u></b>

Total PV for forecast period (see above)	£m 9,680
Terminal value = $(£2,070 \times 1.03)/(0.12 - 0.03) \times 0.404$	9,571
Value of non-operating assets	<u>400</u>
Total value of Marathon	19,651
Less value of debt	<u>(3,000)</u>
Value of equity	<u>16,651</u>
Shares outstanding	8,000
Value per share	<u>£2.08</u>



### Interactive question 4: Valuing an acquisition using FCF model

The management of Atrium, a company in the DIY industry, is considering making a bid for Tetrion, a rival company. The current market price of Tetrion is \$29 per share and a 20% premium will persuade Tetrion shareholders to sell. In order to convince its shareholders, a valuation of Tetrion is undertaken. The following information is used.

#### Statement of financial position

	20X4 \$	20X3 \$	Change \$
Cash	300	100	200
Receivables	2,500	1,500	1,000
Inventory	2,600	1,400	1,200
Property, plant and equipment	5,800	4,000	1,800
Accum depreciation	750	500	250
Net property, plant and equipment	5,050	3,500	1,550
<b>Total assets</b>	<b>10,450</b>	<b>6,500</b>	<b>3,950</b>
Payables	3,600	2,560	1,040
Long-term debt	2,000	2,000	-
Equity	4,850	1,940	2,910
<b>Total liabilities and owners' equity</b>	<b>10,450</b>	<b>6,500</b>	<b>3,950</b>

#### Statement of profit or loss

	20X4 \$
Sales	12,000
Cost of sales	3,500
Selling: General administrative	3,000
Depreciation	250

	<b>20X4</b>
	<b>\$</b>
Total expense	6,750
Interest	100
Income before tax	5,150
Taxes (24%)	1,236
Profit for the year	3,914
<b>FCFs</b>	
	<b>20X4</b>
	<b>\$</b>
<b>Cash flows - Operations</b>	
Revenue	12,000
Cash expenses	(6,500)
Taxes	(1,236)
Total	4,264
Cash flows - Investments	
Working capital	1,360
Non-current assets	1,800
Total	3,160
FCF	1,104

The following predictions are made by the management of Atrium for the next five years:

FCFs	20X5	20X6	20X7	20X8	20X9
	\$	\$	\$	\$	\$
Sales	12,000	15,000	18,750	23,438	29,297
Operating costs excluding depreciation	6,500	8,125	10,156	12,696	15,869
EBITD	5,500	6,875	8,594	10,742	13,428
Depreciation	250	300	360	432	519
EBIT	5,250	6,575	8,234	10,310	12,909
Less tax on EBIT @ 24%	1,260	1,578	1,976	2,474	3,098
Plus depreciation	250	300	360	432	518
Less capital expenditure	1,800	2,160	2,592	3,110	3,732
Less additions to working capital	1,360	1,700	2,125	2,656	3,320
FCF	1,080	1,437	1,901	2,502	3,277
Terminal value (3,277/0.12)					27,308
Total FCF	1,080	1,437	1,901	2,502	30,585

### Requirement

If the WACC is 12% and there are 100 shares outstanding, what is the value of each share of Tetrion plc?

At the current market price of Tetrion of \$29 per share, should the shareholders of Atrium agree to the acquisition of Tetrion?

See **Answer** at the end of this chapter.



## 2.4 EVA<sup>®</sup> approach

As we discussed above, EVA<sup>®</sup> is an estimate of the amount by which **earnings** exceed or fall short of the required minimum rate of return that shareholders and debt holders could get by investing in other securities of comparable risk. It can be relevant in valuing acquisitions, as an alternative to a P/E multiple valuation or an FCF valuation.

It has already been explained that estimates of future annual EVAs can be discounted to a PV to obtain a company valuation.

The PV of the company using EVA<sup>®</sup> is given by:

$$PV = C + \frac{EVA_1}{1 + WACC} + \frac{EVA_2}{(1 + WACC)_2} = \dots$$

Where: C = the invested capital

The value of the company is equal to the value of the invested capital plus the PV of the economic profits from operations.

To arrive at the value of the equity, we need to subtract the value of debt from the value of the company.



### Professional skills focus: Structuring problems and solutions

You are expected to be able to structure information from various sources into suitable formats for analysis. Questions on business valuations often ask you to apply various valuation methods. You will therefore need to identify the information that is relevant to each different valuation method to come up with a suitable range of values for an entity.

## 2.5 Adjusted present value approach

The adjusted present value (APV) approach to company valuation is another method based on discounting expected future cash flows to a PV.

It may be used to value large acquisitions, where the method of financing the acquisition means that the acquirer's WACC is inappropriate as the discount rate. For example, if an all-equity company proposes to make a large acquisition financed by one-third equity and two-thirds new debt, its existing cost of capital should not be used as a discount rate because it does not reflect the change in financing structure that the acquisition would entail.

An APV valuation may therefore be appropriate when an acquisition will require new financing, such as an increase in debt.

The APV approach is to divide the valuation into two stages.

- First, discount the expected future cash flows from the acquisition at an ungeared cost of equity. This is the cost of equity that would apply if the acquiring company were all-equity financed. Discounting the future cash flows at an ungeared cost of equity produces a 'base case NPV'.
- The base case NPV ignores the benefit of tax relief on any debt capital that will be used to finance the acquisition. It also ignores the costs of raising any new capital to finance the acquisition. These are the financing effects of the acquisition, and the PV of these financing effects should be calculated separately.

- (c) The financing effects are likely to include the **benefits of tax relief on future interest payments**. These should be discounted to a PV. If in doubt, discount these financing benefits at the pre-tax cost of debt, because this is the cost that best reflects the systematic risk associated with these cash flows. You should not discount these future tax benefits at the ungeared cost of equity!
- (d) If the company is planning to issue new capital to pay for the acquisition, a financing cost will be the issue costs for the new capital. You should generally assume that issue costs associated with new equity do not attract tax relief, whereas issue costs associated with the issue of new debt capital does attract tax relief. Since these costs will occur at the beginning of the investment they do not need to be discounted.
- (e) The APV of the acquisition is the base case NPV plus (or minus, if negative) the PV of the financing effects of the acquisition. The APV is a valuation for the target company.

The APV approach is consistent with Modigliani and Miller's views of capital structure and the effect of gearing on the cost of capital.



### Worked example: APV of acquisition

Suppose that the management of Xeron is considering the acquisition of Neron, an unquoted company as at the end of 20X7. The owners of Neron want £450 million for the business. The analysis of the prospects of Neron by Xeron is reflected in the following income statements and statements of financial position.

#### Proforma income statements and statements of financial position

Current							Years	
	20X7	20X8	20X9	20Y0	20Y1	20Y2	20Y3	
	£m		£m	£m	£m	£m	£m	£m
Sales	620.00	682.00	750.20	825.22	907.74	998.52	998.52	
Less cost of goods sold	(410.00)	(441.00)	(475.10)	(512.61)	(553.87)	(599.26)	(599.26)	
Gross profit	210.00	241.00	275.10	312.61	353.87	399.26	399.26	
Operating expenses	(133.00)	(144.30)	(156.53)	(169.78)	(184.16)	(199.78)	(199.78)	
EBIT	77.00	96.70	118.57	142.83	169.71	199.48	199.48	
Less interest expense	-	(32.00)	(26.88)	(20.19)	(11.73)	(1.27)		-
Earnings before tax	77.00	64.70	91.69	122.64	157.98	198.21	199.48	
Less tax	(16.17)	(13.59)	(19.25)	(25.75)	(33.18)	(41.62)	(41.89)	
Net income	60.83	51.11	72.44	96.89	124.80	156.59	157.59	
Current assets	100.00	100.00	100.00	100.00	100.00	242.90	404.55	
Non-current assets	400.00	378.00	354.00	328.00	300.00	270.00	238.00	
Total assets	500.00	478.00	454.00	428.00	400.00	512.90	642.55	
Debt	400.00	335.95	252.35	146.63	15.94	-	-	
Equity	100.00	142.05	201.65	281.37	384.06	512.90	642.55	
Total finance	500.00	478.00	454.00	428.00	400.00	512.90	642.55	

**Assumptions:**

Growth rate for sales until 20Y3	10%
Assumed growth rate after 20Y3	Nil
Depreciation expense (20X7)	£40m
Depreciation charges will increase by £2 million per year between 20X7 and 20Y3	
Accounting depreciation equals tax depreciation	
Interest rate on debt	8%
Tax rate	21%
All debt is interest bearing	
Capital expenditures/year	£40m
All available cash flow is applied to repaying debt until repaid in full	
Ungeared beta	1.2
Terminal value in 20Y3 assumes that annual cash flows in perpetuity will be the same as in 20Y3	
Risk-free rate of return	6.0%
Market risk premium	7.5%

**Requirement**

Calculate the APV of Neron based on the expected future cash flows of the company, and determine on the basis of your answer whether Xeron should proceed with the acquisition.

**Solution**

In this example, we are required to calculate the APV of the company's cash flows. The financing effects are therefore simply the tax relief on the interest cost of the company's debt.

**Step 1: Calculation of firm FCF**

	A	B	C	D	E	F	G	H
1		20X7	20X8	20X9	20Y0	20Y1	20Y2	20Y3
2		£m	£m	£m	£m	£m	£m	£m
3	EBIT (1 - tax rate)	60.83	76.39	93.67	112.84	134.07	157.59	157.59
4	Depreciation charge	40.00	42.00	44.00	46.00	48.00	50.00	52.00
5	Capital expenditure	(40.00)	(40.00)	(40.00)	(40.00)	(40.00)	(40.00)	(40.00)
6	FCF	60.83	78.39	97.67	118.84	142.07	167.59	169.59

**Step 2: Calculation of APV**

The FCFs are discounted at the ungeared cost of equity capital which is:

$$k_{eu} = r_f + \beta_a (r_m - r_f) = 6 + 1.2 \times 7.5 = 15\%$$

H3 = NPV(0.15, B3:G3)								
	A	B	C	D	E	F	G	H
1		20X8	20X9	20Y0	20Y1	20Y2	20Y3	20Y4
2		£m	£m	£m	£m	£m	£m	£m
3	FCF	78.39	97.67	118.84	142.07	167.59	169.59	<b>458.03</b>

### Step 3: Calculation of terminal value

The terminal value under the no growth assumption after 20Y3 is:

Value as at 20Y3:  $\text{£}169.59/0.15 = \text{£}1,130.60\text{m}$  The PV of the terminal value is:

$\text{£}1,130.60\text{m}/(1.15)^6 = \text{£}488.79\text{m}$

### Step 4: Calculation of PV of financing effects

Here the only financing cash flows are the tax relief on the company's tax payments. The tax shield is discounted at the pre-tax cost of debt (8%).

	20X8	20X9	20Y0	20Y1	20Y2	20Y3	Total
	£m	£m	£m	£m	£m	£m	£m
Interest	32.00	26.88	20.19	11.73	1.27	0	
Tax savings at 21%	6.72	5.64	4.24	2.46	0.27	-	
PV tax saving @8%	0.926	0.857	0.794	0.735	0.681		<b>16.42</b>

#### Calculation of APV

PV of cash flows 20Y8 to 20Y3	£m
	458.03
PV of terminal value 20Y3	488.79
Base case NPV	946.82
PV of interest relief on debt	16.42
Total APV of company	963.24
Value of debt	(400.00)
Value of equity	563.24

The owners of the company are asking for £450 million for the company, therefore the value to Xeron of acquiring Neron is  $\text{£}563.24\text{m} - \text{£}450\text{m} = \text{£}113.24\text{m}$ .

The managers of Xeron should proceed with the acquisition.



### Interactive question 5: APV of acquisition

Main plc is considering the acquisition of a profitable unquoted company Peek Limited. The directors of Peek have indicated that they would accept a cash offer of £54 million.

- (1) If the acquisition goes ahead, it would be financed entirely by a 10-year loan at 6% interest. The costs of raising this money would be £1 million, so the total amount borrowed will be £55 million.
- (2) It is estimated that the acquisition will increase the operating cash flows of Main plc, net of tax, by £4 million per year in perpetuity.
- (3) The ungeared equity beta that would apply to this investment is 0.80. The risk-free rate of return is 5% and the market rate of return is 8%. Tax is at the rate of 21%.

#### Requirement

Using the APV method of valuation, suggest whether the purchase price demanded by the directors of Peek would be acceptable to Main plc.

See **Answer** at the end of this chapter.

## 2.6 Other aspects of valuation of a takeover

When a company is considering the acquisition of another company a number of factors may affect the valuation. These include:

- (a) **Synergy.** This is considered below.
- (b) **Risk.** An acquisition may affect the financial risk or business risk profile of the acquiring company. Changes in the risk profile should be considered and, where appropriate, the discount rate for a valuation should be adjusted.
- (c) **Real options.** A real option is an option to take a new or different course of action in the future, that will arise if the current investment is undertaken. In a takeover, a real option may be the opportunity that the takeover creates for the company to develop its business in the future, for example by expanding into new geographical markets, if the opportunity would not exist if the takeover did not occur. Real options can have a positive value and the valuation of a target company may be affected by a valuation of any real options that may exist.
- (d) **Financing.** It has already been explained that the method of financing an acquisition, and its cost, will affect the valuation of a takeover target.

## 2.7 Synergy

The existence of synergies may increase shareholder value in an acquisition. The identification, quantification and announcement of these synergies are essential as shareholders of the companies involved in the acquisition process may need persuasion to back the merger.

Unfortunately the actual value of synergy benefits from a takeover cannot be established until after the takeover has occurred, and even then results are often not as expected.



### Context example: Bunnings and Homebase

Bunnings, the Australian DIY retailer that aimed to revamp Homebase in the UK, as part of its plans to expand its home improvement empire internationally, ended up writing off A\$1 billion (£547 million) in February 2018 after some major mistakes.

Perth-based Wesfarmers, the parent company of Bunnings and one of Australia's biggest companies, bought Homebase for £340 million in 2016, but the heavy losses (nearly £100 million in the last six months of 2017) became untenable.

Wesfarmers admitted that the Bunnings management team had made mistakes, including the axing of the entire Homebase senior management team and about 160 middle managers as soon as the deal was completed. They also abandoned the home furnishings operation that had been a big draw for female shoppers, turning the stores into starkly industrial DIY warehouses selling power tools, large barbecues and other heavy equipment not necessarily suited to the British market. Added to this was the fact that the British home renovations sector has already been dampened by rising living costs and a weak housing market.

On 25 May 2018 Wesfarmers sold the UK and Ireland Bunnings/Homebase operation to the turnaround specialist Hilco for £1. The 24 stores that had been rebranded as Bunnings reverted to the Homebase name.

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Claims by management that a takeover will provide synergy benefits may be unrealistic, and simply an excuse to justify a higher bid price for a takeover target, to increase the probability that the bid will be accepted.

Claims of synergy benefits resulting from a takeover should be scrutinised carefully, and with professional scepticism.

### 2.7.1 Revenue synergy

Revenue synergy exists when the acquisition of the target company will result in higher revenues for the acquiring company, higher return on equity or a longer period of growth. Revenue synergies arise from:

- (a) increased market power
- (b) marketing synergies
- (c) strategic synergies

Revenue synergies are more difficult to quantify relative to financial and cost synergies. When companies merge, cost synergies are relatively easy to assess pre-deal and to implement post-deal. But revenue synergies are more difficult. It is hard to be sure how customers will react to the new situation, but revenue synergies must be identified and delivered. Customer Relationship Management and Product Technology Management are the two core business processes that will enable the delivery of revenue.

### 2.7.2 Cost synergy

A cost synergy results primarily from the existence of economies of scale. As the level of operation increases, the marginal cost falls and this will be manifested in greater operating margins for the combined entity. The resulting savings from economies of scale are normally estimated to be substantial.

### 2.7.3 Financial synergy Diversification

Acquiring another firm as a way of reducing risk cannot create wealth for two publicly traded firms, with diversified stockholders, but it could create wealth for private firms or closely held publicly traded firms. A takeover, motivated only by diversification considerations, has no effect on the combined value of the two firms involved in the takeover. The value of the combined firms will always be the sum of the values of the independent firms. In the case of private firms or closely held firms, where the owners may not be diversified personally, there might be a potential value gain from diversification.

#### Cash slack

When a firm with significant excess cash acquires a firm with great projects but insufficient capital, the combination can create value. Managers may reject profitable investment opportunities if they have to raise new capital to finance them. It may therefore make sense for a company with excess cash and no investment opportunities to take over a cash-poor firm with good investment opportunities, or vice versa. The additional value of combining these two firms lies in the PV of the projects that would not have been taken if they had stayed apart, but can now be taken because of the availability of cash.

#### Tax benefits

The tax paid by two firms combined together may be lower than the taxes paid by them as individual firms. If one of the firms has tax deductions that it cannot use because it is losing money, while the other firm has income on which it pays significant taxes, the combining of the two firms can lead to tax benefits that can be shared by the two firms. The value of this synergy is the PV of the tax savings that accrue because of this merger. The assets of the firm being taken over can be written up to reflect new market value, in some forms of mergers, leading to higher tax savings from depreciation in future years.

#### Debt capacity

The tax paid by two firms combined together may be lower than the taxes paid by them as individual firms. If one of the firms has tax deductions that it cannot use because it is losing money, while the other firm has income on which it pays significant taxes, the combining of

the two firms can lead to tax benefits that can be shared by the two firms. The value of this synergy is the PV of the tax savings that accrue because of this merger. The assets of the firm being taken over can be written up to reflect new market value, in some forms of mergers, leading to higher tax savings from depreciation in future years.

### Debt capacity

By combining two firms, each of which has little or no capacity to carry debt, it is possible to create a firm that may have the capacity to borrow money and create value. Diversification will lead to an increase in debt capacity and an increase in the value of the firm. It has to be weighed against the immediate transfer of wealth that occurs to existing bondholders in both firms from the shareholders. When two firms in different businesses merge, the combined firm will have less variable earnings and may be able to borrow more (have a higher debt ratio) than the individual firms.

## 2.8 Corporate reporting issues: business combinations

Acquisitions and mergers are subject to the requirements of IFRS 3, *Business Combinations* and IFRS 10, *Consolidated Financial Statements*. **These standards impose a number of significant requirements on the parties involved that may influence their thinking.**

### 2.8.1 Nature of acquisition

**Remember that IFRS 3 only applies to the acquisition of businesses. All business combinations**

should be accounted for by applying the **acquisition method**. This involves five key steps:

- **identifying the acquirer**
- Determining the **acquisition date**
- Measuring the consideration transferred
- Recognising and measuring the **identifiable assets acquired**, the **liabilities assumed** and any **non- controlling interest** in the acquiree
- Recognising and measuring **goodwill**, or a gain from a bargain purchase



### Definition

**Business:** An integrated set of activities and assets capable of being conducted and managed for the purpose of providing:

- (a) a return in the form of dividends; or
- (b) lower costs or other economic benefits directly to investors or other owners.

A business generally consists of inputs, processes applied to those inputs, and resulting outputs that are, or will be, used to generate revenues. If goodwill is present in a transferred set of activities and assets, the transferred set is presumed to be a business.

If it is just some assets, and perhaps liabilities, which are acquired, then the consideration is allocated according to other IFRSs (eg, IAS 16 in the case of property, plant or equipment) across what has been acquired; no goodwill should be recognised.

IFRS 3 requires that one of the combining entities must be identified as the **acquirer**. Identifying the acquirer requires the assessment of all rights, powers, facts and circumstances. In a reverse acquisition, for example, the legal acquirer (the entity issuing the shares) may come under the control of the legal acquiree. Under IFRS 3 the legal acquiree will be treated as the acquirer.

## 2.8.2 Acquiring control

IFRS 10 states that an investor controls an investee if and only if it has all of the following:

- (a) **power** over the investee (see below)
- (b) Exposure, or **rights, to variable returns** from its involvement with the investee (see below)
- (c) The **ability to use its power** over the investee to affect the amount of the investor's returns

(If there are changes to one or more of these three elements of control, then an investor should reassess whether it controls an investee.)

**Power** is defined as existing rights that give the current ability to direct the relevant activities of the investee.

**Rights to variable returns** may include rights to dividends, remuneration for servicing an investee's assets or liabilities or fees and exposure to loss from providing credit support.



### Worked example: Control

- 1 Twist holds 40% of the voting rights of Oliver and 12 other investors each hold 5% of the voting rights of Oliver. A shareholder agreement grants Twist the right to appoint, remove and set the remuneration of management responsible for directing the relevant activities. To change the agreement, a two-thirds majority vote of the shareholders is required. To date, Twist has not exercised its rights with regard to the management or activities of Oliver.

#### Requirement

Explain whether Twist should consolidate Oliver in accordance with IFRS 10.

- 2 Copperfield holds 45% of the voting rights of Spenlow. Murdstone and Steerforth each hold 26% of the voting rights of Spenlow. The remaining voting rights are held by three other shareholders, each holding 1%. There are no other arrangements that affect decision-making.

#### Requirement

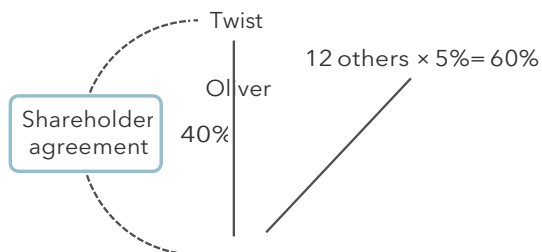
Explain whether Copperfield should consolidate Spenlow in accordance with IFRS 10.

- 3 Scrooge holds 70% of the voting rights of Cratchett. Marley has 30% of the voting rights of Cratchett. Marley also has an option to acquire half of Scrooge's voting rights, which is exercisable for the next two years, but at a fixed price that is deeply out of the money (and is expected to remain so for that two-year period).

#### Requirement

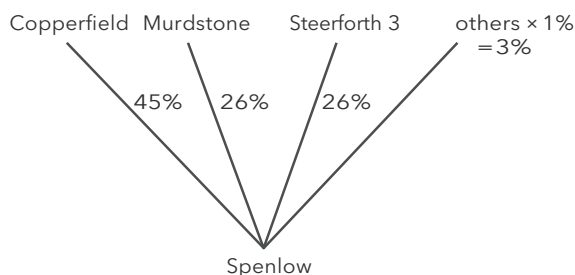
Explain whether either of Scrooge or Marley should consolidate Cratchett in accordance with IFRS 10.

### Solution

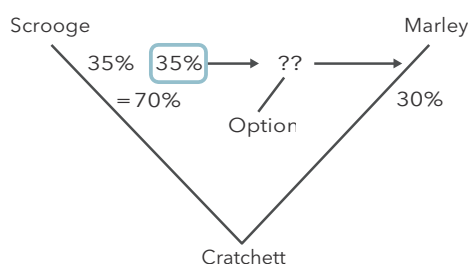




The absolute size of Twist's holding and the relative size of the other shareholdings alone are not conclusive in determining whether the investor has rights sufficient to give it power. However, the fact that Twist has **a contractual right to appoint, remove and set the remuneration of management** is sufficient to conclude that it **has power over Oliver**. The fact that Twist has not exercised this right is not a determining factor when assessing whether Twist has power. In conclusion, Twist does control Oliver, and should consolidate it.



In this case, the size of Copperfield's voting interest and its size relative to the other shareholdings are sufficient to conclude that Copperfield **does not have power**. Only two other investors, Murdstone and Steerforth, would need to cooperate to be able to prevent Copperfield from directing the relevant activities of Spenlow.



Scrooge holds a majority of the current voting rights of Cratchett, so is likely to meet the power criterion because it appears to have the current ability to direct the relevant activities. Although Marley has currently exercisable options to purchase additional voting rights (that, if exercised, would give it a majority of the voting rights in Cratchett), the terms and conditions associated with those options are such that the options are not considered substantive.

Thus voting rights, even combined with potential voting rights, may not be the deciding factor. Scrooge should consolidate Cratchett.

### 2.8.3 Fair value requirements

We discussed in the context of asset-based valuations above the basic requirement of IFRS 3 that the identifiable assets and liabilities acquired are measured at their acquisition-date fair value.

We have seen that the requirement to account for a business combination using fair value measurement will also mean that the acquisition is subject to the requirements of IFRS 13.

The consequences of the recognition of the acquiree's assets and liabilities at the acquisition date are that:

- The acquirer's consolidated statement of profit or loss should include the acquiree's profits and losses from the same date.
- The fair values of the acquiree's net assets form the basis of all the subsequent accounting in the consolidated financial statements. For example, depreciation should be based on the fair values of property, plant and equipment, which may not be the same as the carrying amount in the acquiree's statement of financial position.
- Any non-controlling interest in the acquiree is based on the non-controlling interest share of the net assets at their fair values.

#### 2.8.4 Valuation of previously held stake

Sometimes an acquirer will make an acquisition, having previously held an equity interest in the company being acquired. If this happens, the previously held interest will be remeasured to fair value immediately before control is achieved and the gain or loss taken to profit or loss.

#### 2.8.5 Valuation of non-controlling interest



##### Definition

**Non-controlling interest:** The equity in a subsidiary not attributable, directly or indirectly, to a parent.

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##### Context example: NCI

X Ltd owns 75% of the ordinary shares of Z Ltd.

In this case, X Ltd **controls** 100% of Z Ltd as it owns more than 50% of the ordinary shares, but it only **owns** 75%. The **NCI owns the remaining 25%**.

In group accounts, the ownership interest of both X's shareholders and the NCI needs to be reflected, and the part of the group net assets in which X's shareholders do not have the ownership interest needs to be distinguished from that in which they do.

As both X's shareholders and the NCI own equity (in (X + Z) and Z, respectively), the sum of their respective ownership interests is described as **equity** in the consolidated statement of financial position.

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The figure for **non-controlling interests (NCIs) in the statement of financial position** will be the appropriate proportion of the translated share capital and reserves of the subsidiary plus, where the NCI is valued at fair value, its share of goodwill translated at the closing rate. In addition, it is necessary to show any dividend declared but not yet paid to the NCI at the reporting date as a liability. The dividend payable should be translated at the closing rate for this purpose.

The **NCI in profit or loss** will be the appropriate proportion of profits available for distribution. If the functional currency of the subsidiary is the same as that of the parent, this profit will be arrived at after charging or crediting the exchange differences.

The **NCI in total comprehensive income** includes the NCI proportion of the exchange gain or loss on translation of the subsidiary financial statements. It does not, however, include any of the exchange gain or loss arising on the retranslation of goodwill.

### 2.8.6 Fair value of consideration

Part of the consideration for an acquisition may not pass to the acquiree's shareholders at the acquisition date but may be deferred until a later date.

Deferred consideration should be measured at its **fair value at the acquisition date**. The fair value depends on the form of the deferred consideration.

Where the deferred consideration is in the form of **equity shares**:

- its fair value should be measured at the acquisition date
- the deferred amount should be recognised as part of equity, under a separate heading such as 'shares to be issued'

Where the deferred consideration is payable in cash:

A **liability** should be recognised at the **PV** of the amount payable.



#### Worked example: Deferred consideration

The acquisition date for Winter plc's purchase of the whole of the share capital in Summer Ltd was 1 July 20X5. The consideration comprised 1,000,000 shares in Winter plc to be issued on 1 July 20X5,

£10 million in cash payable on 1 July 20X5, 200,000 shares in Winter plc to be issued on 1 January 20X6 and £5 million in cash payable on 1 July 20X6.

The market price of one Winter plc share was 450p on 1 July 20X5, 475p on 1 January 20X6 and 480p on 1 July 20X6. A discount rate of 7% was appropriate.

#### Requirement

What is the total consideration for this acquisition?

<b>Solution</b>	£m
1,000,000 shares issued on 1 July 20X5 at 450p	4.50
200,000 shares to be issued on 1 January 20X6 at 450p	0.90
Cash payable on 1 July 20X5	10.00
	<b>£m</b>
Cash payable on 1 July 20X6 - £5m/1.07	<u>4.67</u>
	<u>20.07</u>



#### Definition

**Contingent consideration:** is an obligation of the acquirer to transfer additional consideration to the former owners of the acquiree if specified future events occur or conditions are met.

The acquiree's shareholders may have a different view from the acquirer as to the value of the acquiree. They may have different views about the likely future profitability of the acquiree's business.

In such cases it is often agreed that additional consideration may become due, depending on how the future turns out. Such consideration is 'contingent' on those future events/conditions.

Contingent consideration agreements result in the acquirer being under a legal obligation at the acquisition date to transfer additional consideration, should the future turn out in specified ways. IFRS 3 requires contingent consideration to be recognised as part of the consideration transferred and measured at its fair value at the acquisition date.



### Worked example: Contingent consideration

On 1 January 20X7 A acquired 100% of the shares of B when the fair value of B's net assets was £25 million. The consideration was 4 million shares in A issued at 1 January 20X7 when their market value was £6 per share and a cash payment of £6 million on 1 January 20X9 if the cumulative profits of B exceeded a certain amount by that date. At 1 January 20X7 the probability of B hitting that earnings target was such that the fair value of the possible cash payment was £2 million.

At 31 December 20X7 the probability that B would exceed the required profit level had risen and the fair value of the contingent consideration was judged to be £4 million.

At 31 December 20X8 it was clear that B had exceeded the profit target and the whole amount would be payable.

#### Requirement

Show calculations of the amounts to be recognised in the statements of financial position and in profit or loss for the two years ended 31 December 20X8.

#### Solution

The contingent consideration should be recognised at the acquisition date. It should then be re-measured at fair value each year end until ultimate settlement of the amount. Changes in fair value should be recognised in profit or loss.

#### Statement of financial position at 31 December 20X7

	£'000
Non-current assets - goodwill	
Consideration transferred            - 4 million shares × £6	24,000
- contingent at fair value	2,000
	26,000
Net assets acquired	(25,000)
Goodwill	1,000
Non-current liabilities - contingent consideration	4,000

#### Profit or loss for year ended 31 December 20X7

##### Statement of financial position at 31 December 20X7

	£'000
Additional contingent consideration	2,000

##### Statement of financial position at 31 December 20X8

Non-current assets - goodwill (unchanged)	1,000
Current liabilities - contingent consideration	6,000
<b>Profit or loss for year ended 31 December 20X8</b>	
Additional contingent consideration	2,000

## 2.8.7 Goodwill on acquisition

IFRS 3 requires goodwill acquired in a business combination (or a gain on a bargain purchase) to be measured as:

	£
Consideration transferred: Fair value of assets given, liabilities assumed and equity instruments issued, including contingent amounts	X
NCI at the acquisition date	<u>X</u>
	X
Less total fair value of net assets of acquiree	<u>(X)</u>
Goodwill/(gain on a bargain purchase)	<u>X/(X)</u>

This calculation includes the NCI and is therefore calculated based on the whole net assets of the acquiree. Under IFRS 3 the acquirer is required to include a qualitative description of the factors that make up goodwill, such as expected synergies from combining operations and intangible assets that do not qualify for separate recognition.



### Worked example: Worked example - goodwill

Abbot Ltd acquires 60% of Bishop Ltd on 31 December 20X5 for £80,000. The statement of financial position of Bishop Ltd at this date is as follows.

	£
Freehold land (fair value £30,000)	20,000
Goodwill arising on the acquisition of a sole trader	5,000
Sundry assets (carrying amount = fair value)	130,000
	155,000
Share capital	20,000
Retained earnings	85,000
Equity	105,000
Liabilities	50,000
	155,000

#### Requirement

Calculate the goodwill acquired in the business combination with Bishop Ltd.

#### Solution

The goodwill acquired:

#### Group structure

Abbot Ltd



Bishop Ltd

#### Net assets of Bishop Ltd

## Year end = Acquisition date

	£	£
Share capital		20,000
Retained earnings	85,000	
Add fair value uplift (30,000 - 20,000)	10,000	
Less goodwill	(5,000)	
		90,000
		110,000
<b>Goodwill</b>		
		£
Consideration transferred		80,000
Non-controlling interest at acquisition (40% × 110,000 (W2))		44,000
Less FV of net assets at acquisition (W2)		(110,000)
Goodwill		14,000

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## 2.9 Accounting policies and pensions

### 2.9.1 Accounting policies

Accounting policies can have a significant impact on the valuation of acquisitions. They can either work to inflate or depress the share price. **Optimistic accounting policies, valuing assets generously, bringing forward revenue recognition and delaying provisions** may inflate the company position and share price. On the other hand, **accelerating expenses or making very conservative estimates** of future earnings may depress share prices. There may be agency issues with both approaches.

Directors who wish to retain their own jobs may attempt to boost earnings, and hence share prices to deter takeovers. Alternatively, directors who feel they can benefit if a takeover occurs may be tempted to depress a company's market valuation, even though shareholders may lose out as a result.

### 2.9.2 Pensions

In the chapter Strategic performance management, we raised the possibility that concerns over pension liabilities may impact on strategic decisions, and this includes acting as a deterrent to takeover. A pension parachute is a type of 'poison pill', preventing the acquiring firm in a hostile takeover from using surplus cash in the pension fund to finance the takeover. The arrangement ensures that the fund's assets remain the property of its participants.

A large deficit in a defined benefit pension fund can also be a deterrent in a merger or acquisition because of the risks involved. Under UK pension regulations, for example, employers operating schemes that have deficits must agree a plan with the scheme's trustees to pay off the deficit, generally by making extra payments. The requirement for three-yearly full valuations of pension schemes, taking into account new actuarial assumptions, can cause companies to reappraise their plans.

## 2.10 Due diligence

Due diligence should be carried out in two stages.

Preliminary due diligence should be conducted before an offer is made to acquire a target company. This will involve an investigation into the business on the basis of available information. An initial offer to acquire the target business will be made on the basis of this investigation.

If the board of the target company indicate a willingness to accept the offer, the two parties should sign heads of agreement, setting out the main terms of the acquisition, such as:

- what the purchaser has agreed to buy
- the purchase price and the form of the purchase consideration (for example cash and shares)
- preconditions that the buyer may insist on, such as a requirement that the target company's next half-yearly or annual accounts will show at least a stated amount of profit
- any warranties or indemnities that the sellers will provide

When heads of agreement have been signed, the purchaser should carry out a second stage of due diligence, which will be more detailed than the first. This may involve meeting with the target company's main customers or suppliers, studying the company's accounts for sales growth, profit margins and assets and liabilities. Due diligence may also include an employee audit, as well as legal due diligence (for example checking the legal ownership of certain assets, such as land and buildings and patents).

We covered due diligence in the context of acquisitions generally in the chapter Strategic choice. Here we focus on the financial and tax aspects.

Due diligence will attempt to achieve the following:

- Confirm the accuracy of the information and assumptions on which a bid is based
  - provide the bidder with an independent assessment and review of the target business
  - Identify and quantify areas of commercial and financial risk
  - Give assurance to providers of finance
  - place the bidder in a better position for determining the value of the target company
- The precise aims will, however, depend on the types of due diligence being carried out.

### 2.10.1 Financial due diligence

Financial due diligence is a review of the target company's financial **position**, financial **risk and projections**. It differs from a statutory audit in a number of ways:

- (a) Its nature, duties, powers and responsibilities are normally determined **by contract or financial regulation** rather than by statute.
- (b) Its purposes are **more specific** to an individual transaction and to particular user groups.
- (c) There is normally a specific focus on **risk and valuation**.
- (d) Its nature and scope is **more variable from transaction to transaction**, as circumstances dictate, than a statutory audit.
- (e) The information being reviewed is likely to be different and **more future orientated**.
- (f) The **timescale available is likely to be much tighter** than for most statutory audits.

The information which is subject to financial due diligence is likely to include the following:

- Financial statements
- Management accounts
- Projections
- Assumptions underlying projections

- Detailed operating data
- Working capital analysis
- Major contracts by product line
- Actual and potential liabilities
- Detailed asset registers with current sale value/replacement cost
- Debt/lease agreements
- Current/recent litigation
- property and other capital commitments

### 2.10.2 Tax due diligence

Information must be provided to allow the potential purchaser to form an assessment of the **tax risks and benefits** associated with the company to be acquired. Purchasers will wish to assess the robustness of tax assets, and gain comfort about the position in relation to potential liabilities (including a possible latent gain on disposal due to the low base cost).

### 2.10.3 Agreeing the final terms

Following detailed due diligence, some of the terms of the offer may be changed, and any such changes will have to be negotiated and agreed.

## 3 Unquoted companies and start-ups



### Section overview

While it is possible to value quoted companies given the availability of vast quantities of information, unquoted companies are more difficult to value.

- Shares are not quoted on the stock exchange, therefore the companies themselves have to be valued before the share price can be determined.
- Share price volatilities have to be determined before any share-based payments (such as share option schemes) can be valued.
- The size of the holding may affect the control of the company and this might have a significant effect on the valuation.
- Start-ups can be valued using the models we have previously described, although there may be problems related to the uncertainties surrounding forecast figures used.

### 3.1 Why value unquoted shares?

Unquoted shares are valued for all sorts of purposes, for example:

- o sell the company
- part of a divorce settlement
- or taxation purposes
- o raise capital from investors

The important thing to note is that as soon as you change the purpose of the valuation you will change the share price. Shares are valued on different bases for different purposes; there are many sources of information on which share values can be based.



### 3.2 How do we value unquoted shares?

The valuation of unquoted shares is not an exact science and there may be a range of possible values.

When trying to value an unquoted company's shares, one of the most frequent errors is to assume that this exercise can be conducted without taking into account the value of the entire enterprise. Sole reliance on such measures as the P/E ratio for comparable quoted companies can result in valuable information being omitted from the valuation process, leading to potential under- or overvaluation.

When unquoted shares are valued for tax purposes, the valuation method used tends to be – with a few exceptions – the estimated price that the shares would achieve if sold on the open market.

Various court decisions over the years have given guidance on how an imaginary market sale can be used to arrive at a value. For this purpose, the valuer should consider:

- the sustainable future reported earnings after tax
- the company's performance as shown in its financial statements, and any other information normally available to its shareholders
- the commercial and economic background at the valuation date
- the size of the shareholding and the shareholders' rights
- the company's dividend policy
- appropriate yields and P/E ratios
- the value of the company's assets
- gearing levels
- the existence of certain rights and obligations attached to preference shares, convertible bonds
- any other relevant factors

### 3.3 Valuing majority shareholdings

The valuation of a majority shareholding must reflect the extent to which a potential buyer of the shares can or cannot control – or influence – the company. There are many degrees of control which are usually determined by the voting power of a particular block of shares. These range from full control (including the power to liquidate the company) to a small or non-existent influence over the company's affairs.

Unless there are exceptional circumstances, if the degree of control is less than complete, the value of the shares will be less than a pro rata proportion of the overall value of the company.

In order to value a majority shareholding, consider the following:

- (a) The rights and prospects attached to the shareholding – for example, the right to appoint directors.
- (b) Whether restrictions apply to, for example, sale of shares or receipt of dividend.
- (c) Whether control is in excess of 75%, meaning that the articles of association can be changed by the holder. A 75% holding also gives the holder the right to wind up the company.
- (d) Whether minority shareholders have contractual rights that would be expensive for majority shareholders to buy out.

(e) Whether the minority shareholdings are concentrated on one individual or dispersed. When a majority shareholding is valued, there is a control premium attached to it, meaning that the overall value will be in excess of the pro rata value to the value of the company as a whole. The extent of the premium depends on the answers to the above factors. As a crude guidance, the following table gives you a starting point for consideration:

Shareholding	Discount on 100% company value
75% +	Nil to 5%
> 50% but < 75%	10-15%
50%	20-30%
	(but a much greater discount if another party holds the other 50%)

### 3.4 Valuation of minority shareholdings of unquoted companies

While there are few differences between the value of a majority holding in a private company and that of a quoted company, there can be major differences between the values of minority holdings. This depends very much on the nature of the unquoted company.

Several factors should be considered when valuing minority shareholdings in an unquoted company:

- - This may be the only difference between the quoted company being used for comparison purposes and the unquoted company.
- Private companies are often much smaller than quoted companies. Any size adjustment to valuations depends very much on specific circumstances. Although the growth prospects of an unquoted company may not be as attractive as those of a quoted company, smaller organisations operating in a niche market may be more dynamic and therefore the adjustment in valuation may be positive rather than negative.
- **of cash returns** - The marketability factor of unquoted companies is affected by the likelihood of minority shareholders receiving a future cash return, either in the form of dividends or due to the flotation of the company. Quoted companies' shareholders are more likely to receive cash returns by way of dividends or share buybacks. If there are little or no prospects of cash returns in the near future, there will be little or no value attached to minority shareholdings unless some significant influence can be exerted on the directors or other shareholders.

Rather than using DCF analysis and market comparability models for valuation purposes, it is more appropriate to value minority shareholdings of unquoted companies using the PV of anticipated dividend streams.

However, consideration should also be given to any contractual protection or rights pertaining to minority shareholdings (eg, through the Articles of Association or service contracts). Similarly, the question of which parties, and how many, hold the majority shares may be a key issue in valuing any tranche of minority shares. These circumstances would need to be considered on a case by case basis.



#### Professional skills focus: Applying judgement

Business valuations are not an exact science. You will therefore need to apply judgement when concluding on an appropriate value to use when acquiring a company.

## 3.5 Valuation of start-up businesses

Here we define a start-up business as an unquoted company that has not been in business for long. Start-ups may be attractive takeover propositions, not because of what they have achieved so far, but because of their future potential. The value of start-ups may lie in expectations of future revenue growth and profits, or in the value of some of the assets that it owns.

The valuation of **start-ups** presents a number of challenges for the methods we have considered so far, due to their unique characteristics which are summarised below:

- (a) Most start-ups typically have little or no track record. Their revenues may be growing, but from a very small starting point.
- (b) Because a start-up is earning relatively little revenue, it will probably be making losses and will also be cash flow negative.
- (c) It will not yet have established a strong customer base.
- (d) Its products may be insufficiently tested in the market. Its products may even still be under development, and not yet marketed at all. If so, its likely market acceptance and the volume of sales demand for the product will be unknown.
- (e) Its management team may be inexperienced in business.
- (f) Little may be known about the nature of competition, if the product is new.

### 3.5.1 Projecting economic performance

All valuation methods require reasonable projections to be made with regard to the key drivers of the business. The following steps should be undertaken with respect to the valuation of a high-growth start-up company.

#### Identifying the drivers

Any market-based approach or DCF analysis depends on the reasonableness of financial projections. Projections must be analysed in light of the market potential, resources of the business, the management team, financial characteristics of the guideline public companies, and other factors.

#### Period of projection

One characteristic of high-growth start-ups is that in order to survive they need to grow very quickly. Start-ups that do grow quickly usually have operating expenses and investment needs in excess of their revenues in the first years and experience losses until the growth starts to slow down (and the resource needs begin to stabilise). This means that long-term projections, all the way out to the time when the business has sustainable positive operating margins and cash flows, need to be prepared. These projections will depend on the assumptions made about growth. However, rarely is the forecast period less than seven years.

#### Forecasting growth

For most high-growth start-ups the proportion of profits retained will be high, as the company needs to achieve a high growth rate through investing in R&D, expansion of distribution and manufacturing capacity, human resource development (to attract new talent), and development of new markets, products or techniques.

### 3.5.2 Valuation methods

Once growth rates have been estimated, the next step is to make a valuation. A number of different valuation methods may be used.

### Asset-based method

The asset-based method may not be appropriate because the value of capital in terms of tangible assets may not be high. Most of the investment of a start-up is in people, marketing and/or intellectual rights that are treated as expenses rather than as capital.

### Market-based methods

The market approach to valuation also presents special problems for start-ups. This valuation process involves finding other companies, usually sold through private transactions, that are at a similar stage of development and that focus on existing or proposed products similar to those of the company being valued. Complicating factors include comparability problems, differences in fair market value from value paid by strategic acquirers, lack of disclosed information, and the fact that there are usually no earnings with which to calculate price to earnings ratios.

Instead of making a valuation using a P/E ratio multiple, it may be appropriate to value the company on a multiple of its current or expected annual sales revenue (a price to revenue ratio multiple).

### DCFs

A DCF method of valuation might be used, but only if the start-up company is expected to achieve positive cash flows in the near future, and if these cash flows can be estimated with reasonable confidence in their probable accuracy.

There is little point in making a DCF valuation when the cash flow estimates are uncertain and unreliable.

Using the DCF methodology, FCFs are first projected and then discounted to the present using a risk-adjusted cost of capital. For example, one could use the constant growth model which specifies that:

$$V = \frac{FCF}{r-g}$$

Where:  $r$  = required rate of return  
 $g$  = growth rate of earnings

Our discussion of the high-growth start-up indicates that the growth rates of revenues and costs may vary. Since  $FCF = \text{Revenue} - \text{Costs} = R - C$ , the value of the company will be given by:

$$V = \frac{R-C}{r-g}$$

Now assuming that the growth rate of revenues  $g_R$  is different from the growth rate of costs  $g_C$ :

$$V = \frac{R}{r-g_R} - \frac{C}{r-g_C}$$

### Entry cost valuation method

When an acquirer is seeking to enter a new sector of the market for the first time, it may consider that acquiring a start-up company will be a useful way of establishing its new business. Since a start-up has already occurred, it should be quicker to gain market entry by purchasing the start-up than by establishing a new business from scratch.

In these circumstances, a useful method of valuation might be to consider what it would cost to enter the market and establish a new business, and value the target start-up business on the basis of this entry cost. The entry costs for the target start-up might include:

- costs of raising the finance
- cost of assets acquired
- cost of product development
- costs of recruiting and training employees
- costs of building up the customer base

Having estimated this start-up cost, the acquirer should then consider any factors that would make it possible to establish a new business more cheaply, such as using better technology and locating operations in a less expensive area.

The entry cost valuation should then be based on the estimates of these cheaper alternatives, ie, the estimated entry costs incurred by the target start-up company should be reduced to allow for the cost-saving alternatives of starting the business from scratch.

### First Chicago method

The First Chicago method is a variation of an approach to the valuation of high-risk high-growth start-ups known as the Venture Capital Valuation Method. This method can be summarised as follows:

- (a) A would-be investor in a high-growth start-up business produces three sets of estimated future cash flows and returns from the investment. The three sets of returns are based on a best case scenario, a worst case scenario and a 'base case' scenario.
- (b) For each scenario, estimates of investment returns are made for a given number of years, at the end of which the investor makes an assumption about the exit route for his investment, and the valuation of the investment at the exit date.
- (c) The cash flows for each scenario are discounted to a PV, using a risk-adjusted discount rate.
- (d) A probability estimate is made for the three scenarios, for example 40% worst case, 40% base case and 20% best case.
- (e) A valuation is obtained by calculating the expected value of the PVs of the three scenarios.
- (f) The resulting valuation is compared with other known information about business valuations, to assess the valuation for realism.

### Standard industry methods of valuation

In some industries, it may be standard practice to value companies on a basis other than profits. For example, an estate agency (realtor) business may be valued on a multiple of outlets. A larger company of estate agents may offer to purchase a small company with 10 outlets, but making no profits, at a price of £20,000 per outlet. The buyer will be able to incorporate the acquired outlets into its operations and online services, and make profits through savings/synergy.

Similarly, a larger company may offer to buy a smaller competitor that is making no profits on the basis of an amount per regular customer.



### Worked example: Valuing a start-up

QuickLeg is an internet legal services provider which next year expects revenue of £100 million and costs of £50 million. The revenues of the firm are expected to rise by 21% every year but costs will remain at the same level. The required rate of return is assumed to be 22%.

#### Requirement

What is the value of QuickLeg?

## Solution

$$V = \frac{\pounds 100\text{m}}{0.22-0.21} - \frac{\pounds 500\text{m}}{0.22-0} = \pounds 7,727.27\text{m}$$

The above model seems to capture the phenomenon observed in many start-ups of high losses in the first year of operations with high values of the company.

A very important problem with the discounted flow approach is the sensitivity of the valuation model to the underlying assumptions. Changes in the growth rate induced by changes in demand, technology and management of other causes can have a dramatic effect on the value of the start-up. For example, suppose that the growth rate of revenues falls from 21% to 20%. The value of the company is now:

$$V = \frac{\pounds 100\text{m}}{0.22-0.20} - \frac{\pounds 500\text{m}}{0.22-0} = \pounds 2,727.27\text{m}$$

That is, the company has lost £5 billion.

Another problem with the DCF is that it cannot reflect managerial flexibilities and the strategic options to expand, delay, abandon or switch investments at various decision points. The best way of incorporating uncertainty into the DCF analysis for a new company, technology or product is to assign probabilities of success to each of the various possibilities.

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### 3.5.3 Probabilistic valuation methods

In a probabilistic cash flow model, a number of scenarios are constructed for the drivers of value and derive a value under each scenario. The next step is to assign probabilities to each scenario and arrive at a weighted average value. The procedure to be followed is akin to the Monte Carlo methodology.



#### Interactive question 6: Valuation methods

Black Raven Ltd is a prosperous private company whose owners are also the directors. The directors have decided to sell their business and have begun a search for organisations interested in its purchase. They have asked for your assessment of the price per ordinary share a purchaser might be expected to offer. Relevant information is as follows.

#### Most recent statement of financial position

	£'000	£'000	£'000
Non-current assets (carrying amounts)			
Land and buildings			800
Plant and equipment			450
Motor vehicles			55
Patents			<u>2</u>
			1,307
<b>Current assets</b>			
Inventory		250	
Receivables		125	
Cash		<u>8</u>	
		383	

**Non-current assets (carrying amounts) Current liabilities**

	£'000	£'000	£'000
Payables	180		
Taxation	<u>50</u>		
		<u>230</u>	
			<u>153</u>
			1,460

**Long-term liability**

Loan secured on property			<u>400</u>
			<u>1,060</u>
Share capital (300,000 ordinary shares of £1)			300
Reserves			<u>760</u>
			<u>1,060</u>

The profits after tax and interest but before dividends over the last five years have been as follows:

Year	£
1	90,000
2	80,000
3	105,000
4	90,000
5 (most recent)	100,000

The company's 5-year plan forecasts an after-tax profit of £100,000 for the next 12 months, with an increase of 4% a year over each of the next 4 years. The annual dividend has been £45,000 for the last 6 years. As part of their preparations to sell the company, the directors of Black Raven Ltd have had the non-current assets revalued by an independent expert, with the following results:

	£
Land and buildings	1,075,000
Plant and equipment	480,000
Motor vehicles	45,000

The gross dividend yields and P/E ratios of three quoted companies in the same industry as Black Raven Ltd over the last three years have been as follows:

	Albatross plc		Bullfinch plc		Crow plc	
	Div. yield %	P/E ratio	Div. yield %	P/E ratio	Div. yield %	P/E ratio
Recent year	12	8.5	11.0	9.0	13.0	10.0
Previous year	12	8.0	10.6	8.5	12.6	9.5
Three years ago	12	8.5	9.3	8.0	12.4	9.0
Average	12	8.33	10.3	8.5	12.7	9.5

Large companies in the industry apply an after-tax cost of equity of about 18% to acquisition proposals when the investment is not backed by tangible assets, as opposed to a rate of only 14% on the net tangible assets.

Your assessment of the net cash flows after interest and tax which would accrue to a purchasing company, allowing for the capital expenditure required after the acquisition to achieve the company's target five-year plan, is as follows.

	£
Year 1	120,000
Year 2	120,000
Year 3	140,000
Year 4	70,000
Year 5	120,000

### Requirement

Use the information provided to suggest alternative valuations which prospective purchasers might make.

See **Answer** at the end of this chapter.

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## 3.6 Bargain purchases



### Professional skills focus: Concluding, recommending and communicating

You are expected to be able to make evidence-based recommendations which can be justified by reference to supporting data and other information. A recommended bid value and method of payment must therefore be based on the information provided in the question.

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### Definition

**Bargain purchase:** The purchase of a company for an amount that is less than the fair value of the net assets acquired.

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Occasionally a business may be acquired for a price that is less than the fair value of the net assets acquired. This could happen when the acquired company is in serious financial difficulties and is facing the risk of insolvency.

It might be supposed that in such circumstances, the owners should seek to wind up their business and realise the business assets. However:

- The realisable value of the assets may be less than the fair value at which the assets would be valued in an ongoing business.
- It may be difficult to find willing buyers for the assets, especially within a short time.

In these circumstances the business owners may agree to accept an offer price that is lower than the fair value of the net assets of the business.

IFRS 3 states that when a bargain purchase occurs, the acquirer should recognise the difference between the fair value of the acquisition and the actual purchase price as a **gain in profit or loss on the acquisition date**.

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However, before recognising the gain the acquirer should reassess whether it has correctly identified:

- all the assets that have been acquired and the liabilities that have been assumed
- the NCI in the acquired business, if any
- the consideration transferred

If this reassessment indicates the need to adjust any of these amounts, the gain on the bargain purchase should be adjusted accordingly.

## 4 Valuation of debt



### Section overview

- The basic idea behind debt valuation is that the value is the PV of all future cash flows to the investor (that is, interest plus capital redemption) discounted at the debt investor's required rate of return.
- Different types of debt (irredeemable, redeemable and convertible) are valued in different ways.

### 4.1 Notes on debt calculations

- Debt is usually quoted in £100 nominal units, or blocks (euro loans are usually quoted in €1,000 blocks); always use £100 nominal values as the basis to your calculations unless told otherwise.
- Debt can be quoted in % or as a value, eg, 97% or £97. Both mean that £100 nominal value of debt is worth £97 market value.
- Interest on debt is stated as a percentage of nominal value. This is known as the coupon rate. It is not the same as the redemption yield on debt or the cost of debt.
- Sometimes people quote an interest yield, defined as coupon/market price, but this is only a crude approximation unless the debt is irredeemable and there is no tax effect.
- Always use ex-interest prices in any calculations, unless the debt is specifically described as cum interest.

### 4.2 Irredeemable debt

For irredeemable debentures or loan stock, where the company will go on paying interest every year in perpetuity without ever having to redeem the loan, the valuation formula (ignoring taxation) is:

$$P_0 = \frac{i}{r_d}$$

Where:  $P_0$  = the market price of the stock ex interest; that is, excluding any interest payment that might soon be due

$i$  = the annual interest payment on the stock

$r_d$  = the return required by the loan stock investors

Irredeemable (undated) debt, paying annual after-tax interest  $i(1 - T)$  in perpetuity, where  $P_0$  is the ex-interest value:

$$P_0 = \frac{i(1-T)}{k_d}$$

Where:  $k_d$  = the after-tax cost to the company In practice, irredeemable debt is uncommon.

### 4.3 Redeemable debt

The valuation of redeemable debt owned by investors depends on future expected receipts and the yield required by the investors in the debt. The market value is the discounted PV of future interest receivable, up to the year of redemption, **plus** the discounted PV of the redemption payment (ignoring tax).

Value of debt = (Interest earnings × Annuity factor) + (Redemption value × DCF factor)

Where the debt incurs interest at a variable rate, and if the variable rate payable is a market rate of interest, it can be assumed that the market value of the debt is its par value. For example, it is generally assumed that the market value of a variable rate bank loan is the face value/par value of the loan.

Discounting future income to obtain a market valuation is therefore required only for other types of debt, such as fixed interest debt and zero interest debt.



#### Worked example: Market value of debentures

Furry has in issue 12% debentures with par value £100,000 and redemption value £110,000 with interest payable quarterly. The redemption yield on the bonds is 8% annually and 2% quarterly. The debentures are redeemable on 30 June 20X4 and it is now 31 December 20X0.

#### Requirement

Calculate the market value of the debentures.

#### Solution

You need to use the redemption yield cost of debt as the discount rate, using the quarterly discount rate (8%/4).

To calculate the PV, the following variables need to be input to the PV function. The use of the PV function is covered in more detail in the chapter Spreadsheet formulae.

B5 =PV(B1,B2,B3,B4)		
	A	B
1	Rate of return required over the period	0.02
2	Nper = the number of periods	14
3	Pmt = amount (interest) paid in single period	3,000
4	Fval = future value (amount paid at maturity)	110,000
5	Present value (issue price)	-119,685

Market value is £119,685.



### Interactive question 7: Value of redeemable debt

A company has issued some 9% debentures, which are redeemable at par in 3 years' time. The most recent interest payment on the debentures has just been made. Investors now require an annual redemption yield of 10%.

#### Requirements

What will be the current market value of each £100 of debenture:

- (a) if interest is paid annually?
- (b) if interest is paid six-monthly?

See **Answer** at the end of this chapter.

## 4.4 Convertible debt

When convertible loan notes are traded on a stock market, the minimum market price will be the price of straight loan notes with the same coupon rate of interest. If the market value falls to this minimum, it follows that the market attaches no value to the conversion rights.

The actual market price of convertible loan notes will depend on:

- the price of straight debt
- the current conversion value
- the length of time before conversion may take place
- the market's expectation as to future equity returns and the associated risk

If the conversion value rises above the straight debt value then the price of convertible loan notes will normally reflect this increase.

$$\text{Conversion value} = P_0 (1 + g)^n R$$

- Where:  $P_0$  = the current ex-dividend ordinary share price  
 $g$  = the expected annual growth of the ordinary share price  
 $n$  = the number of years to conversion  
 $R$  = the number of shares received on conversion

The current market value of a convertible bond where conversion is expected is the sum of the PVs of the future interest payments and the PV of the bond's conversion value.



### Worked example: Convertible debt

What is the value of a 9% convertible bond if it can be converted in 5 years' time into 35 ordinary shares or redeemed at par on the same date? An investor's required return is 10% and the current market price of the underlying share is £2.50 which is expected to grow by 4% per annum.

#### Solution

$$\text{Conversion value} = P_0 (1 + g)^n R = 2.50 \times 1.04^5 \times 35 = \text{£}106.46$$

B5 =PV(B1,B2,B3,B4)		
	<b>A</b>	<b>B</b>
1	Rate of return required over the period	0.10
2	Nper = the number of periods	5
3	Pmt= the amount (of interest) paid in any singleperiod	9
4	Fval = the future value (the amount paid at maturity).	106.46
5	Present value (issue price)	-100.22

Current market value of convertible bond = £100.22

## 4.5 Floating rate debt

With floating rate debt, the coupon rate is reset at each payment date (or possibly even more regularly) to prevailing interest rates. The implication of this is that at a reset date the bond will be valued at par. In addition, the cash value of the next coupon has now been set. Though all subsequent coupons will still be reset at the next reset date if interest rates move, the next coupon will not be.

This resetting of the coupon at each payment date ensures that the price of floating rate debt is always close to par. Floating rate debt therefore safeguards the par value of the investment rather than showing great swings in value as interest rates fluctuate (as is demonstrated by normal bonds).

Coupon rates tend to be reset by reference to money market rates. As a result, pricing follows money market conventions, applying simple rates over periods less than one year.

To evaluate floating rate debt we have a choice of methods, specifically:

- first principles
- a more practical alternative

From first **principles**, floating rate debt can be evaluated using the relationship

$$P_0 = \frac{i_1}{(1 + k_d)} + \frac{i_2}{(1 + k_d)^2} + \frac{i_3}{(1 + k_d)^3} + \dots + \frac{i_n + R}{(1 + k_d)^n}$$

The difficulty with this approach is that the future coupon rates are not known at present.



### Worked example: Floating rate debt

The current interest rate is at 10% and is expected to remain at that level for the foreseeable future. A floating rate note (FRN) has just paid its most recent annual coupon, and future coupons have been reset to 10%.

#### Requirement

Calculate the current market value of the FRN.

#### Solution

$$P_0 = \frac{10}{1.10} + \frac{10}{1.10^2} + \frac{10}{1.10^3} + \dots + \frac{110}{1.10^n} = £100.00$$

A more flexible alternative is to imagine that the debt may be sold at the next reset date at its par value. Though it is not necessary that the holder intends to sell at this date, it is always an option that is open and hence can validly be used to determine the current price. Based on this idea, the market value can be estimated as follows.

$$P = \frac{\text{Next coupon} + \text{Par value}}{(1 + rc)}$$

Where:  $rc$  = rate for the period to the next coupon, ie,  $rc = r \times \text{Days}/365$  (assuming UK convention), so more generally:

$$P_0 = \frac{\text{Next coupon} + \text{Par value}}{1 + r \times \frac{\text{Days}}{365}}$$

Where: Days = time to the next coupon



### Worked example: Floating rate debt 2

Calculate the current market value of the above floating rate debt if interest rates stay at 10%, and if interest rates increase to 11% and are expected to remain at that level.

#### Solution

**Interest at 10%** - Price =  $10 + 100 \times 1.10 = \text{£}110.00$

**Interest at 11%** - In this situation, the next coupon in one year's time will remain at £10, its value determined at the last reset date. All further coupons will, however, be reset to £11 at the next date (assuming no further interest rate changes), giving rise to a par value at that time. The current market value is therefore

$$\text{Price} = \frac{10 + 100}{1.11} = \text{£}99.10$$

## 5. International Valuation Standards (IVS)

ICAB Members and Students are expected to know that International Valuation Standards (IVS) are applicable for valuation assignments as it is adopted by Bangladesh Bank, the Bangladesh Securities and Exchange Commission (BSEC) and the Financial Reporting Council (FRC).

### 5.1 About IVS

IVS are developed with the aim of serving as a professional benchmark for valuers around the world with the "objective to increase the confidence and trust of users of valuation services by establishing transparent and consistent valuation practices".

IVS consist of mandatory requirements that must be followed in order to state that a valuation was performed in compliance with IVS. IVS are focused on the whole valuation engagement (i.e. process), not just the valuation report.

IVS are principles-based multi-disciplinary standards; hence, they include requirements for multiple asset classes - tangible assets (such as plant & equipment and real property interests), business valuation, intangible assets and financial instruments. IVS requirements apply to external as well as internal valuation engagements.

## 5.2 Structure of IVS

This version of International Valuation Standards is published on 31 July 2021, with an effective date of 31 January 2022. The IVSC permits early adoption from the date of publication. References hereafter to IVS will be to the IVS 2021 publication. IVS include a glossary, framework and five general standards that apply to all valuation assignments, as well as eight asset standards that include requirements related to specific types of assets.

General Standards	Assets Standards
<ul style="list-style-type: none"><li>· <b>IVS 101</b> - Scope of Work</li><li>· <b>IVS 102</b> - Investigations and Compliance</li><li>· <b>IVS 103</b> - Reporting</li><li>· <b>IVS 104</b> - Bases of Value</li><li>· <b>IVS 105</b> - Valuation Approaches and Method</li></ul>	<ul style="list-style-type: none"><li>· <b>IVS 200</b> - Businesses and Business Interests</li><li>· <b>IVS 210</b> - Intangible Assets</li><li>· <b>IVS 220</b> - Non-Financial Liabilities</li><li>· <b>IVS 230</b> - Inventory</li><li>· <b>IVS 300</b> - Plant &amp; Equipment</li><li>· <b>IVS 400</b> - Real Property Interests</li><li>· <b>IVS 410</b> - Development Property</li><li>· <b>IVS 500</b> - Financial Instruments</li></ul>

A separate Handbook is published by The Institute of Chartered Accountants of Bangladesh (ICAB) with respect to International Valuation Standards (IVS). The purpose of this publication is to raise awareness and understanding of IVS among ICAB Members, Registered Students and Corporates. This publication provides a high level factual overview of the structure of the IVS and the content therein that is relevant to valuation.

# Summary

Tick off

There are numerous ways in which companies (or components of companies) can be valued, including asset-based and cash-based measures.

Different circumstances demand different valuation measures - there is no particular method that applies in all situations.

Unquoted companies have the problem of limited information being available - a combination of DCF analysis and market comparability measures may have to be employed for majority shareholdings.

Minority shareholdings in unquoted companies may have little value if there are no dividend payments forthcoming in the future.

Different types of debt (irredeemable, redeemable and convertible) are valued in different ways.

International Valuation Standards (IVS) are applicable for valuation assignments

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	Can you value a business using discounted free cash flows? (Topic 1)
2.	Can you identify and explain the due diligence procedures that should be performed to support a business valuation? (Topic 2)
3.	Is your knowledge of the corporate reporting implications of business combinations up to date? (Topic 2)
4.	Can you apply each of the valuation models covered in this chapter to a start-up business? (Topic 3)
5.	Can you value redeemable, convertible and floating rate debt? (Topic 4)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed to the next chapter.

Question	Learning benefit from attempting this question
2 Wilkinson	This is a good introductory question covering business valuations, it is a revision of what you would have covered in your Financial Management studies. Work through this question carefully before attempting exam standard questions.
3 Cub	This question covers EVA. Before attempting this question make sure you have covered section 1.6 of the chapter in detail including the worked example on EVA. Having a good layout for your calculations will help you tackle this question.
4 Cromer	This is a good question to practice the corporate reporting treatment of a decommissioning liability under IFRS 13 and IAS 37. Fair value measurements are popular in SBM&L questions Refer back to your corporate reporting notes if you need to.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development before you start the next chapter.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.



# Technical reference

## 1 IAS 33, *Earnings Per Share*

- The objective of IAS 33 is to prescribe the principles determining and presenting earnings per share (EPS) to facilitate performance comparisons between different entities in the same reporting period and between different reporting periods for the same entity. IAS 33 sets out how to calculate both basic EPS and diluted EPS. The calculation of basic EPS is based on the weighted average number of ordinary shares outstanding during the period, while diluted EPS also includes dilutive potential ordinary shares (such as options and convertible instruments) provided they meet certain criteria.

## 2 IFRS 13, *Fair Value Measurement*

- Defines fair value as the price that would be received to sell an asset or would be paid to transfer a liability in an orderly transaction between market participants at the measurement date. IFRS 13 defines fair value on the basis of an 'exit price' notion and uses a 'fair value hierarchy' which results in a market-based measurement rather than an entity-specific one.

## 3 IFRS 3, *Business Combinations*

- Outlines the accounting when an acquirer obtains control of a business through an acquisition. These business combinations are accounted for using the 'acquisition method' which generally requires the assets acquired, and the liabilities assumed, to be measured at their fair values at the acquisition date.

## 4 IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*

- Outlines the accounting for provisions (liabilities of uncertain timing or amount), contingent assets (possible assets) and contingent liabilities (possible obligations or present obligations which are not probable or which cannot be measured reliably). Provisions are measured at the best estimate of the expenditure required to settle the present obligation. The objective of IAS 37 is to ensure that financial statements provide sufficient information to enable users to understand the nature, timing and amount of any provisions, contingent liabilities and contingent assets, but it is also underpinned by the key principle that a provision should only be recognised when a genuine liability exists.

## 5 IAS 12, *Income Taxes*

- Outlines a method of accounting for income taxes which recognises both the current tax consequences of transactions and events, and the future tax consequences of the future recovery of the carrying amount of an entity's assets or the future settlement of its liabilities. Differences between the carrying amount and the tax base of assets and liabilities are recognised, with limited exceptions, as deferred tax liabilities or deferred tax assets.

## 6 IAS 19, *Employee Benefits*

- Outlines the accounting requirements for employee benefits, including short-term benefits (eg, wages and salaries; annual leave); post-employment benefits (eg, retirement benefits); and termination benefits. The standard requires that the cost of providing employee benefits should be recognised in the period in which the

benefit is earned by the employee, rather than when it is paid or payable. IAS 19 also outlines how each category of employee benefits is measured, and it provides detailed guidance about post-employment benefits.

**7 IFRS 2, Share-based Payment**

- The objective of IFRS 2 is to specify the financial reporting by an entity when it undertakes a share-based payment transaction. IFRS 2 requires an entity to recognise share-based payment transactions (such as shares granted and share options) in its financial statements. This includes transactions with employees or other parties, to be settled in cash, other assets, or equity instruments of the entity.

**8 IFRS 5, Non-current Assets Held for Sale and Discontinued Operations**

- Outlines the accounting required for non-current assets held for sale (or for distribution to owners). In general terms, assets (or disposal groups) held for sale are not depreciated, are measured at the lower of carrying amount and fair value less costs to sell, and are presented separately in the statement of financial position.

**9 IFRS 10, Consolidated Financial Statements**

- Outlines the requirements for the preparation and presentation of consolidated financial statements, with entities being required to consolidate other entities they control.

**10 IAS 16, Property, Plant and Equipment**

- Outlines the accounting treatment for most types of property, plant and equipment. The principal issues are the recognition of assets, the determination of their carrying amounts, and the depreciation charges and impairment losses to be recognised in relation to them.

# Self-test questions

Answer the following questions.

## 1 Profed

Profed provides a tuition service to professional students. This includes courses of lectures provided on their own premises and provision of home study material. Most of the lecturers are qualified professionals with many years' experience in both their profession and tuition. Study materials are written and word processed in-house, but sent to an external printing company.

The business was started 15 years ago and now employs around 40 full-time lecturers, 10 authors and 20 support staff. Freelance lecturers and authors are employed in times of peak demand.

The shareholders of Profed mainly comprise the original founders of the business who would now like to realise their investment. In order to arrive at an estimate of what they believe the business is worth, they have identified a long-established quoted company, City Tutors, which has a similar business, although it also publishes texts for external sale to universities, colleges and so on.

Summary financial statistics for the two companies for the most recent financial year are as follows:

	Profed	City Tutors
Issued shares (million)	4	10
NAVs (£m)	7.2	15
EPS (pence)	35	20
Dividend per share (pence)	20	18
Debt: equity ratio	1:7	1:65
Share price (pence)		362
Expected rate of growth in earnings/dividends	9% p.a.	7.5% p.a.

### Requirements

- 1.1 Compute a range of valuations for the business of Profed, using the information available and stating any assumptions made.
- 1.2 Comment on the strengths and weaknesses of the methods you used in (a) and their suitability for valuing Profed.

### Notes

- 1 The net assets of Profed are the net book values of tangible non-current assets plus net working capital. However:
  - A recent valuation of the buildings was £1.5 million above book value.
  - Inventory includes past editions of textbooks which have a realisable value of £100,000 below their cost.
  - Due to a dispute with one of their clients, an additional allowance for bad debts of £750,000 could prudently be made.
- 2 Growth rates should be assumed to be constant per annum; Profed's earnings growth rate estimate was provided by the marketing manager, based on expected growth in sales adjusted by normal profit margins. City Tutors' growth rates were gleaned from press reports.

- 3 Profed uses a discount rate of 15% to appraise its investments, and has done for many years.

## 2 Wilkinson plc

Wilkinson plc has identified Chris Limited as a potential acquisition target. It has approached you as its financial adviser to ask for assistance in valuing the company. You have obtained the following information about Chris Limited:

### Statement of changes in equity for the years ended 31 December

	20X5	20X6	20X7
	£'000	£'000	£'000
Profit after tax	280	260	410
Dividends	(150)	(160)	(185)
Retained profit	130	100	225

### Statement of financial position as at 31 December

	20X5	20X6	20X7
	£'000	£'000	£'000
Non-current assets	1,365	1,405	1,560
Working capital	810	870	940
	2,175	2,275	2,500
Share capital	100	100	100
Retained earnings	875	975	1,200
10% debentures 20Y2	1,200	1,200	1,200
	2,175	2,275	2,500

The non-current assets include an unused property which has a market value of £100,000. The debentures pay a semi-annual coupon and are redeemable at the end of 20Y2. The gross redemption yield on 20Y2 gilts paying a similar level of coupon is 11%.

The P/E ratio for the quoted company sector in which Chris Limited's activities fall is around 15 times and the sector's gross dividend yield is around 11%. The  $\beta$  of the sector is around 0.8 and the return on the market is around 21%.

### Requirement

Estimate the value of Chris Limited, using four different methods of valuation. Explain the rationale behind each valuation, when it would be useful and why each method gives a different value. Discuss the limitations of your analysis and what further information you would require to gain greater assurance on the valuations.

## 3 Cub

The following data relates to Cub.

### Profit or loss statement and dividend data

	20X1 \$m	20X2 \$m
Sales	995	1,180
Pre-tax accounting profit	204	258

	20X1 \$m	20X2 \$m
Taxation	49	62
Profit after tax	155	196
Dividends	50	60
Retained earnings	105	136

### Statement of financial position data

	20X1 \$m	20X2 \$m
Non-current assets	370	480
Net current assets	400	500
	770	980
Financed by:		
Shareholders' funds	595	720
Medium- and long-term bank loans	175	260
	770	980

This is taken after deducting the economic depreciation of the company's non-current assets.

### Other relevant information

- (1) Economic depreciation was \$95 million in 20X1 and \$105 million in 20X2.
- (2) Interest expenses were \$13 million in 20X1 and \$18 million in 20X2.
- (3) Other non-cash expenses were \$32 million in 20X1 and \$36 million in 20X2. (These should not be included in the EVA<sup>®</sup> calculation.)
- (4) The tax rate in 20X1 and 20X2 was 24%.
- (5) Cub had non-capitalised leases valued at \$35 million in each year 20X0-20X2.
- (6) The company's pre-tax cost of debt was estimated as 7% in 20X1 and 8% in 20X2.
- (7) The company's cost of equity was estimated as 14% in 20X1 and 16% in 20X2.
- (8) The target capital structure is 75% equity, 25% debt.
- (9) Statement of financial position capital employed at the end of 20X0 was \$695 million. There were no loans at that date.

### Requirement

Estimate the EVA<sup>®</sup> for Cub for 20X1 and 20X2, stating any assumptions that you make and discussing what the calculations demonstrate about the performance of the company.

## 4 Cromer

Cromer assumes a decommissioning liability in a business combination. It is legally required to dismantle a power station at the end of its useful life, which is estimated to be 20 years.

### Requirement

How would the decommissioning liability be measured under IFRS?

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

## Answer to Interactive question 1

$$1.1 k_e = 12\% + 2\% = 14\% (0.14) \quad D_0 = £250,000 \quad P_0 = D_0 / K_e = £250,000 / 0.14 = £1,785,714$$

$$1.2 P_0 = D_0(1+G) / k_e - g = £250,000(1.04) / 0.14 - 0.04 = £2,600,000$$

$$1.3 P_0 = £250,000(1.04) / (1.14) + £250,000(1.04)^2 / (1.14)^2 + £250,000(1.04)^3 \times 1/0.14 / (1.14)^2$$

$$= £228,070 + £208,064 + £1,545,618 = £1,981,752$$

## Answer to Interactive question 2

Suitable range of valuations for the shares of Mayfly:

- (1) **Earnings.** Average earnings over the last 5 years have been £67,200, and over the last 4 years £71,500. There might appear to be some growth prospects but estimates of future earnings are uncertain.

A low estimate of earnings in 20X5 would be, perhaps, £71,500.

A high estimate of earnings might be £75,000 or more. This solution will use the most recent earnings figure of £75,000 as the high estimate.

- (2) **P/E ratio.** A P/E ratio of 15 (Bumblebee's) would be much too high for Mayfly, because the growth of Mayfly's earnings is not as certain and Mayfly is an unquoted company.

On the other hand, Mayfly's expectations of earnings are probably better than those of Wasp. A suitable P/E ratio might be based on the industry's average of 10, but since Mayfly is an unquoted company and therefore riskier, a lower P/E ratio might be more appropriate; perhaps 60% to 70% of 10 = 6 or 7, or conceivably even as low as 50% of 10 = 5.

The valuation of Mayfly's shares might therefore range between: high P/E ratio and high earnings:  $7 \times £75,000 = £525,000$ ; and low P/E ratio and low earnings:  $5 \times £71,500 = £357,500$ .

## Answer to Interactive question 3

The maximum price is one which would make the return from the total investment exactly 15% over 5 years, so that the NPV at 15% would be 0.

B3 =NPV(0.15,C2:G2)							
	A	B	C	D	E	F	G
1	Year	0	1	2	3	4	5
2	Cash flows, no purchase consideration £	(100,000)	(80,000)	60,000	100,000	150,000	150,000
3	PV@15%T1-5	201,895					
4	Less investment @T0	(100,000)					
5	NPV	101,895					

The maximum purchase price is £101,895

#### Answer to Interactive question 4

First we calculate the PV of the FCFs over the five-year planning horizon.

B4 =NPV(0.12,B3:F3)						
	A	B	C	D	E	F
1		20X5	20X6	20X7	20X8	20X9
2		\$	\$	\$	\$	\$
3	FCF	1,080	1,437	1,901	2,502	30,585
4	PV at 12%	22,408				

Total PV = \$22,408	\$
PV @ 12% (see above)	22,408
Less debt	(2,000)
Equity value	20,408
Shares outstanding	100
Intrinsic value per share	\$204.08
Market share price	\$29.00
Price at which Tetrion shareholders will sell (\$29.00 × 120%)	\$34.80
Discount of selling price from value	83%

The shareholders of Atrium should buy Tetrion at the offered price.

#### Answer to Interactive question 5

Cost of ungeared equity =  $5\% + 0.80(8 - 5)\% = 7.4\%$

Base case NPV (ignoring the purchase cost of Peek) =  $\text{£}4\text{m}/0.074 = \text{£}54.05\text{m}$  Tax relief on interest Years 1-10 =  $\text{£}55\text{m} \times 6\% \times 21\% = \text{£}0.693\text{m}$

PV of tax relief discounted at risk-free cost of debt 5% =  $\text{£}0.693\text{m} \times 7.722 = \text{£}5.35\text{m}$

Financing costs =  $\text{£}1\text{m} - (\text{£}1\text{m} \times 21\% \times 0.952) = \text{say } \text{£}0.8\text{m}$

**Note:** It is assumed that the costs of the debt issue are allowable for tax purposes.

Ignoring the purchase cost	£m
Base case NPV	54.05
PV of debt financing benefits	5.35
PV of financing costs	(0.80)
APV	58.60

This suggests that a purchase price of £54 million would be just acceptable financially, with an APV of +£4.6 million after deducting the purchase cost. However, the directors of Main should try to negotiate a lower price if possible. They should also consider other factors, such as the risk and uncertainty in the estimated cash flows, before making a decision about whether or not to agree to the asking price.

## Answer to Interactive question 6

### Tutorial Note

This question provides comprehensive practice of valuation techniques. You need to make clear the basis of your calculations and the assumptions you are making (in (a) the assumption is that the purchaser will accept the valuation, in (b) that the last five years are an appropriate indicator and so on). Other important issues which this question raises include:

- valuation (if any) of intangible assets
- lack of likelihood that asset valuation basis would be used
- adjustment to P/E ratios used in calculations because company is unquoted

Do not take all the figures used in this answer as the only possibilities. You could for example have made adjustments to estimated earnings in (c) to allow for uncertainty, or used a different figure to 17% in (d).

### Earnings-basis valuations

If the purchaser believes that earnings over the last five years are an appropriate measure for valuation, we could take average earnings in these years, which were:

$$\frac{\pounds 465,000}{5} = \pounds 93,000$$

An appropriate P/E ratio for an earnings basis valuation might be the average of the three publicly quoted companies for the recent year. (A trend towards an increase in the P/E ratio over three years is assumed and, even though average earnings have been taken, the most recent year's P/E ratios are considered to be the only appropriate figures.)

	P/E ratio	
Albatross plc	8.5	
Bullfinch plc	9.0	
Crow plc	10.0	
Average	9.167	(i)
Reduce by about 40% to allow for unquoted status	5.5	(ii)

Share valuations on a past earnings basis are as follows:

	P/E ratio	Earnings £'000	Valuation £'000	Number of shares	Value per share
(1)	9.167	93	852.5	300,000	£2.84
(2)	5.5	93	511.5	300,000	£1.71

Because of the unquoted status of Black Raven Ltd, purchasers would probably apply a lower P/E ratio, and an offer of about £1.71 per share would be more likely than one of £2.84.

Future earnings might be used. Forecast earnings based on the company's five-year plan will be used.

	£
Expected earnings:	
	Year 1 100,000
	Year 2 104,000
	Year 3 108,160
	Year 4 112,486
	Year 5 116,986



£

Average 108,326.4 (say £108,000)

A share valuation on an expected earnings basis would be as follows:

P/E ratio	Average future earnings	Valuation	Value per share
5.5	£108,000	£594,000	£1.98

It is not clear whether the purchasing company would accept Black Raven's own estimates of earnings.

### A dividend yield basis of valuation with no growth

There seems to have been a general pattern of increase in dividend yields to shareholders in quoted companies. It is reasonable to suppose that investors in Black Raven would require at least the same yield.

An average yield for the recent year for the three quoted companies will be used. This is 12%. The only reliable dividend figure for Black Raven Ltd is £45,000 a year gross, in spite of the expected increase in future earnings. A yield basis valuation would therefore be:

$$\frac{£45,000}{12\%} = £375,000 \text{ or } £1.25 \text{ per share}$$

A purchasing company would, however, be more concerned with earnings than with dividends if it intended to buy the entire company, and an offer price of £1.25 should be considered too low. On the other hand, since Black Raven Ltd is an unquoted company, a higher yield than 12% might be expected.

### A dividend yield basis of valuation, with growth

Since earnings are expected to increase by 4% a year, it could be argued that a similar growth rate in dividends would be expected. We shall assume that the required yield is 17%, rather more than the 12% for quoted companies because Black Raven Ltd is unquoted. However, in the absence of information about the expected growth of dividends in the quoted companies, the choice of 12%, 17% or whatever is not much better than a guess.

$$P_0 = \frac{D_0(1+g)}{(k-g)} = \frac{45,000(1.04)}{(0.17-0.04)} = £360,000 \text{ or } £1.20 \text{ per share}$$

### The discounted value of future cash flows

The PV of cash inflows from an investment by a purchaser of Black Raven Ltd's shares would be discounted at either 18% or 14%, depending on the view taken of Black Raven Ltd's assets. Although the loan of £400,000 is secured on some of the company's property, there are enough assets against which there are no charges to assume that a purchaser would consider the investment to be backed by tangible assets.

The PV of the benefits from the investment would be as follows:

Year	Cash flow £'000
1	120
2	120
3	140
4	70
5	120
PV of cash flow @14%	<b>395.87</b>

A valuation per share of £1.32 might therefore be made. This basis of valuation is one which a purchasing company ought to consider. It might be argued that cash flows beyond Year 5 should be considered and a higher valuation could be appropriate, but a figure of less than £2 per share would be offered on a DCF valuation basis.

### Summary

Any of the preceding valuations might be made but, since share valuation is largely a subjective matter, many other prices might be offered. In view of the high asset values of the company, an asset stripping purchaser might come forward.

### Answer to Interactive question 7

(a) If interest is paid annually.

To calculate the market value, the following variables need to be input to the PV function:

B5 =PV(B1,B2,B3,B4)		
	A	B
1	Rate of return required over the period	0.10
2	Nper = the number of periods	3
3	Pmt= amount (interest) paid in single period	9
4	Fval = future value (amount paid at maturity)	100
5	Present value (issue price)	-97.51

Each £100 of debenture will have a market value of £97.51.

(b)

	A	B
1	Rate of return required over the period	0.05
2	Nper = the number of periods	6
3	Pmt= the amount (of interest) paid in any single period	4.50
4	Fval = the future value (the amount paid at maturity).	100
5	Present value (issue price)	-97.46

Each £100 of debenture will have a market value of £97.46.

If interest is paid six-monthly: Assumed six-monthly yield =  $10\%/2 = 5\%$

# Answers to Self-test questions

## 1 Profed

1.1 The information provided allows us to value Profed on three bases: net assets, P/E ratio and dividend valuation.

All three will be computed, even though their validity may be questioned in part (b) of the answer.

### Assets-based valuation

	£'000
Net assets at book value	7,200
Add increased valuation of buildings	1,500
Less decreased value of inventory and receivables	(850)
Net asset value of equity	7,850

Value per share = £1.96

### P/E ratio

	Profed	City Tutors
Issued shares (million)	4	10
Share price (pence)		362
Market value (£m)		36.2
Earnings per share (pence)	35	20
P/E ratio (share price , EPS)		18.1

The P/E for a similar quoted company is 18.1. This will take account of factors – such as marketability of shares, status of company, growth potential – that will differ from those for Profed. Profed's growth rate has been estimated as higher than that of City Tutors, possibly because it is a younger, developing company, although the basis for the estimate may be questionable.

All other things being equal, the P/E ratio for an unquoted company should be taken as between one-half to two-thirds of that of an equivalent quoted company. Being generous, in view of the possible higher growth prospects of Profed, we might estimate an appropriate P/E ratio of around 12, assuming Profed is to remain a private company.

This will value Profed at  $12 \times £0.35 = £4.20$  per share, a total valuation of £16.8 million.

### Dividend valuation model

The dividend valuation method gives the share price as:

Next year's dividend  
cost of equity–growth rate

which assumes dividends being paid into perpetuity, and growth at a constant rate. For Profed, next year's dividend =  $£0.20 \times 1.09 = £0.218$  per share

While we are given a discount rate of 15% as being traditionally used by the directors of Profed for investment appraisal, there appears to be no rational basis for this. We can

instead use the information for City Tutors to estimate a cost of equity for Profed. This is assuming the business risks are similar, and ignores the small difference in their gearing ratio.

Again, from the DVM, cost of equity =  $\frac{\text{Next year's dividend}}{\text{Market price}} + \text{Growth rate}$

For City Tutors, cost of equity =  $\frac{£0.18 \times 1.075}{£3.62} + 0.075 = 12.84\%$

Using, say, 13% as a cost of equity for Profed (it could be argued that this should be higher since Profed is unquoted so riskier than the quoted City Tutors):

Share price =  $\frac{£0.218}{0.13 - 0.09} = £5.45$

valuing the whole of the share capital at £21.8 million.

### Range for valuation

The three methods used have thus come up with a range of values of Profed as follows:

	Value per share	Total valuation
	£	£m
Net assets	1.96	7.9
P/E ratio	4.20	16.8
Dividend valuation	5.45	21.8

### Asset-based valuation

Valuing a company on the **basis of its asset values** alone is rarely appropriate if it is to be sold on a going concern basis. Exceptions would include property investment companies and investment trusts, the market values of the assets of which will bear a close relationship to their earning capacities.

Profed is typical of many service companies, a large part of whose value lies in the **skill, knowledge and reputation of its personnel**. This is not reflected in the net asset values, and renders this method quite inappropriate. A potential purchaser of Profed will generally value its intangible assets such as knowledge, expertise, customer/supplier relationships and brands more highly than those that can be measured in accounting terms.

Knowledge of the net asset value (NAV) of a company will, however, be important as a **floor value** for a company in financial difficulties or subject to a takeover bid. Shareholders will be reluctant to sell for less than the NAV even if future prospects are poor.

### P/E ratio valuation

The P/E ratio measures the **multiple of the current year's earnings** that is reflected in the **market price** of a share. It is thus a method that reflects the earnings potential of a company from a market point of view. Provided the marketing is efficient, it is likely to give the most meaningful basis for valuation.

The market price of a share at any point in time is determined by supply and demand forces prevalent during small transactions, and will be dependent on a lot of factors in addition to a realistic appraisal of future prospects.

A downturn in the market, and economic and political changes can all affect the day to day price of a share, and thus its prevailing P/E ratio. It is not known whether the share price given for City Tutors was taken on one particular day, or was some sort of average over a period. The latter would perhaps give a sounder basis from which to compute an applicable P/E ratio.

Even if the P/E ratio of City Tutors can be taken to be **indicative of its true worth**, using it as a basis to value a smaller, unquoted company in the same industry can be problematic.

The status and marketability of shares in a quoted company have tangible effects on value but these are difficult to measure.

The P/E ratio will also be affected by **growth prospects** – the higher the growth expected, the higher the ratio. The growth rate incorporated by the shareholders of City Tutors is probably based on a more rational approach than that used by Profed.

If the growth prospects of Profed, as perceived by the market, did not coincide with those of **Profed's management** it is difficult to see how the P/E ratio should be adjusted for relative levels of growth. However, the earnings yield method of valuation could be useful here.

In the valuation in (a) a crude adjustment has been made to City Tutors's P/E ratio to arrive at a ratio to value Profed's earnings. This can lead to a very inaccurate result if account has not been taken of all the differences involved.

### Dividend-based valuation

The dividend valuation model (DVM) is a **cash flow based approach**, which values the dividends that the shareholders expect to receive from the company by discounting them at their required rate of return. It is perhaps more appropriate for valuing a minority shareholding where the holder has no influence over the level of dividends to be paid than for valuing a whole company, where the total cash flows will be of greater relevance.

The practical problems with the DVM lie mainly in its **assumptions**. Even accepting that the required 'perfect capital market' assumptions may be satisfied to some extent, in reality, the formula used in (a) assumes constant growth rates and constant required rates of return in perpetuity.

Determination of an **appropriate cost of equity** is particularly difficult for an unquoted company, and the use of an 'equivalent' quoted company's data carries the same drawbacks as discussed above. Similar problems arise in estimating future growth rates, and the results from the model are highly sensitive to changes in both these inputs.

It is also highly dependent on the **current year's dividend** being a representative base from which to start.

The dividend valuation model valuation provided in (a) results in a higher valuation than that under the P/E ratio approach. Reasons for this may be as follows:

- The **share price** for City Tutors may be currently **depressed below its normal level**, resulting in an inappropriately low P/E ratio.
- The **adjustment** to get to an **appropriate P/E ratio** for Profed may have been too harsh, particularly in light of its apparently better growth prospects.
- The **cost of equity** used in the DVM was that of City Tutors. The validity of this will largely depend on the relative levels of risk of the two companies. Although they both operate the same type of business, the fact that City Tutors sells its material externally means it is perhaps less reliant on a fixed customer base.
- Even if business risks and gearing risk may be thought to be comparable, a prospective buyer of Profed may consider investment in a **younger, unquoted company** to carry **greater personal risk**. His required return may thus be higher than that envisaged in the DVM, reducing the valuation.

## 2 Wilkinson plc

### Earnings-based valuation P/E ratio

The earnings-based valuation would be based on applying the P/E ratio for similar quoted companies to Chris Limited's earnings.

$$15 \times \text{£}410,000 = \text{£}6,150,000$$

This value would be the approximate value of a quoted company in the sector. Research has indicated the acquisitions of private companies are typically priced at a discount of 30% to 40% to the quoted sector P/E. This discount probably reflects the lack of marketability of the private company shares compared to those of its quoted counterparts. Using a discount of 40%, the value of Chris Limited would be:

$$\text{£}6,150,000 \times 60\% = \text{£}3,690,000$$

This is the value of the earnings stream. On top of this, it should be possible to sell the unused property without affecting the earnings stream for around £100,000, giving a total valuation of £3,790,000.

### Limitations of the calculation

The sector P/E is an average for the sector. It is not clear whether Chris Limited is an average company or whether it is in a more or less attractive part of the sector. It may be better to identify specific companies in exactly the same class of business as Chris Limited.

The sector P/E reflects the expected growth in earnings in the sector. It may be that Chris Limited's expected growth rate is better or worse than the sector average, meaning that a different P/E ratio would be more appropriate.

The sector P/E reflects the risk of the sector in general, including business and gearing risk. If Chris Limited has a different level of gearing or is in a part of the sector where the business risk is slightly different, then a different P/E ratio would be appropriate.

The calculation has assumed that Wilkinson plc acquires a controlling interest and forces the sale of the unused property.

### When the calculation is useful

Use of earnings to value a company implies that the investor has control of the earnings and can dictate dividend policy, for example. It would therefore be suitable if Wilkinson plc is aiming to get control of the company.

### Dividend-based valuation - Dividend valuation model

In order to use the dividend valuation model, the cost of equity of the company must first be estimated. This can be done with the capital asset pricing model:  $k_e = r_f + \beta(r_m - r_f)$

Where:  $k_e$  = the company's cost of equity

$r_f$  = the risk-free rate (estimated as the yield on gilts)

$r_m$  = the return on the market

$$K_e = 11 + 0.8(21-11) = 19\%$$

The market value (MV) of the company is given by the formula  $MV = D_1 / (k_e - g)$  where  $D_1$  is the prospective dividend (estimated as  $D_0 \times \{1 + g\}$ ),  $k_e$  is the cost of equity and  $g$  is the expected growth rate in dividends. The value of  $g$  can be estimated from extrapolating the dividend growth of Chris Limited over the last few years and is 11% ( $\sqrt[4]{185/150} - 1$ ).

$$MV = 185 \times 1.11 / (0.19 - 0.11) = \text{£}2,567,000$$

Since this valuation relies on the b of quoted companies and would give the value of a quoted company's dividend stream, this value should be discounted.

$$£2,567,000 \times 60\% = £1,540,000$$

Adjusting for the value of the unused property, the value of the business would be around £1,640,000.

### Limitations of the calculation

As with the earnings estimate, use of the sector b implies that Chris Limited has comparable gearing and business risk to the sector average.

The assumption that past dividend growth of 11% will continue in the future may not be valid.

It has been assumed the company will dispose of the unused property even if Wilkinson plc only obtains a minority holding.

### When the calculation would be useful

A minority investor who only receives dividends from the company will find this most useful and therefore it may be relevant if Wilkinson plc only intends to take a minority stake.

### Dividend-based valuation - Dividend yield

$$185 \times \frac{1}{0.11} = 1,682$$

Discount for lack of marketability:

$$1,682 \times 60\% = 1,009,000$$

Including the proceeds from the assumed sale of the unused property, the valuation of Chris Limited would be **£1,109,000**.

### Limitations of the calculation

As with the above methods, it assumes that Chris Limited is similar to the sector in terms of gearing and business risk.

It has been assumed that the company will dispose of the unused property, even if Wilkinson plc does not acquire a controlling shareholding.

### When the calculation would be useful

As with the dividend valuation model, it is most useful for a minority investor who will only receive a dividend flow from the company.

### Asset-based valuation

#### Net realisable value of assets

The net book value of the company's assets is £2,500,000. To establish the value available to equity investors, the market value of the loan stock must be deducted. This will be the PV of the loan stock's future cash flows, discounted at the investors' required rate of return. The best indication of required returns is given by the details on gilts for the same maturity with the same coupon in the question. A risk premium must be added on to the yield on the gilts to compensate for the additional risk of Chris Limited, say 3%. The resultant annual yield (11% + 3% = 14%) needs to be altered to a semi-annual rate of return of 6.8% ( $\sqrt{1.14} - 1$ ) since the coupon is semi-annual.

**Note:** The precise calculation here using the square root is probably over the top and gives a spurious level of accuracy. A six-monthly factor of 7% would be just as good.

Time	Cash flow	Discount factor	PV
	£	6.8%	£
1-10	60,000	7.09	425,400
10	1,200,000	1/1.068 <sup>10</sup>	621,539
			1,046,939

The total value of the company's equity is therefore £2,500,000 - £1,047,000 = £1,453,000.

### Limitations of the calculation

The only data available is net book value, which may not represent realisable value due to potential revaluations, obsolescent inventories, costs of disposal, and so on.

The contents of each category of asset and liability are not known. For example, non-current assets may include intangibles which could not easily be sold at book value.

The value of intangibles such as brands and goodwill may not be included in the above valuation. The required yield on the loan stock has been estimated and the 14% may not be appropriate.

### When the calculation would be useful

Net realisable value assumes the company's assets can be sold off.

This will only be appropriate if Wilkinson plc acquires a 75% interest and can force a compulsory liquidation. Alternatively, the company must obtain at the very least 50% to be able to force the disposal of any surplus assets.

Replacement cost of assets may be appropriate to use for a purchaser who is considering starting up an equivalent business from scratch. The problem will be in identifying the cost of replacing intangible assets such as goodwill and brands.

### Reasons for differences between the valuations

The earnings-based valuation is based on an earnings figure that has grown dramatically in the final year. The very high earnings of £410,000 may not be representative and in subsequent years the earnings may fall back to a level similar to earlier years. Alternatively, if the earnings are going to grow from the current base, then the earnings-based valuation is likely to be the most appropriate of all the above.

The dividends of Chris Limited, by contrast, have grown at a reasonably constant rate over the three-year period regardless of earnings performance. Since the dividends have grown at a much slower rate than earnings, this explains the much lower valuations using dividend-based methods.

The dividend policy may give a clue as to the directors' expectations for future profitability and sustainable dividend growth. If this is the case, then the dividend-based methods are likely to give the most appropriate valuations.

The asset-based valuation is the lowest of the four figures. This is probably because the company derives its value not from its assets base but from its earnings stream and cash flows.

### Additional information required

- Market value of assets
- Existence and value of intangibles



- Analysis of profits between ordinary recurring items and exceptional one-off items, which may have distorted the profits in individual years
- Details of costs or income that may be avoided or lost if the company is acquired, such as very high directors' remuneration
- Details on growth prospects
- More specific details on the company's business, its business risk and gearing risk and similar information for closely comparable quoted companies
- The shareholding Wilkinson plc intends to buy
- The possibilities for synergies
- Cash flow details, to obtain a more fundamental cash-based valuation
- Details of any comparable deals executed in the recent past

### 3 Cub

#### Economic value added<sup>®</sup>

Economic value added<sup>®</sup> = Net operating profit after tax (NOPAT) - (Capital employed × Cost of capital)

#### NOPAT

NOPAT is arrived at after making a number of adjustments.

	20X1	20X2
	\$m	\$m
Profit after tax	155	196
Add non-cash expenses	32	36
Add interest after taxcharge (1 - 0.24)	9.9	13.7
NOPAT	196.9	245.7

#### Capital employed

Capital employed is on start of year figures

20X1 Capital employed	= Capital employed at end of 20X0 + Leases
	= 695 + 35
	= \$730m
20X2 Capital employed	= Book value of shareholders' funds + Bank loans + Leases
	= 595 + 175 + 35
	= \$805m

#### Weighted average cost of capital

20X1 cost of capital	= (0.75 × 14%) + (0.25 × (7% (1 - 0.24)))
	= 11.8%
20X2 cost of capital	= (0.75 × 16%) + (0.25 × (8% (1 - 0.24)))
	= 13.5%

### Economic value added<sup>®</sup>

20X1 EVA <sup>®</sup>	= 196.9 - (0.118 × 730)
	= \$110.8m
20X2 EVA <sup>®</sup>	= 245.7 - (0.135 × 805)
	= \$137.0m

On this measure, the company has created significant value in both 20X1 and 20X2 and appears to be on a rising trend.

## 4 Cromer

Because this is a business combination, Cromer must measure the liability at fair value in accordance with IFRS 13, *Fair Value Measurement*, rather than using the best estimate measurement required by IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*.

Cromer will use the expected present value technique to measure the fair value of the decommissioning liability. If Cromer were contractually committed to transfer its decommissioning liability to a market participant, it would conclude that a market participant would use all of the following inputs, probability weighted as appropriate, when estimating the price it would expect to receive.

- (1) Labour costs
- (2) Allocated overhead costs
- (3) The compensation that a market participant would generally receive for undertaking the activity, including profit on labour and overhead costs and the risk that the actual cash outflows might differ from those expected
- (4) The effect of inflation
- (5) The time value of money (risk-free rate)
- (6) Non-performance risk, including Cromer's own credit risk

As an example of how the probability adjustment might work, Cromer values labour costs on the basis of current marketplace wages adjusted for expected future wage increases. It determines that there is a 20% probability that the wage bill will be £15 million, a 30% probability that it will be £25 million and a 50% probability that it will be £20 million. Expected cash flows will then be (20% × £15)

+ (30% × £25m) + (50% × £20m) = £20.5 million. The probability assessments will be developed on the basis of Cromer's knowledge of the market and experience of fulfilling obligations of this type.

# Chapter 13

## Financial instruments and financial markets

### Introduction

Learning outcomes

Knowledge brought forward

Syllabus links and examination context

Syllabus links and examination context

Chapter study guidance

### Learning topics

- 1 Financial instruments - introduction
- 2 Raising equity
- 3 Equity markets
- 4 Fixed interest securities and bonds
- 5 Bond markets
- 6 Bond valuation and yields
- 7 Credit risk
- 8 Leasing
- 9 Derivatives
- 10 Derivative markets
- 11 Financial reporting and financial instruments

Summary

Further question practice

Technical reference

Self-test questions

Answers to Interactive questions

Answers to Self-test questions



# Introduction

## Learning outcomes

- Assess and explain the types of equity securities, and evaluate the implications for disclosure, presentation, recognition and measurement in financial statements
- Appraise and explain the characteristics of equity markets and the financial institutions operating in these markets
- Analyse and evaluate the cost of equity, portfolio theory and the use of appropriate asset pricing models, applying principles of financial economics
- Explain the types of fixed interest securities and evaluate the implications for disclosure, presentation, recognition and measurement in financial statements
- Appraise and explain the characteristics of bond markets and the financial institutions operating in these markets
- Appraise and evaluate the use of bonds/loans as a method of finance, and explain the implications of terms included in loan agreements in a given scenario (for example, covenants and guarantees) and explain the procedures by which monitoring and assurance can be provided in respect of such agreements
- Explain and appraise bond valuation techniques and assess flat and gross redemption yields
- Explain and appraise yield curves, sensitivity to yield and components of the yield
- Appraise and evaluate credit risk and credit spread
- Explain the types of derivative securities and evaluate the implications for disclosure, presentation, recognition and measurement in financial statements
- Assess and explain the characteristics of derivative markets and the financial institutions operating in these markets
- Appraise and evaluate the characteristics of forwards, futures, options, swaps and credit derivatives

## Knowledge brought forward

The chapter revises the main features of equity and debt finance, and then builds on your earlier knowledge of equity and debt finance and derivatives.

## Syllabus links and examination context

We shall look at the choice between different sources of finance at the start of the next chapter. You should not necessarily expect to have to choose between debt and equity. It may be that all the choices available are forms of debt, and you may well have to consider corporate reporting implications. The choice may also be influenced by the financial markets that the business is able to use.

The use of derivatives to hedge interest rate and foreign exchange risks is covered in the chapter Financial risk management. The chapter revises the main features of equity and debt finance, and then builds on your earlier knowledge of equity and debt finance and derivatives.

## Syllabus links and examination context

We shall look at the choice between different sources of finance at the start of the next chapter. You should not necessarily expect to have to choose between debt and equity. It may be that all the choices available are forms of debt, and you may well have to consider corporate reporting implications. The choice may also be influenced by the financial markets that the business is able to use. The use of derivatives to hedge interest rate and foreign exchange risks is covered in the chapter Financial risk management.

## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>Financial instruments - introduction</b> Without finance, businesses would not exist. Therefore, a finance professional must have detailed knowledge of the various ways in which different methods of financing can help individual organisations. There has been rapid international expansion in the use of financial instruments. As we will see in this chapter, these vary from straightforward, traditional instruments such as bonds and equities, through to derivative instruments.</p>	<p><b>Approach</b> In Chapter 1, we highlighted the linkage between business and financial strategy in relation to the questions of whether an entity has sufficient funds to support a proposed business strategy, or how can it raise the additional funds needed to support that strategy. In this chapter we now look at the different sources of finance available to entities. You should focus on the advantages and disadvantages of the different financing methods. It is worth taking time to make sure you are comfortable with the calculations in this chapter.</p> <p><b>Stop and think</b> If a business has surplus cash, should this cash always be its first-choice source of finance for a new project?</p>	<p>In the examination you may be required to discuss the strengths and weaknesses of different sources of finance and the risks relating to them.</p>	
2	<p><b>Raising equity</b> There are broadly three methods of raising equity: retentions, rights issues and new issues.</p>	<p><b>Approach</b> You can cover sections 2.1 and 2.3 quite quickly as this is revision from your Financial Management studies.</p>	<p>In the exam you may be required to correctly classify a financial instrument as debt or equity.</p>	

Topic	Practical significance	Study approach	Exam approach	Interactive questions
	Classification of financial instruments as debt or equity can have a significant effect on the financial statements. If a financial instrument is classified as equity, reported gearing will be lower than if it were classified as a financial liability.	Spend time on section 2.2 ensuring that you can distinguish between debt and equity in accordance with IAS 32, <i>Financial Instruments: Presentation</i> . <b>Stop and think</b> Why is it important to correctly classify a financial instrument as debt or equity?		
3	<b>Equity markets</b> The London Stock Exchange's Main Market is the world's most international market for the listing and trading of equity, debt and other securities. The Alternative Investment Market (AIM) and ICAP Securities and Derivatives Exchange (ISDX) are also available for smaller companies.	<b>Approach</b> Sections 3.6 and 3.7 on the factors affecting share price and the efficient market hypothesis are important. Make sure you work carefully through these two sections. <b>Stop and think</b> How has the increased use of automated trading platforms impacted on market efficiency?	In the examination you may be required to advise businesses of the features of different financial markets and which markets they should use.	
4	<b>Fixed interest securities and bonds</b> Bonds come in various forms, including redeemable, irredeemable, floating rate, zero coupon and convertible.	<b>Approach</b> The terminology in this section should be familiar to you from your earlier studies, but this section provides a worthwhile recap. You should focus on the advantages and disadvantages of the different types of bonds, aiming to gain awareness of the key features of each. <b>Stop and think</b> What are the main advantages to a borrower of using convertible bonds?	In the exam you may be required to suggest an appropriate type of bond to fund a new investment project.	<b>IQ1: Convertibles</b> This simple question will help with your understanding of the terms conversion value and conversion premium. <b>IQ2: Derecognition of financial assets</b> This question provides a good revision of your knowledge of IFRS 9.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
5	<p><b>Bond markets</b></p> <p>Large multinational firms with good credit ratings are able to access the international bond market. Smaller companies will have to use the less active domestic corporate bond market.</p>	<p><b>Approach</b></p> <p>This brief section covers the sterling domestic bond market and bond markets in other countries.</p> <p><b>Stop and think</b></p> <p>What are the advantages of issuing bonds on the international bond market?</p>	<p>In the exam you may be required to examine the impact on investment and financing decisions of developments in capital markets.</p>	
6	<p><b>Bond valuation and yields</b></p> <p>There is an inverse relationship between bond yields and bond prices. As interest rates rise, the price of bonds falls (and bond prices rise when yields fall). The yield that investors require from a bond is made up of a number of elements, including a risk-free return plus return to compensate for credit and default risk, liquidity and marketability risk, issue-specific risk and fiscal risk.</p>	<p><b>Approach</b></p> <p>Go through each of the worked examples carefully to practice calculating the price of a bond and its yield.</p> <p><b>Stop and think</b></p> <p>What factors impact on the required yield of a bond?</p>	<p>Exam questions may ask you to calculate and compare the yields of different bonds.</p>	
7	<p><b>Credit risk</b></p> <p>Credit risk is the risk for a lender that the borrower will default either on interest payments or on the repayment of principal on the due date, or on both.</p>	<p><b>Approach</b></p> <p>You can work through this brief section of the chapter quite quickly. Make sure you are familiar with the credit ratings noted in section 7.1.2</p> <p><b>Stop and think</b></p> <p>What two factors determine the credit risk of a bond?</p>	<p>Exam questions may require you to interpret the credit rating attached to bonds.</p>	

Topic	Practical significance	Study approach	Exam approach	Interactive questions
8	<p><b>Leasing</b> Leasing is a commonly used source of finance, especially for small or medium sized entities. It is a form of debt finance that can be very useful where capital is rationed. Rather than buying an asset outright, using either available cash resources or borrowed funds, a business may lease an asset.</p>	<p><b>Approach</b> The financial reporting implications of leasing are covered in more detail in section 11. This section focuses on the lease or buy decision. Go through the two worked examples carefully.</p> <p><b>Stop and think</b> What non-financial factors would a company need to consider when making the lease or buy decision?</p>	Exam questions may ask you to assess the option of leasing an asset rather than buying it outright. You may need to consider the financial and strategic or operational implications of leasing rather than buying an asset.	
9	<p><b>Derivatives</b> Derivatives are instruments based on (or derived from) underlying assets such as bonds, shares, indices, commodities, currencies and property. They enable investors to reduce risk or enhance returns on these investments. Derivatives include forwards, futures, options and swaps.</p>	<p><b>Approach</b> This section is key as an introduction to derivatives. There is lots of terminology and worked examples in this section so take your time working through each of them.</p> <p><b>Stop and think</b> Why would a company choose not to use derivatives?</p>	In the exam you may have to calculate the outcome from using derivatives to hedge risk. You may also need to discuss the advantages and disadvantages of using derivatives in the context of the scenario provided.	<p><b>IQ4: Black-Scholes formula</b> A simple question allowing you to practice the application of the Black-Scholes pricing model.</p>
10	<p><b>Derivative markets</b> Derivatives can only exist when the market for the underlying asset or item allows buyers and sellers to freely influence the market price.</p>	<p><b>Approach</b> Section 10 is relatively brief. The table at section 10.2 is a useful summary of the differences between OTC vs exchange traded markets.</p>	In the exam you may be required to consider the use of the derivatives market for a company's hedging strategy.	



Topic	Practical significance	Study approach	Exam approach	Interactive questions
	Those underlying markets include the FX markets for exchange rates and money markets for short-term interest rates.	<b>Stop and think</b> How have the advances in technology changed how the derivatives markets operate?		
11	<b>Financial reporting and financial instruments</b> The use of financial derivatives has implications for financial reporting and profitability. The three accounting standards that currently apply to financial instruments, including derivatives, are IAS 32, IFRS 9 and IFRS 7. IFRS 16 deals with accounting for leases.	<b>Approach</b> When going through this section remember that between 15–20% of the marks available in SBM&L could relate to financial reporting issues, so make sure that you are comfortable with the key elements of the financial reporting treatment of financial instruments. There are lots of numerical examples in this section so take time to work through each of them. <b>Stop and think</b> Is your corporate reporting knowledge of financial instruments up to date?	In the exam you may be required to discuss the financial reporting implications of proposed financing methods and describe the assurance work that may be required to support an application for new finance.	<b>IQ5: Derecognition of financial assets and liabilities</b> <b>IQ7: Lessee accounting</b> <b>IQ9: Sale and leaseback</b> <b>IQ10: Factoring with and without recourse</b> Each of these brief questions cover some of the key elements of the financial reporting treatment of financial instruments. Work through each of them carefully.

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 Financial instruments - introduction



## Section overview

- There has been rapid international expansion in the use of financial instruments. As we will see in this chapter, these vary from straightforward, traditional instruments such as bonds and equities, through to derivative instruments.
- Equity-based financial instruments represent ownership of an asset, while debt-based financial instruments represent a loan made by an investor to the owner of the asset

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Financial instruments are discussed in the sections which follow and may be divided into two types:

### Cash instruments

The value of such instruments is determined by the market, and includes equity shares (section 2), cash deposits, certificates of deposit and loans. They also include bonds in their various forms (section 4.1 - 4.10), warrants (section 4.11), commercial paper (section 4.12), medium term notes (section 4.13), repos (section 4.14) and Islamic bonds (section 4.15).

### Derivative instruments

The value of a derivative instrument is based on its underlying components, such as assets or interest rates. Derivatives may be either **exchange traded** (where there are standardised contracts, an active secondary market accessible to participants and guarantees against default via a clearing house) or contracts entered directly between counterparties **over the counter** (on the OTC market).

Derivatives which are OTC traded include forwards (section 9.1), forward rate agreements (section 9.2), swaps (section 9.8), credit derivatives (section 9.9) and CDOs (section 9.10). Exchange traded derivatives include futures (section 9.3) and options (section 9.4 - 9.7).

Some important definitions are set out below.



## Definitions

**Financial instrument:** Any contract that gives rise to both a financial asset of one entity and a financial liability or equity instrument of another entity.

**Derivative:** A financial instrument or other contract with all three of the following characteristics:

- (a) its value changes in response to the change in an underlying variable such as a specified interest rate, financial instrument price, commodity price or foreign exchange rate
  - (b) it requires no initial net investment, or only a small initial net investment
  - (c) it is settled at a future date
-

## 2 Raising equity



### Section overview

You will recall from earlier studies that there are various methods of issuing new equity, depending on whether the company is listed.



### Definition

**Equity:** represents the **ordinary shares** in the business. Equity shareholders are the owners of the business and through their voting rights exercise ultimate control. Equity shares have the rights to participate in the distribution of residual assets after any fixed claims from loan holders or preference shareholders have been satisfied.

### 2.1 Raising new equity

There are broadly three methods of raising equity:

Method	Real world use
<b>Retentions</b> , ie, retaining profits flows rather than paying them out as dividends (sometimes mistakenly called financing through retained profits - but profits are not cash flows)	By far and away the most important source of equity
<b>Rights issues</b> , ie, an issue of new shares to existing shareholders	The next most important source
<b>New issues</b> to the public, ie, an issue of new shares to new shareholders	The least important source of new equity

In addition, new shares may be issued as all or part of a payment for an acquisition and some new shares are issued by companies that operate share option schemes for employees.

#### 2.1.1 Retained earnings

The cash generated from profits earned by a business can either be paid out to shareholders in the form of dividends or reinvested in the business.

There is sometimes a misconception that because no new shares are being sold, using cash flows from retained earnings has no cost. There may be no issue costs but shareholders will still expect a return on the funds reinvested in the business.

Such retentions represent a very easy and important source of finance, particularly for young growing businesses where there may be a continual need for funds but where it is impractical to keep raising them using rights/new issues (and debt).

## 2.1.2 Rights issues



### Definition

**Rights issue:** is an issue of new shares for cash to existing shareholders in proportion to their existing holdings.

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Legally a rights issue must be offered to existing shareholders before a new issue to the public. Existing shareholders have rights of first refusal (pre-emption rights) on the new shares and can, by taking them up, maintain their existing percentage holding in the company. However, shareholders can, and often do, waive these rights by selling them to others. Shareholders can vote to rescind their pre-emption rights.

Companies need to consider the following factors when making rights issues:

- (a) **Issue costs** - These have been estimated at around 4% on £2 million raised but, as many of the costs are fixed, the percentage falls as the sum raised increases.
- (b) **Shareholder reactions** - Shareholders may react badly to firms continually making rights issues as they are forced either to take up their rights or sell them (doing nothing decreases their wealth). They may sell their shares in the company, driving down the market price.
- (c) **Control** - Unless large numbers of existing shareholders sell their rights to new shareholders there should be little impact in terms of control of the business by existing shareholders.
- (d) **Unlisted companies** - These often find rights issues difficult to use, because shareholders unable to raise sufficient funds to take up their rights may not have available the alternative of selling them if the firm's shares are not listed. This could mean that the firm is forced to use retentions or raise loans.

## 2.1.3 Issues in the market

These account for around 10% of new equity finance. When they occur they are often large in terms of the amount raised. They are often used at the time a firm obtains a listing and a quotation on the stock exchange, known as an initial public offering (IPO). An IPO is an offer to sell shares in a company to the public for the first time. The shares may be existing shares owned by the founders of the business who wish to realise profits from their investment, or new shares issued to raise additional capital to support growth, or a combination of both. The company is normally advised on its IPO by an investment bank.



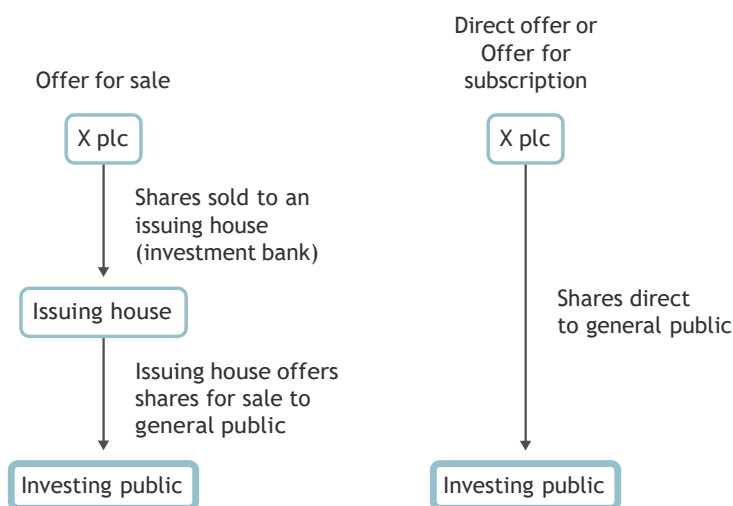
### Definition

**Initial public offering (IPO):** An initial public offering (IPO) is an offer to sell shares in a company to the public for the first time.

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Issues in the market are also popular when a firm wants to raise a very large amount and therefore needs a high-profile issue.

There are two methods of making a public offer, and they are best illustrated diagrammatically: Figure 13.1: Methods of making a public offer



In practice the offer for sale is far more common; in either method the issue is likely to be underwritten. There is no restriction on the amount of capital raised by this method.

## 2.2 Accounting: recognition of equity

You will remember the definition of an equity instrument from your earlier financial reporting studies.



### Definition

**An equity instrument:** is any contract that evidences a residual interest in the assets of an entity after deducting all its liabilities.

An instrument is an equity instrument if and only if:

- (a) The instrument includes no contractual obligation to:
  - deliver cash or another financial asset to an entity; or
  - exchange financial assets or financial liabilities with another entity under conditions that are potentially unfavourable to the entity.
- (b) If the instrument will or may be settled in the issuer's own equity instruments, it is:
  - A non-derivative that includes no contractual obligation for the issuer to deliver a variable number of its own equity instruments
  - A derivative that will be settled only by the issuer exchanging a fixed amount of cash or another financial asset for a fixed number of its own equity instruments

### 2.2.1 Classification as equity

Under IAS 32, *Financial Instruments: Presentation*, whether a financial instrument is classified as an equity instrument should be in accordance with the substance of the contractual terms and not with factors outside the terms. Terms may include whether the instruments are redeemable, whether the returns are mandatory or discretionary and whether they contain features such as put or call options that require the issuer to settle the instrument in cash or other financial assets.

The critical feature therefore in contractual terms is whether there is an obligation to deliver cash or another financial asset, or to exchange a financial asset or financial liability on

potentially unfavourable terms. If the issuer does not have an unconditional right to avoid delivery of cash or other financial assets, then the instrument is a liability.

The definition of residual interest is not confined to a proportionate interest ranking equally with all other interests; it may also be an interest in preference shares.

### 2.2.2 Debt/equity distinction in more detail

In practice, the debt/equity distinction may not be clear cut. Classification of financial instruments as debt or equity can have a significant effect on the financial statements. Guidance is provided in IAS 32, *Financial Instruments: Presentation* (and other standards for items outside IAS 32's scope), but there are sometimes areas where it is difficult to determine whether a transaction is debt or equity.

A contract is not an equity instrument solely because it may result in the receipt or delivery of the entity's own equity instruments. It is necessary to consider whether the settlement results in receipt or delivery of variable or fixed number of the entity's own equity instruments.

If the contract results in delivery of variable number of equity instruments, the fair value of the equity instruments equals to the amount of the fixed contractual right or obligation. Such a contract does not evidence a residual interest in the entity's assets after deducting all of its liabilities.

The following contracts require delivery of the entity's own equity instruments but are **classified as financial liability**:

- a contract to deliver as many of the entity's own equity instruments as are equal in value to £6,000
- a contract to deliver as many of the entity's own equity instruments as are equal in value to 200 ounces of gold

#### Contingent settlement provisions

A financial instrument may require the entity to deliver cash or another financial asset in the event of **occurrence or non-occurrence of uncertain future events** that are beyond the control of both the issuer and holder of the instrument. These are known **as contingent settlement provisions** and could relate to changes in stock market index, consumer price index, interest rate, issuer's future profits or revenues. Such instruments are classified as financial liability. This is because the issuer **does not have an unconditional right to avoid** delivering cash or another financial asset.

The financial instrument would be an equity instrument if it has equity-like features, for example, obligation arises only in the event of liquidation of the issuer.

### 2.2.3 Practical implications

The classification of financial instruments as debt versus equity is important as the presentation of the two items and associated financial effects are very different.

If a financial instrument is classified as a financial liability (debt) it will be reported within current or non-current liabilities. Non-current liabilities are relevant in determining an entity's leverage, or gearing, ie, the proportion of debt finance versus equity finance of a business, and therefore risk to ordinary equity holders.

Distributions relating to instruments classified as financial liabilities are classified as finance cost, having an impact on reported profitability.

If a financial instrument is classified as equity, reported gearing will be lower than if it were classified as a financial liability. However, classification as equity is sometimes viewed negatively as it can be viewed as a dilution of existing equity interests.

Distributions on instruments classified as equity are charged to equity and therefore do not affect reported profit.

It is important to note that it is not just the presentation of an arrangement that determines the underlying gearing of a business that an analyst will use to assess the business's risk, but the substance of the arrangement. Analysts often make their own adjustments to financial statements where they believe that the information reported under IFRSs does not show the underlying economic reality. IAS 32, *Financial Instruments: Presentation* strives to follow a substance-based approach to give the most realistic presentation of items that are in substance debt or equity, avoiding the need for analysts to make adjustments.

Classification of instruments can also have financial implications for businesses. For example, debt covenants on loans from financial institutions often contain clauses that reported gearing cannot exceed a stated figure, with penalties or call-in clauses if it does.

Companies with high gearing may also find it harder to get financing or financing may be at a higher interest rate.

High gearing is particularly unpopular in the current economic climate and there have been high profile cases of companies that have been pressed to sell off parts of their business to reduce their 'debt mountains', eg, Telefónica SA, the Spanish telecoms provider, selling O<sub>2</sub> Ireland to Hutchison Whampoa (the owner of the '3' telephone network).

Consider the following examples.



### Worked example: Debt or equity?

- 1 Acquittie issued 40 million non-redeemable £1 preference shares at par value. Under the terms attaching to the preference shares, a dividend is payable on the preference shares only if Acquittie also pays a dividend on its ordinary shares relating to the same period.
- 2 Acquittie entered into a contract with a supplier to buy a significant item of equipment. Under the terms of the agreement the supplier will receive ordinary shares with an equivalent value of £5 million one year after the equipment is delivered.
- 3 The directors of Acquittie, on becoming directors, are required to invest a fixed agreed sum of money in a special class of £1 ordinary shares that only directors hold. Dividend payments on the shares are discretionary and are ratified at the Annual General Meeting of the company. When a director's service contract expires, Acquittie is required to repurchase the shares at their nominal value.

#### Solution

- 1 IAS 32 requires a financial instrument to be classified as a liability if there is a **contractual obligation** to deliver cash or another financial asset to another entity.

In the case of the preference shares, as they are **non-redeemable**, there is **no obligation to repay the principal**.

In the case of the **dividends**, because of the condition that preference dividends will only be paid if ordinary dividends are paid in relation to the same period, the **preference shareholder has no contractual right** to a dividend. Instead, the distributions to holders of the preference shares are at the discretion of the issuer as **Acquittie can choose** whether or not to pay an ordinary dividend and therefore a preference dividend. Therefore, there is **no contractual obligation** in relation to the dividend.

As there is no contractual obligation in relation to either the dividends or principal, the **definition of a financial liability has not been met** and the preference shares should be treated as **equity** and initially recorded at **fair value** ie, their par value of £40 million.

The treatment of **dividends** should be consistent with the classification of the shares and should therefore be charged directly to **retained earnings**.

- 2 The price of the equipment is fixed at £5 million one year after delivery. In terms of recognition and measurement of the equipment, the £5 million price would be discounted back one year to its present value.

The company is paying for the equipment by issuing shares. However, this is **outside the scope of IFRS 2, Share-based Payment** because the payment is not dependent on the value of the shares, it is fixed at £5 million.

This is an example of a contract that 'will or may be settled in an entity's own equity instruments and is a non-derivative for which the entity is or may be obliged to deliver a **variable** number of the entity's own equity instruments', ie, a financial liability.

It is the number of shares rather than the amount paid that will vary, depending on share price. Therefore it should be classed as a financial **liability** and initially measured at the **present value** of the £5 million.

Subsequently, as it is not measured at fair value through profit or loss (as it is not held for short-term profit-taking or a derivative), it should be measured at **amortised cost**.

As a result, **interest** will be applied to the discounted amount over the period until payment and recognised in **profit or loss** with a corresponding increase in the financial liability.

- 3 Most ordinary shares are treated as equity as they do not contain a contractual obligation to deliver cash.

However, in the case of the directors' shares, a **contractual obligation to deliver cash exists** on a specific date as the shares are **redeemable** at the end of the service contract.

The redemption is **not discretionary**, and Acquittie has no right to avoid it. The mandatory nature of the repayment makes this capital a financial liability. The financial liability will initially be recognised at its fair value, ie, the present value of the payment at the end of the service contract. It will be subsequently measured at amortised cost and effective interest will be applied over the period of the service contract.

Dividend payments on the shares are **discretionary** as they must be ratified at the Annual General Meeting. Therefore, no liability should be recognised for any dividend until it is ratified. When recognised, the classification of the **dividend** should be consistent with the classification of the shares and therefore any dividends are classified as a finance cost rather than as a deduction from retained earnings.

#### 2.2.4 Interest, dividends, losses and gains

Again this is a summary of what you've studied before.

Interest, dividends, losses and gains arising in relation to a financial instrument that is classified as a financial liability should be recognised in profit or loss for the relevant period.

Distributions, such as dividends, paid to holders of a financial instrument classified as equity should be charged directly against equity (as part of the movement on retained earnings in the statement of changes in equity).

For compound instruments such as convertible bonds, the annual interest expense recognised in profit or loss should be calculated by reference to the interest rate used in the initial measurement of the liability component.



## 2.3 Cost of equity and portfolio theory

This section provides a brief revision of portfolio theory and the cost of equity. The cost of equity is the size of returns that investors expect to receive on their equity shares, measured as an annual percentage amount on the value of their investment.

Decisions by investors to buy or sell investments are based on an assessment of expected returns and risk. Risk is the possibility that actual returns could be higher or lower than expected, and risk can be measured statistically from historical data as the standard deviation of returns. A higher standard deviation around the mean expected return indicates higher volatility in returns and so greater investment risk.

Risk can be divided into two categories:

- (a) **Systematic risk** is variability in returns that is caused by general market factors, such as changes in economic conditions. Systematic risk is a feature of the stock market as a whole; when the market as a whole suffers a fall in returns, the expected returns on all companies' shares in the market also fall. Similarly, expected returns for all companies tend to rise when market returns as a whole increase.
- (b) **Unsystematic risk or diversifiable risk** is risk that is unique to individual companies. It represents variations in returns that are independent of market returns generally, for example due to changes in the perceived future profitability of a company.

Portfolio theory is based on the view that investors with well-diversified portfolios can ignore diversifiable risk because, by holding shares in a fairly large number of different companies, the diversifiable risk with different companies will tend to cancel each other out. Some companies will provide unexpected high returns and others will disappoint with unexpected low returns, due to factors that are unique to those companies.

Diversifiable risk can be 'diversified away' by having a sufficiently large portfolio of shares in different companies. If this is the case, systematic risk should be the only aspect of risk that concerns these investors. Investors should decide on the balance between risk and return that satisfies their investment preferences: do they want higher returns by accepting higher risks; or lower returns and lower risks?

### 2.3.1 Risks and returns in a portfolio

Investors in market securities (shares and corporate bonds) must accept that there will be some volatility in the returns they receive, due to systematic risk. If they invest in a portfolio of shares and other securities that represents the make-up of the stock market as a whole, they accept the average level of systematic risk in the market (the market risk).

They could choose to invest in companies with higher systematic risk, or in companies with lower systematic risk. Whatever they choose to do, their expected returns (based on systematic risk only and ignoring diversifiable risk) will vary up or down with market returns, by a larger or smaller amount than returns for the market as a whole.

Investors can also invest in risk-free securities. These are securities whose systematic risk is 0. The expected returns are predictable and do not change with changes in stock market returns. Risk-free returns can be defined as the return from government bonds (or other government securities) issued by a government with a high credit rating and in its domestic currency.

An investor can therefore seek to create a portfolio that meets their requirement for risk and return by:

- (a) creating an investment portfolio that has a suitable mix of shares representing the stock market as a whole and risk-free securities; or

- (b) creating a portfolio containing shares whose systematic risk is above or below the market average.

Investors will expect a return (ignoring diversifiable risk) that is the best obtainable for the amount of investment risk that they are prepared to accept.

### 2.3.2 Beta factors

Systematic risk can be measured by beta factors. When average stock market returns change, up or down, the beta factor of an individual security (including risk-free securities) is a measure of the expected amount by which the expected returns on that security will change.

- (a) The beta factor for the market as a whole is 1.0, meaning for example that if expected market returns go up by 1% (100 basis points) due to improving economic conditions, the change in expected market returns will be  $+ 1\% \times 1.0 = 1\%$ .
- (b) The beta factor for a risk-free security is 0, which means that if there is a change in the expected market returns, there will be no change in the expected returns from the risk-free security.
- (c) The systematic risk for a company's shares may be higher than the systematic risk for the market as a whole, so that its beta factor is higher than 1.0. For example, if a company's shares have a beta factor of 1.5 and expected market returns rise by 1% (100 basis points), the expected returns from the company's shares will increase by  $+ 1\% \times 1.5 = 1.5\%$ .
- (d) Similarly, the systematic risk for a company's shares may be lower than the systematic risk for the market as a whole, so that its beta factor is higher than 0 but lower than 1.0. For example, if a company's shares have a beta factor of 0.8 and expected market returns rise by 1% (100 basis points), the expected returns from the company's shares will increase by  $+ 1\% \times 0.8 = 0.8\%$ .

Beta factors can be used to calculate the expected returns on a company's equity shares (ignoring diversifiable risk) using the capital asset pricing model (CAPM).

$$k_e = r_f + \beta_e (r_m - r_f)$$

Where:  $k_e$  = cost of equity capital

$r_f$  = risk free rate of return

$r_m$  = the return from the market as a whole

$\beta_e$  = the beta factor of the individual security

The CAPM is discussed in more detail in the chapter Financial structure and financial reconstruction.

## 3 Equity markets



### Section overview

The London Stock Exchange's Main Market is the world's most international market for the listing and trading of equity, debt and other securities with AIM and ISDX also available for smaller companies.

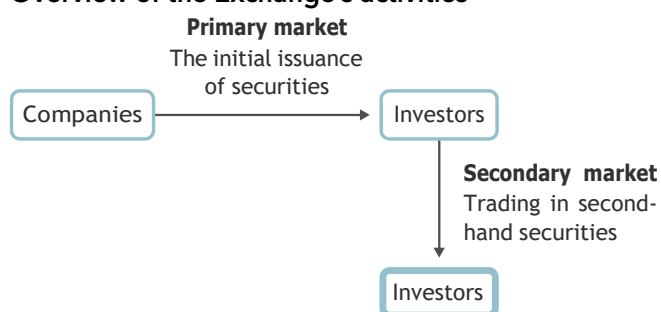
## 3.1 London Stock Exchange

The **London Stock Exchange** (LSE) is, above all else, a business. Its primary objective is to establish and run a marketplace in securities. In any economy there are savers and borrowers. The exchange acts as a place in which they can meet.

Initially, the companies (the borrowers) issue shares to the investing public (the savers). This is known as the **primary market**. The main role of the LSE's primary market is to enable a company to issue shares. Investors would not be willing to invest their money unless they could see some way of releasing it in the future.

Consequently, the exchange must also offer a **secondary market** trading in secondhand shares; this allows the investor to convert the shares into cash.

### Overview of the Exchange's activities



Companies whose shares are traded on the LSE are generally known as **quoted companies**. Listed shares are those which have been admitted to the Official List by the **UK Listing Authority** (UKLA) (the title used by the Financial Conduct Authority in this area). Joining the Main Market of the LSE involves a two-stage process:

- The UKLA is responsible for the approval of prospectuses and the admission of companies to the Official List.
- The LSE is responsible for the admission to trading of companies to the Main Market.

### 3.1.1 Primary market

The primary market is the market for the issue of new securities. It is important to ensure that the primary market is selective. A poor-quality primary market will undermine the liquidity of the secondary market. Companies wishing to issue shares often find it useful to hire the services of an issuing house or sponsor (usually these are services available from the investment banks) which will guide them through the process of preparing for the new issue and advertising the fact to potential new investors.

### 3.1.2 Secondary market

The secondary market (markets in secondhand securities) exists to enable those investors who purchased investments to realise their investments into liquid cash.

In order to ensure the stability of the secondary market, the exchange must establish strong controls over the companies that are allowed onto the market. Equally, the exchange must establish rules concerning the activities of brokers in the secondary market in order to preserve the reputation of the market. However, the LSE has itself a number of rules concerning the restriction on the investments in which a member firm can deal. These rules are designed to complement the UKLA rules.

Most investors who buy or sell shares in a secondary market want a liquid market, in which there is always a number of other investors willing to buy or sell the shares. A liquid market should mean that a buyer or seller will always be able to get a fair price for the shares, and market prices will not be distorted by major share transactions (such as the sale of a large quantity of shares in a company by an investor) or by a temporary lack of willing buyers or sellers.

Although secondary market trading is carried out on the stock exchange because it can provide a liquid market, a significant amount of trading in shares occurs elsewhere. Some institutional investors want to enjoy confidentiality about their share dealing and to avoid reporting requirements for large transactions on the stock exchange. Some banks therefore operate their own private share dealing services for off-market transactions.

### 3.1.3 Role of stock exchange member firms

All member firms of an exchange are **broker-dealers**. Broker-dealers have **dual capacity**, giving them the choice to either act as **agents** on behalf of customers, or to deal for themselves as **principals**, dealing directly with customers.

Some broker-dealers can elect to take on board an additional level of responsibility through one of the following roles.

<b>Market makers</b>	Market makers are the focus of market activity and their obligation is to ensure that there is always a two-way price in the securities in which they are registered.
<b>Inter-dealer brokers</b>	Inter-dealer brokers (IDBs) provide market makers with an anonymous dealing service to unwind positions.
<b>Stock Borrowing and Lending Intermediaries</b>	Stock Borrowing and Lending Intermediaries provide a service allowing market makers to borrow securities in order to settle a 'short' transaction, ie, selling shares they do not own.

### 3.1.4 Trading methods of the London Stock Exchange (LSE)

Different types of shares, with varying levels of liquidity, trade via a variety of market systems. On the LSE, there are three trading systems, through which Main Market shares and Alternative Investment Market (AIM) shares are traded: the Stock Exchange Electronic Trading Service (SETS), the Stock Exchange Electronic Trading Service - quotes and crosses (SETSqx) and the Stock Exchange Automated Quotation System (SEAQ).

System	SETS	SETSqx	SEAQ
<b>Nature</b>	Order driven  Electronic trading system	Combined order and quote driven Periodic electronic auction book combined with standalone non-electronic quote-driven market making	Quote driven Non-electronic trading system in which market makers quote prices that buyers/sellers must accept
<b>Market makers?</b>	<b>No</b> market makers	<b>At least one</b> market maker per stock	<b>At least two</b> market makers per stock
<b>Full list stocks traded</b>	All stocks classified as 'liquid' under the Markets in Financial Instruments Derivative (MiFID), ie, all FTSE All-Share Index stocks, Exchange Traded	All stocks classified as 'illiquid' under MiFID, ie, equities that are less liquid than shares traded on SETS	None

System	SETS	SETSqx	SEAO
	Funds, Exchange Traded Commodities, actively traded Irish stocks		
<b>AIM stocks traded</b>	Some traded AIM stocks	All AIM stocks in AIM EURO sectors not traded on SETS	All remaining AIM stocks

### 3.1.5 Order- and quote-driven systems

Where a market is **order driven**, the relevant electronic trading system will match buyers and sellers automatically, provided that they are willing to trade at prices compatible with each other. This is essentially the function which SETS performs. Prices of securities which trade on SETS are, therefore, purely driven by the buyers and sellers in the market themselves: for example, buyers and sellers can specify limits to the prices they are prepared to pay or accept.

A **quote-driven** market, such as SEAO, requires certain market participants (market makers) to take responsibility for acting as buyers and sellers to the rest of the market so that there will always be a price at which a trade can be conducted. The market makers quote buying and selling prices for the securities in which they are prepared to trade. For such a market to operate efficiently, up to date prices at which market makers are willing to trade need to be made available to other market participants. This is the function performed by SEAO. Unlike SETS, SEAO does not provide a mechanism for trades to be executed automatically.

## 3.2 The criteria for listing

- (a) The UKLA's rules for admission to listing are contained in the Listing Rules. These detail the requirements that a company must meet prior to being admitted to the Full List. The basic conditions are as follows:

The expected market value of shares to be listed by the company must be at least £700,000. If the company is to issue debt, the expected market value of any such debt is to be at least

- (b) £200,000.
- (c) All securities issued must be freely transferable.
- (d) The company must have a trading record of at least three years. Its main business activity must have been continuous over the whole three-year period. In addition, there should be three years of audited accounts. This requirement is waived for innovative high-growth companies, investment companies and certain other situations.

The shares must be sufficiently marketable. A minimum of 25% of the company's share capital being made available for public purchase (known as the free float) is normally seen to satisfy this requirement. The lower the free float, the fewer shares are available in the market, potentially leading to higher share price volatility.

- Applicants for listing must appoint a UKLA-approved **sponsor** whose role is to:
- ensure the company and its directors are aware of their obligations
- ensure the company is suitable for listing and satisfy UKLA of this fact
- liaise with UKLA and submit documentation to it as required
- coordinate the listing process

Companies must generally produce a prospectus containing information on the company's past and present activities and performance, directors, capital structure and future prospects.

### 3.2.1 Premium and Standard listings

- (a) UK entities are permitted to apply for a 'Primary' listing.
- (b) The **standard** listing allows UK companies to qualify through the less stringent requirements and standards that were previously only open to non-UK entities. This now provides a level playing field for UK and overseas companies.

A **premium** listing is available for equity securities of UK and non-UK incorporated companies and investment entities. The issuer will have to meet the 'super-equivalent' standards.

Entities with a premium listing are subject to more extensive continuing obligations, such as the publication of an annual financial report and other information. They also need to comply with the Disclosure and Transparency Rules.

A premium listing is a prerequisite for admission to the FTSE UK index. Therefore, most larger companies are likely to continue to apply for premium listing despite the additional compliance costs and continuing obligations. Many institutional shareholders have indicated that they will expect 'premium' listings.

### 3.2.2 Continuing obligations

- All applicants for membership agree to be bound by the continuing obligations of the Listing Rules which require the company to:
- notify the LSE of any price-sensitive information
- publish information about important transactions undertaken by the company under the Class Tests Rule
- inform the LSE of any changes in the important registers of ownership of the shares, such as notifiable interests and directors' shareholdings
- notify the LSE of dividends
- issue reports

## 3.3 Alternative Investment Market (AIM)

The LSE introduced the second-tier **AIM** in 1995. This forum for trading a company's shares enables companies to have their shares traded through the LSE in a lightly regulated regime. Thus smaller, fast-growing companies may obtain access to the market at a lower cost and with less regulatory burden.

An admission to trading on the AIM used to be regarded as a stepping stone towards obtaining a full listing. Companies now choose to remain on the AIM rather than progress to the Main Market.

Recent years have seen an increase in traffic of companies transferring the other way - from the Main Market to the AIM - attracted by the lighter touch regulation and also the **tax advantages offered to investors**.



### Context example: AIM

Since London AIM's launch in 1995, 3,700 companies have listed, raising an aggregate of £100 billion. The largest institutional investors in London's AIM include BlackRock, Invesco, J.P. Morgan, Schroders, Legal & General, Aviva, Standard Life, Barclays, M&G and AXA.

The 1,000 companies currently listed on London's AIM have an average market capitalisation of £81 million, with 61% falling between £10 million and £250 million. The most common reason an AIM listed company leaves the market is because of acquisition by

a competitor, supplier or customer. 65% of the companies listed on London's AIM are British, with the balance coming from overseas jurisdictions such as the US, China, Australia, Ireland, India, South Africa, Israel, Canada and Russia.

Source: <http://www.aimadvisers.com/> [Accessed 13 August 2018]

### 3.3.1 Conditions for admission to the AIM

A summary of the main conditions that companies must meet in order to secure admission to AIM is as follows:

- (a) All securities must be freely transferable.
- (b) AIM companies must have an LSE-approved Nominated Adviser (NOMAD) to advise the directors on their responsibilities and guide them through the AIM process.
- (c) AIM companies must also have a broker to support trading of the company's shares.
- (d) AIM companies must comply with ongoing obligations to publish price sensitive information immediately and to disclose details of significant transactions. The NOMAD has a duty to ensure the AIM company meets its ongoing obligations.
- (e) Companies with a track record of less than two years must agree to a 'lock-in' whereby the directors, significant shareholders and employees with 0.5% or more of their capital agree not to sell their shares for a year following admission.

For AIM companies, there is no minimum level of free float (shares available for purchase by the public), no minimum market value for their securities and no minimum trading history.

However, they must produce a prospectus, which is considerably less detailed than for a full listing and is known as an Admission Document.

### 3.3.2 Comparison of UKLA and AIM rules

	Full List	AIM
<b>Trading record</b>	3 years	None
<b>Percentage in public hands</b>	25%	None
<b>Minimum market value</b>	£700,000 for equity £200,000 for debt	None
<b>Free transferability</b>	Yes	Yes
<b>Requirement to produce a prospectus</b>	Yes	Yes
<b>Corporate governance requirements</b>	Yes	Yes
<b>Requirement to announce price-sensitive information without delay</b>	Yes	Yes
<b>Applicable rules</b>	UKLA	LSE

As noted in the chapter Corporate governance, with effect from 28 September 2018 all AIM companies need to report on their application of a recognised corporate governance code. AIM companies will be required to include:

- details of a recognised corporate governance code that the board of directors of the company has decided to apply;
- how the company complies with that code; and
- where it departs from its chosen code, an explanation of the reasons for doing so ('comply or explain')

## 3.4 ISDX

ICAP Securities and Derivatives Exchange (ISDX) is a Recognised Investment Exchange and may be described as London's third stock market after the LSE Main Market and AIM.

The market is lightly regulated and was established to help smaller companies raise capital. However, it has struggled to attract listings, thanks in part to the success of AIM. The market had previously operated under the name PLUS, but due to financial difficulties it was acquired by ICAP in 2012. It targets smaller companies needing to raise between £2 million and £3 million. The average market value of companies on the ISDX is about £10 million.

## 3.5 International stock exchanges

### 3.5.1 US

The US is home to the world's largest stock market, with its constituent parts being the New York Stock Exchange, the American Stock Exchange, NASDAQ OMX, the Philadelphia Stock Exchange, the Boston Stock Exchange, the Chicago Stock Exchange, the Cincinnati Stock Exchange and the Pacific Exchange.

Trading on the NYSE revolves around **specialists** who receive and match orders via a limit order book. Specialists will also act as market makers where an order cannot be matched via the order book to ensure continuous liquidity in a stock. The primary regulator of the US equities market is the Securities and Exchange Commission (SEC).

NASDAQ OMX Group owns and operates the **NASDAQ** stock market, a screen-based, quote-driven market, and is monitored by the SEC. NASDAQ is the largest electronic screen-based securities trading market in the US, and is the second largest by capitalisation in the world. As the successor to over the counter trading of stocks and the world's first electronic stock market when it was set up in 1971, NASDAQ introduced new competition into the market and helped to lower spreads between bid and offer prices. It has specialised in providing a market for the more innovative companies and technology companies.

### 3.5.2 Japan

There are eight stock exchanges in Japan, the Tokyo Stock Exchange (TSE) being by far the largest. The TSE is order driven through the CORES dealing system. Settlement is on T+3 by book entry transfer through the Japanese Securities Clearing Corporation.

### 3.5.3 Hong Kong

The Stock Exchange of Hong Kong Limited (SEHK) is a subsidiary of the Hong Kong Exchanges and Clearing Limited. Trading is via AMS/3, an automated order matching system. The Central Clearing and Settlement System (CCASS) is the book-entry clearing and settlement system, operated by the depository, Hong Kong Securities Clearing Company Limited.

### 3.5.4 France

Trading on Euronext Paris is via the Nouveau Système de Cotation, the exchange's integrated electronic cash market trading platform. It is an order-driven market.

### 3.5.5 Germany

The Deutsche Börse is a fierce competitor with the LSE. Trading takes place through a computerised order book called Xetra. The Deutsche Börse's Xetra US stars trading scheme allows for the trading of US shares in Europe outside the normal market hours.



### 3.5.6 Emerging markets

There are various **bond and equity markets** in growing and **emerging markets**, each with its own unique characteristics. In many of these markets, bond and equity trading is OTC and is restricted to locally registered participants. Settlement systems in such markets tend to be run by central banks with no counterparty guarantees. In addition, non-electronic settlement systems and physical delivery are not uncommon.

Potential benefits from investing in emerging markets are as follows:

- (a) Potential for high returns – in the long run, emerging markets may offer higher returns than developed markets.
  - There is a perception that foreign securities are mispriced, giving investment opportunities.
  - Faster expanding developing market economies give higher profits growth for companies.
- (b) Potential for reduction in overall portfolio volatility – emerging markets have relatively low correlations with developed markets, giving diversification benefits.

Brazil, Russia, India and China are often referred to collectively as the **BRIC** countries. Brazil and Russia are rich in resources, particularly in oil. China is strong in manufacturing, while India has a well-developed information technology industry.

Additional factors motivating investment in emerging markets are as follows:

- (a) Liberalisation of foreign markets encouraged foreign investment. The demand caused by foreign investors caused prices to rise, attracting more investors. Note that this has a risk of becoming a speculative bubble, ending with the market crashing after excessive investment by foreign and local investors.
- (b) Deregulation (eg, abolishing price controls, foreign exchange controls) made entry into emerging markets easier.
- (c) Privatisation of government industries gave a boost to emerging stock markets.
- (d) Improved trade, communication and transport links make investing easier. **Investability** describes whether it is possible to invest in an emerging market or not. There are various **restrictions on investability** which will make an emerging market less attractive:
  - (a) Limitation on foreign holdings in local stocks, either to a maximum percentage or to a particular class of share
  - (b) Small free float of shares eg, the Government is still a substantial shareholder in a privatised industry
  - (c) Restrictions on remittance of funds to overseas
  - (d) Taxes on foreign investors
  - (e) Dual currency system and other foreign currency controls
  - (f) Investment may only be permitted by authorised foreign investors
  - (g) Lack of liquidity with holdings being too small to be meaningful, giving rise to excessive transaction costs (market impact)
  - (h) Emerging market indices are often based only on investable shares

## 3.6 Factors affecting share prices

Share prices do not always react in the way that is expected of them. Investors buy ordinary shares mainly because they expect share values to increase. Over a long period, what causes share prices to rise is the increasing earning power of the companies and their ability to pay higher dividends out of these increasing earnings. However, in the short term, there are many other factors that can distort the picture.

### 3.6.1 Impact of information

Share prices are observed to move when new information is received, and will fairly reflect that new information. Since new information must, by definition, be unpredictable and random (otherwise it would not be new information), it follows that share price movements will also be random.

From these observations, the **efficient markets hypothesis (EMH)** (discussed below) was developed which hypothesised that, at any time, share prices are fairly valued on the basis of all existing known information.

### 3.6.2 Profit taking

Surprising though it may seem, a company's share price will often fall when it announces good profits. This may happen because speculators buy before the profit announcement is actually made, and then sell their shares in order to take the profit.

### 3.6.3 Press recommendations

If the press tips a particular share for whatever reason, the price of that share is likely to rise. It is worth noting, however, that this may be caused by buying or simply by the market makers pushing up the price in anticipation of likely buying.

### 3.6.4 Market makers' and speculators' manoeuvres

Market makers depend on high levels of activity in terms of buying and selling in order to make their profits. Thus, in periods of little activity, they may well try to stimulate the market artificially by moving their quoted prices, and possibly sell shares that they do not own.

Speculators may also employ this technique of selling shares they do not own if they anticipate that the share price will fall. However, if the market makers get wind of this activity, they may push up their quoted prices in order to force speculators to buy the shares, which they need to deliver, at a high price. These speculators who have traded in anticipation of a fall in the share price are known as bears.

### 3.6.5 Interest rate and currency movements

An increase in interest rates may cause share prices to fall for two separate reasons:

- The available alternative investments in, say, government stocks will become more attractive.
- The higher cost of borrowing is likely to damp down economic activity in general, thus having an adverse effect on company profits.

The effect of movements in sterling can also be fairly complicated. Although a fall in sterling may lead to a rise in interest rates, with its associated problems, it may also improve a country's competitive position relative to other countries and may thus give rise to greater profit potential.

### 3.6.6 New share issues

If a company raises funds by issuing a large number of new shares, the share price may well fall, as at that time there may not be enough willing buyers to absorb the number of shares in issue.

### 3.6.7 Political and other sentiment

In the run-up to an election, the anticipated result will often have an effect on share prices. It has been known in the past for share prices to be affected by the result of a cricket match

and also by more logical factors such as economic statistics and the behaviour of other markets in the world.

### 3.6.8 Takeovers

Rumours of a corporate action such as a major takeover tend to push up the share price of the company concerned and also quite possibly of the market as a whole.

### 3.6.9 Automated trading

Automated forms of trading have sometimes been blamed for major movements in stock prices.

- (a) **Program trading** has been defined by the NYSE as an order to buy or sell 15 or more stocks valued at over US\$1 million total. In practice, this means that computers are used to enter program trades. Such trades are often made to take advantage of arbitrage opportunities, which seek to exploit small price differences between related financial instruments, such as index futures contracts and the stocks underlying them.
- (b) **Algorithmic trading** is a form of trading in which orders are entered to an electronic trading platform based on an algorithm which sets criteria for making the trade based on aspects such as timing, price and quantity. Generally, orders will be executed without human intervention. A special type of algorithmic trading is **high frequency trading** or 'flash' trading, which seeks to respond to information received electronically before other human traders are able to process the information and place trades. Studies have found that over half the equity trading volume on major exchanges results from algorithmic trading.

## 3.7 Market efficiency

You covered the EMH in previous studies and we summarise it here.

The **random walk hypothesis suggests** that future share price movements cannot be predicted from details of historical movements. On the other hand, share prices are observed to move when **new information** is received, and will fairly reflect that new information. Since new information must, by definition, be unpredictable and random (otherwise it would not be new information), it follows that share price movements will also be random.

From these observations, the **EMH** was developed which broadly stated that, at any time, share prices are fairly valued on the basis of all existing information.

If securities are priced efficiently, their prices reflect forecasts of expected benefits from future cash flows capitalised at appropriate discount rates. Of course, individuals can disagree, and it is this disagreement which results in transactions. The aggregation and resolution of expectations in the transaction process produces an unbiased valuation in an efficient market.

Broadly speaking, the evidence suggests that efficient markets can be divided into three forms that are classified according to the degree to which information is reflected in share prices and the availability of that information.

### 3.7.1 Weak form efficiency

The **weak** form of the EMH states that all information that can be discovered from past price movements has already been incorporated into the current share price. This implies that it should not be possible to predict future price movements from past price movements or to produce superior returns on the basis of past information, since any such information available from past prices has already been taken account of in the current price.

### 3.7.2 Semi-strong form efficiency

The **semi-strong** form of the EMH states that current share prices not only reflect the information referred to in the weak form, but also incorporate any information that has been published about a company (all publicly available information). For example, release of preliminary figures by the company constitutes new information and the share price will move to reflect this.

This level of market efficiency has been investigated through a number of **events studies** investigating the reaction of the market to the release of new information. Observations in major markets have shown that prices do respond to the release of new information and, traditionally, many people have suggested that share markets tend to exhibit this level of efficiency.

### 3.7.3 Strong-form efficiency

The **strong** form of the EMH is based on the premise that share prices fully reflect all information, whether publicly available or private.

If markets are strong-form efficient, then no investor will ever be able to make better than average returns, except through luck. It would be impossible for even the most corrupt investor to find out anything which the share price did not already reflect.

The evidence on strong-form efficiency is not conclusive, but the seemingly widespread incidence of insider traders (until they are caught) suggests that knowledge of secret information does give the investor a way of predicting share price movements before they have happened. The strong form of market efficiency cannot, therefore, hold.

### 3.7.4 Alternative theories

The global crisis of 2007–09 has brought renewed discussion of alternatives to the EMH, which include the following.

**Behavioural finance.** This area of study postulates that markets are driven by traders who are not rational in the classical sense. Instead, they display behavioural and cognitive shortcomings which psychologists have identified. For example, market participants show a tendency to avoid losses at all costs. They also tend to act like a herd, which will make occasional extreme market crashes more probable.

**Adaptive evolution.** Markets are complex 'ecosystems'. They may be in a stable equilibrium for extended periods of time. Occasionally, a disruptive event may upset the equilibrium, and new financial 'species' may emerge while others may become 'extinct'.

**Chaos theory.** It is hypothesised that markets do not behave in a random fashion. Market movements may be modelled in a similar way to the modelling of 'chaotic' systems such as wind turbulence and weather patterns.

## 4 Fixed interest securities and bonds



### Section overview

Some of this section is revision material, but it also includes some types of bonds that you may not have come across before.

The term **bonds** describes various forms of long-term debt a company may issue. Bonds come in various forms, including redeemable, irredeemable, floating rate, zero coupon and convertible.

The terminology should be familiar to you from your earlier studies but it is worthwhile to recap on it here.



## Definitions

**Fixed interest securities:** are issued by companies or governments to borrow money from investors. Securities issued by the UK Government are known as 'gilts', while securities issued by companies are known as corporate bonds.

**Face (or par or nominal) value:** The amount of money the bondholder will receive when the bond matures (provided it is not redeemable at a premium or a discount). This is not the market price of the bond. If the market price is above par value, the bond is said to be trading at a premium; if price is below par value, the bond is trading at a discount.

**Coupon rate:** The amount the bondholder receives as interest payments based on the par value.

**Maturity:** The date at which the principal will be repaid. Maturities can range from one day to as long as 30 years (although it has been known for 100-year bonds to be issued).

**Issuer:** The issuer's stability is the bondholder's main assurance for getting repaid. For example, the UK Government is much more secure than any company. Hence government-issued bonds are known as risk-free assets and will have lower returns than company-issued bonds.

**Fixed charge:** The security given on the bond relates to a specific asset or group of assets, typically land and buildings. The company will be unable to dispose of the asset without providing a substitute asset or without the lender's consent.

**Floating charge:** The charge is on certain assets of the company and the lender's security in the event of a default of payment is whatever assets of the appropriate class the company then owns. The company would be able to dispose of the assets as it chose until a default took place.

## 4.1 Bonds

Unlike shares, debt is often issued at par, ie, with £100 payable per £100 nominal value. Where the coupon rate is fixed at the time of issue, it will be set according to prevailing market conditions and the credit rating of the company issuing the debt. Subsequent changes in market (and company) conditions that change the yield that investors require on the bond will cause the market value of the bond to fluctuate, although the coupon will stay at the fixed percentage of the nominal value (the fixed coupon rate).

## 4.2 Terms of a loan agreement

Covenants within the loan agreement are conditions attached to a bond issue. Bond covenants are legally enforceable rules that borrowers and lenders agree upon at the time of a new bond issue. Covenants enumerate what issuers are required to do (affirmative covenants) and what they are prohibited from doing (negative covenants).

For example, an affirmative covenant may require an issuer to maintain enough liquid assets to cover the principal of the bond. More commonly, a positive covenant requires the issuer to have a certain amount of insurance or submit to periodic audits.

A negative covenant may prevent an issuer from issuing more debt until the bond matures. More commonly, a restrictive covenant limits the dividends an issuer may pay to shareholders so as to reduce the risk to the bond.

A cross-default clause is included in most loan agreements and states that if the borrower defaults on any one of its loans, then this will constitute a default of this borrowing as well.

#### 4.2.1 Typical loan covenants

Typical affirmative covenants:	Typical negative covenants:
<ul style="list-style-type: none"> <li>The borrower agrees to maintain various kinds of insurance, such as property, liability and 'key man'</li> </ul>	<ul style="list-style-type: none"> <li>No pledge of any assets if doing so gives the lender less security. Prevents the borrower from issuing any debt in the future which would jeopardise a current claim</li> </ul>
<ul style="list-style-type: none"> <li>Quarterly or monthly financial statements must be submitted to the bank or lender's representatives. These may need to be audited if the loan is large.</li> </ul>	<ul style="list-style-type: none"> <li>No changes in management or the nature of business without the lender's permission</li> </ul>
<ul style="list-style-type: none"> <li>All shareholder loans to the business must be subordinate to the bank's loan</li> </ul>	<ul style="list-style-type: none"> <li>No distribution of profits without prior lender approval</li> </ul>
<ul style="list-style-type: none"> <li>The borrower agrees to maintain liquidity and performance ratios such as maximum gearing ratio, minimum interest cover and minimum business net worth. These financial covenants may state an express limit on the overall level of borrowing that can be undertaken.</li> </ul>	<ul style="list-style-type: none"> <li>No further loans from other sources to the company without lender approval or without meeting certain conditions. Such a condition is normally linked to key ratios such as interest cover</li> </ul>
<ul style="list-style-type: none"> <li>Any lender is granted the same level of security as given to any new lenders ('pari passu')</li> </ul>	<ul style="list-style-type: none"> <li>No sale of equipment without prior lender approval. This ensures that the company cannot sell assets unless it receives a fair market value and unless a specified percentage of the consideration is received in cash. A further extension to this clause is often that the monies received are used to: <ul style="list-style-type: none"> <li>- repay senior debt</li> <li>- reinvest in the business within one year</li> <li>- repay the debt</li> </ul> </li> </ul>

#### 4.2.2 Events of default

A breach of the covenants or the failure to pay the coupon or principal on the due dates are events of default. Within the agreement there may be allowance for 'grace periods', during which time the borrower is able to remedy the breach. If the borrower remains in default, the loan is immediately repayable.

In principle, an event of default gives the lender/bondholders the right to demand immediate repayment of the debt. In practice, a breach of covenant will lead to discussions between the borrower and the bondholders' representatives about appropriate measures to be taken.

Most bonds are constituted in such a way that there is a trustee who is responsible for ensuring the bondholder's interests are protected. Where there is no trustee, the bondholder is obliged to seek redress directly from the company.

## 4.3 Bond coupons

### 4.3.1 Predetermined coupons

The majority of bonds have a fixed coupon rate. On these bonds, the gross annual coupon (ie, the amount due to be paid in a one-year period, irrespective of the frequency of payment) is specified as a percentage of the nominal value of the bond. Sub-classes here include:

- (a) **Straight/fixed coupon bonds** - where the coupon is at a set level for the entire life of the bond.
- (b) **Stepped coupon bonds** - where the coupon increases in steps to pre-specified amounts as the bond moves through its life.
- (c) **Zero-coupon bonds** - bonds that carry no coupon and simply redeem at face value at maturity. Investors obtain a yield on these bonds because the bonds are issued at a discount to face value, and continue to trade at less than face value in the entire period up to maturity and redemption.

### 4.3.2 Variable coupons

This category includes:

- (a) **Floating rate bonds or notes** - where the coupon varies as the yield on a benchmark interest rate varies. For example, for sterling floating rate bonds that pay interest every six months, the benchmark rate is likely to be the six-month sterling SONIA (Sterling Overnight Index Average) or SOFR (Secured Overnight Financing Rate). Loan agreements specify the interest rate (called reference or index rate to be used) and also the quoted margin, the rate above the reference rate that must be paid. The quoted margin will reflect the borrower's credit rating and size of issue, along with market conditions. Arrangements may include a floor (the rate below which the rate paid cannot fall) and a ceiling or cap (the rate above which the rate paid cannot rise).
- (b) **Index-linked bonds** - where the coupon and redemption proceeds figures get scaled for the effects of inflation.

### 4.3.3 Coupon frequency

The frequency of the payment of the coupons is predetermined before issue, normally following the local market conventions. As a result, all investors will (or should) be aware of these dates.

Conventions regarding the frequency of payment differ between bond markets. Some markets have a convention of paying semi-annual coupons, as is the case in the UK and the US, whereas other markets, in particular the Eurobond market, France and Germany, pay coupons on an annual basis.

### 4.3.4 Zero-coupon bonds

Zero-coupon bonds are bonds that are issued at a discount to their redemption value, but no interest is paid on them. The investor gains from the difference between the issue price and the redemption value. There is an implied interest rate in the amount of discount at which the bonds are issued (or subsequently resold on the market).

- a) The advantage for borrowers is that zero-coupon bonds can be used to raise cash immediately. There is no cash repayment until redemption date. The cost of redemption is known at the time of issue, and so the borrower can plan to have funds available to redeem the bonds at maturity.

- (b) The advantage for lenders is restricted, unless the rate of discount on the bonds offers a high yield. The only way of obtaining cash from the bonds before maturity is to sell them. Their market value will depend on the remaining term to maturity and current market interest rates.

## 4.4 Debentures



### Definitions

**Debenture:** A written acknowledgement of a debt by a company, usually given under its seal and normally containing provisions as to payment of interest and the terms of repayment of principal. A debenture is usually unsecured, which means that the investors rely on the creditworthiness of the borrower for repayment. In comparison, the term 'bond' is often used to mean a bond for which security has been given by the borrower.

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## 4.5 Eurocurrency and Eurobonds



### Definitions

**Eurocurrency:** Currency which is held by individuals and institutions outside the country of issue of that currency.

**Eurodollars:** US dollars deposited with, or borrowed from, a bank outside the US.

**Eurobond:** A bond sold outside the jurisdiction of the country in whose currency the bond is denominated.

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The term 'euro-' is still occasionally used, but the terms 'currency deposits', 'currency loans' and 'international bonds' are now more common usage.

### 4.5.1 Eurocurrency

A UK company might borrow money from a bank or from the investing public in sterling. However, it might also borrow in a foreign currency, especially if it trades abroad, or if it already has assets or liabilities abroad denominated in a foreign currency. When a company borrows in a foreign currency, the loan is known as a eurocurrency loan or more simply as a currency loan. The eurocurrency markets are money markets. They involve the depositing of funds with a bank outside the country of the currency in which the funds are denominated and relending these funds for a fairly short term, typically three months, normally at a floating rate of interest.

### 4.5.2 Eurobonds

Eurobonds or international bonds are long-term loans raised by international companies or other institutions and sold to investors in several countries at the same time. Most Eurobonds are currently denominated in US dollars and, to a lesser extent, euros and yen.

In recent years, a strong market has built up which allows very large companies to borrow in this way, long term or short term. The market is not subject to national regulations but there is a self-regulatory association of bond dealers, the International Capital Market Association (ICMA).



- (a) Advantages of international **bonds**
- (b) Most international bonds are 'bearer instruments', which means that there is no bond ownership register and the owner **does not have to declare his identity**.
- (c) Interest is **paid gross** and this has meant that in the past Eurobonds have been used by investors to avoid payments of tax.
- (d) International bonds can be used to create a liability in a foreign currency to **match** against a foreign currency asset.
- (e) They may be **cheaper** than a foreign currency bank loan because they can be sold on by the investor, who will therefore accept a lower yield in return for this greater liquidity.
- (f) They are typically issued by companies with **excellent credit ratings** and are normally unsecured, which makes it easier for companies to raise debt finance in the future. Companies with lower credit ratings that want to raise funds in the bond markets may do so through a national 'junk bond' market. There is a large junk bond market in the US. International bond issues are **not normally advertised** to the general investing public because they are placed with institutional investors and this reduces issue costs.

- (a) Disadvantages of international **bonds**
- (b) Like any form of debt finance there will be issue costs to consider (perhaps about 2% of funds raised) and there may also be problems if gearing levels are too high.

A borrower contemplating an international bond issue must consider the foreign exchange risk of a long-term foreign currency debt. If the money is to be used to purchase assets which will earn revenue in a currency different to that of the bond issue, the borrower will run the risk of exchange losses if the currency of the loan strengthens against the currency of the revenues out of which the bond (and interest) must be repaid.

## 4.6 Deep discount bonds



### Definitions

**Deep discount bond:** A bond offered at a large discount on the face value of the debt so that a significant proportion of the return to the investor comes by way of a capital gain on redemption, rather than through interest payment.

Deep discount bonds will be redeemable at par (or above par) when they eventually mature. For example, a company might issue £1,000,000 of bonds in 20X4 at a price of £50 per £100, and redeemable at par in the year 20Y9. For a company with specific cash flow requirements, the low servicing costs during the currency of the bond may be an attraction, coupled with a high cost of redemption at maturity.

Investors might be attracted by the large capital gain offered by the bonds, which is the difference between the issue price and the redemption value. However, deep discount bonds will carry a much lower rate of interest than other types of bonds. The only tax advantage is that the gain gets taxed in one lump on maturity or sale, not as amounts of interest each year.

## 4.7 Redeemable and irredeemable bonds

Bonds are usually redeemable. They are issued for a term of 10 years or more, and sometimes for up to 25 or 30 years. At the end of this period, they will 'mature' and become redeemable (at par or possibly at a value above par).



## Definitions

**Redemption:** Repayment of the principal amount (for example a bond) at the date of maturity.

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Some redeemable bonds have an earliest and a latest redemption date. For example, 12% Loan Notes 20X9/Y1 are redeemable at any time between the earliest specified date (in 20X9) and the latest date (in 20Y1). The issuing company can choose the date. The decision by a company on when to redeem a debt will depend on how much cash is available to the company to repay the debt, and on the nominal rate of interest on the debt.

Some bonds do not have a redemption date, and are 'irredeemable' or 'undated'. Undated bonds might be redeemed by a company that wishes to pay off the debt, but there is no obligation on the company to do so.

Corporate bonds can have a variety of **redemption** terms.

### 4.7.1 Bullets

Many bonds issued are bullet issues, with a single redemption date when the full amount borrowed becomes repayable.

In practice, a company that has to redeem a bond in a bullet payment may seek refinancing, and may issue a new bond to raise money to redeem the maturing bond.

### 4.7.2 Sinking funds

The sinking fund or sinker is a process whereby a proportion of the bonds in issue are redeemed each year. The bonds to be redeemed in each year are selected by the process of 'drawing' the serial numbers. The serial numbers of the bonds drawn in this way are then published and the holders submit the bonds to the paying agent for redemption at par. The final repayment is normally larger than the others and is referred to as the balance or balloon repayment.

Sinking funds tend to come into operation towards the end of the bond's life and rarely start to redeem from the first coupon date.

### 4.7.3 Purchase fund

A purchase fund buys back the bonds in the secondary market and not at par. The obligation to repay is triggered by a condition specified in the offer document, normally the bond trading below par.

### 4.7.4 Serial notes

A serial note is one where a proportion of the capital is repaid each year together with the interest.

### 4.7.5 Optional redemption

The option to redeem a bond can be given to either side of the deal. A **call right** would give the issuer the right to seek an earlier redemption. An example would be the double-dated gilts in the UK market, where the Government has the right to redeem from the earlier of the two dates, but must redeem by the later date.

#### 4.7.6 Callable bonds

Callable bonds are where the issuer has the right to redeem the bonds at an agreed price prior to its maturity. This price may be above the normal redemption price and the extra price paid is referred to as the call premium.

The call provision is valuable to the issuer, but is a disadvantage to the investor, since the issuer will only exercise the call if it suits the issuer to do so. As a result, the price at which a callable bond can be issued will be lower than for a comparable straight bond, and the interest rate it will need to pay will consequently be higher.

A call provision will reduce the expected time to maturity of the bond, since there is a possibility that the bond will be retired early as a result of the call provision being exercised.

Call provisions will be exercised when the issuer can refinance the issue at a cheaper cost due to interest rates having fallen. For example, if a bond were issued when interest rates were 15% and interest rates have now fallen to 5%, the issuer could issue a new bond at the currently low rate and use the proceeds to call back the higher coupon bond.

#### 4.7.7 Puttable bonds

This is where the investor has a put option on the bond, giving him the right to sell the bond back to the company at a specified price (the put price). The put price is typically around par, given that the bond was issued at par.

The benefit to investors is that if interest rates rise after the bond is issued, they can sell the bond at a fixed price and reinvest the proceeds at a higher interest rate. As a result of the benefit to investors, puttable bonds are issued at higher prices or lower coupons than comparable non-puttable bonds.

### 4.8 Convertible bonds



#### Definitions

**Convertible debt:** A liability that gives the holder the right to convert into another instrument, normally ordinary shares, at a predetermined price/rate and time.

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Conversion terms often vary over time. For example, the conversion terms of convertible bonds might be that on 1 April 20X6, £2 of bonds can be converted into one ordinary share, whereas on 1 April 20X7 the conversion price will be £2.20 of bonds for one ordinary share. Once converted, convertible securities cannot be converted back into the original fixed return security.

The current market value of ordinary shares into which a unit of bonds may be converted is known as the conversion value. The conversion value will be below the value of the bonds at the date of issue, but will be expected to increase as the date for conversion approaches on the assumption that a company's shares ought to increase in market value over time.

Conversion value = Conversion ratio × Market price per ordinary share  
Conversion premium = Current market value - Current conversion value



## Interactive question 1: Convertibles

The 10% convertible bonds of Starchwhite are quoted at £142 per £100 nominal. The earliest date for conversion is in four years' time, at the rate of 30 ordinary shares per £100 nominal. The share price is currently £4.15. Annual interest on the bonds has just been paid.

### Requirements

- 1.1 Calculate the current conversion value.
- 1.2 Calculate the conversion premium and comment on its meaning.

See **Answer** at the end of this chapter.

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Most companies issuing convertible bonds expect them to be converted. They view the notes as delayed equity. They are often used either because the company's ordinary share price is considered to be particularly depressed at the time of issue or because the issue of equity shares would result in an immediate and significant drop in earnings per share. There is no certainty, however, that the security holders will exercise their option to convert. Therefore the bonds may run their full term and need to be redeemed.

### 4.8.1 Price, coupon rate and premium

A company will aim to issue bonds with the greatest possible conversion premium so that, for the amount of capital raised, it will on conversion have to issue the lowest number of new ordinary shares. The premium that will be accepted by potential investors will depend on the company's growth potential and so on prospects for a sizeable increase in the share price.

Convertible bonds issued at par normally have a lower coupon rate of interest than straight debt. This lower yield is the price the investor has to pay for the conversion rights. It is, of course, also one of the reasons why the issue of convertible bonds is attractive to a company, particularly one with tight cash flows around the time of issue, but an easier situation when the notes are due to be converted.

When convertible bonds are traded on a stock market, their minimum market price or floor value will be the price of straight bonds with the same coupon rate of interest. If the market value falls to this minimum, it follows that the market attaches no value to the conversion rights.

The actual market price of convertible bonds will depend on:

- the price of straight debt
- the current conversion value
- the length of time before conversion may take place
- the market's expectation as to future equity returns and the risk associated with these returns

### 4.8.2 Mandatory convertibles

Sometimes the bondholder will be required to convert the nominal value into ordinary shares of the company at a set redemption date. These are known as mandatory convertibles.

The appeal for the investor of 'mandatories' is that the company takes the risk of the share price volatility in the period between issuance and conversion. Mandatories are often issued in conjunction with equity in an IPO to attract investors who would not otherwise be interested in the IPO.

### 4.8.3 Advantages and disadvantages of convertible bonds

#### Advantages

Compared to either a bond or share issue, convertibles offer the following advantages to the issuer:

- no immediate dilution of the current shareholders
- lower cost than normal bonds due to a lower coupon
- less dilution of earnings per share than either a normal share or bond issue as a consequence
- suitable for when assets are not available to secure straight finance
- suitable for finance projects with long payback periods

#### Disadvantages

The disadvantage to the issuer is that if the company fails to perform, it is obliged to make the coupon payments, and ultimately redeem the bond for cash if the holder chooses not to convert. Therefore, the firm cannot be sure that it is issuing deferred share capital when it issues a convertible.

### 4.9 Exchangeable bonds



#### Definitions

**Exchangeable bonds:** Bonds that are convertible into the ordinary shares of a subsidiary or associate company of the issuer. This is therefore a different company to the issuer of the bond.

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The use of exchangeable bonds can be to provide a way for a group to divest an unwanted investment. There is no dilution of control for the shareholders of the issuer.

### 4.10 Hybrid bonds



#### Definitions

**Hybrid bond:** A security that combines characteristics of both debt and equity.

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Fixed rate hybrids pay a predictable return or dividend until a certain date, at which point the holder has a number of options, possibly including converting the securities into the underlying share. The most common examples of hybrids are convertible bonds and convertible preference shares.

Though hybrids pay a fixed return like bonds, the payments are voluntary. A missed payment does not constitute a default and payments do not normally accumulate if deferred. Like equities, they tend to be irredeemable or very long dated and they rank behind other debt if the company becomes insolvent.

The motives behind corporate hybrid issues include the following:

- (a) Consolidating credit ratings by buying back senior debt.
- (b) Refinancing pension deficits by using the proceeds of the issue to increase the pension fund. This reduces the deficit and, if the hybrid is assessed as partly equity, replacing the pension liability debt will also have a positive impact on the company's credit rating.

- (c) Financing corporate activity such as mergers and acquisitions, share buybacks and leverage buyouts, providing non-dilutive capital and flexibility.

For bond investors, hybrids offer higher yields than conventional debt but are not without risk. For equity investors, hybrids provide a tax-efficient, long-term source of finance to the company without either the diluting effect of an equity issue or the risk of extra gearing from a debt issue where the coupons cannot be deferred if circumstances dictate. Investors in the equity still enjoy the benefits associated with any improvement in company performance.

## 4.11 Warrants



### Definitions

**Warrant:** A right given by a company to an investor, allowing them to subscribe for new shares at a future date at a fixed, predetermined price (the exercise price).

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Warrants are usually issued as part of a package with unsecured bonds. An investor who buys bonds will also acquire a certain number of warrants. The purpose of warrants is to make the bonds more attractive.

Once issued, warrants are detachable from the bonds and can be sold and bought separately before or during the 'exercise period' (the period during which the right to use the warrants to subscribe for shares is allowed). The market value of warrants will depend on expectations of actual share prices in the future.

### 4.11.1 Advantages of warrants

- (a) Warrants themselves **do not involve the payment of any interest or dividends**. Furthermore, when they are initially attached to bonds, the interest rate on the bonds will be lower than for a comparable straight debt.
- (b) Warrants **make a bond issue more attractive** and may make an issue of unsecured bonds possible where adequate security is lacking.

Warrants provide a **means of generating additional equity funds** in the future without any immediate dilution in earnings per share. The cost will be the right that warrants holders have acquired to buy at the possibly reduced exercise price.

### 4.11.2 Disadvantages of warrants

- (a) When exercised, they will result in the **dilution of share capital**.
- (b) Warrants may be exercised when a business **does not need additional capital**.
- (c) The company has **less control over the exercise of warrants** than it does over the exercise of share capital.



### Professional skills focus: Assimilating and using information

An organisation in the exam scenario may have a variety of financial instruments available to it. Your task is to understand and review the business context in order to recommend the most appropriate financial instrument to use. You should not necessarily expect to have to choose between debt and equity. It may be that all the choices available are forms of debt, and you may have to consider corporate reporting implications. The choice may also be influenced by the financial markets that the business is able to use. It is therefore important that you can identify key business and financial issues from the scenario.

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## 4.12 Commercial paper



### Definitions

**Commercial paper (CP):** Short-term unsecured corporate debt with maturity up to 270 days (US dollar CP) or 364 days (euro CP). The typical term of this debt is about 30 days.

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As CP is unsecured debt, it can only be issued by large organisations with good credit ratings, normally to fund short-term expenditure on operating expenses or current assets. The debt is issued at a discount that reflects the prevailing interest rates, but the rates on CP are typically lower than bank rates.

CP is issued within a longer-term programme, which is managed on an issuer's behalf by a bank. For example, within a five-year CP programme, a company may be able to issue CP up to a maximum amount at any time, with each separate CP issue having a maturity of 30 days. A bank managing the programme arranges for each issue, including the sale of the paper to investors. Typically investors hold the paper until maturity and there is no secondary market.

CP is a cheaper alternative to bank credit, although the small difference in interest rates means that the saving on CP is only significant if large sums are being raised. However, many businesses still maintain bank lines of credit even if they use CP. The wide maturity gives greater flexibility, security does not have to be given and investors can trade their CP, although the market is less liquid than for bonds. However, issues are controlled, and banks that issue ordinary CP see a reduction in their credit limits.

A sub-sector of the CP market – the asset-backed CP market – is where the loans are backed by assets such as mortgages and credit card debt. The concern is that asset-backed CP could be held off balance sheet in special investment vehicles that use the funds raised to buy longer-term assets such as mortgage-based securities. As these vehicles are off balance sheet, their activities do not affect the banks' ability to lend money for other reasons.

## 4.13 Medium Term Notes

Medium Term Notes are not strictly a type of security. Instead, the term describes a facility enabling the issuer to issue a range of stock from one global facility. In the US, the facility can cover short-term CP out to 30-year debt.

The issuer sets up a shelf programme. When the programme is initially set up, relevant documentation is prepared to enable the issuer to issue a wide variety of different instruments in terms of:

- maturity (eg, from 1 week to 10 years)
- currency (sterling, US dollars, euro)
- coupon (coupon-paying or zero coupon)
- instrument (CP, long-term bonds)

The implication of this is that the costs of setting up the programme are relatively high compared to the cost of a large international bond issue. However, the benefit is that the programme offers greater flexibility and lower cost to the issuer in the long run. As a result, it is more suitable for issuers who need funding flexibility over a period of time. In contrast, a large issuer might find a one off large international bond issue more suitable.

## 4.14 Repos

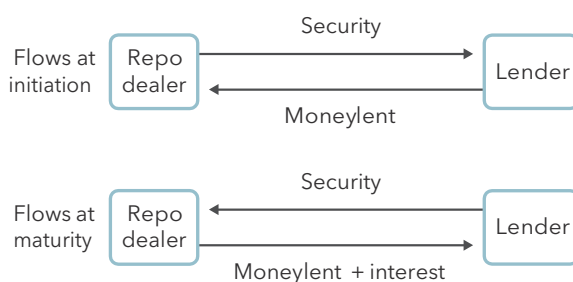


### Definitions

**Repurchase agreement (repo):** An agreement between two counterparties under which one counterparty agrees to sell a quantity of financial instruments to the other on an agreed date for an agreed price, and simultaneously agrees to buy back the instruments from the counterparty at a later date for an agreed higher price.

A repo is a loan secured by a marketable instrument, usually a treasury bill or a bond. The typical term is 1-180 days. A repo is an attractive instrument because it can accommodate a wide spectrum of maturities. The flows in a repo are shown in the following diagram.

Figure 13.2: Flows in a repo transaction



A repo is in effect a cash transaction combined with a forward contract. Repos can be:

- overnight (one-day maturity transactions)
- term (specified end date)
- open (no end date)

In effect, a repo is a short-term loan secured by a quantity of financial instruments, such as short-dated bonds and money market instruments. By selling securities and agreeing to buy them back at a higher price, an organisation is borrowing money and repaying it with interest at maturity.

A reverse repurchase agreement (reverse repo) is an agreement for the purchase of financial instruments with the simultaneous agreement to resell the instruments at an agreed future date and agreed price. In a reverse repo, the dealer purchases the securities initially and then sells them back at maturity. Because the two parties in a repo agreement act as a buyer and a seller of the security, a repo to one party is a reverse repo to the other.

### 4.14.1 Use of repos

Repos give buyers the chance to invest cash for a limited period of time, on a transaction where they receive collateral as security. Market liquidity and rates are generally good. Traders use repos to cover their positions and benefit from lower funding costs. The repo market is an important component of the overnight market.



### Worked example: Repurchase agreements

Green Bank sells a bond carried on its statement of financial position to Red Bank for £1,000. Green Bank commits to buy back the bond in three months for £1,025.



## Requirements

- 1 Has Green Bank transferred substantially all the risks and rewards of ownership?
- 2 Would your answer be different if Green Bank commits to buyback in three months at market price?

## Solution

- 1 IFRS 9 rules on these situations:

This is a sale and repurchase transaction where the repurchase price is a fixed price or at the sale price plus a lender's return.

Green Bank has not transferred substantially all the risks and rewards of ownership and hence the bond is not derecognised.

Green Bank will recognise a loan liability of £1,000 and interest expense of £25 to reflect the collateralised borrowing.

- 2 This is a sale of a financial asset together with commitment to repurchase the financial asset at its fair value at the time of repurchase. Because any repurchase is at the then fair value, all risks and rewards of ownership are with the buying party and hence Green Bank will derecognise the bond and recognise at its fair value the liability implicit in its commitment to repurchase.



## Interactive question 2: Derecognition of financial assets

- 2.1 Excel Bank sells an investment in shares, but retains a call option to repurchase those shares.

### Requirement

Discuss if the investment in the shares should be derecognised in each of the following instances:

- The call option is deeply out of the money.
- The call option is deeply in the money.
- The call option is neither deeply in the money nor deeply out of the money.

- 2.2 Access Bank sells a bond and enters into a 'total return swap' with the buyer. Under the 'total return swap' arrangement, the buyer passes on interest payment cash flows along with increases in value of the bond to the seller. In return the seller compensates the buyer through a fixed payment and any decreases in value.

### Requirement

Discuss whether the investment in the bond should be derecognised.

See **Answer** at the end of this chapter.

## 4.15 Islamic bonds

Islamic bonds or Sukuk are bond issues that satisfy Islamic principles and have gained Sharia'a approval. Western-style bonds do not satisfy certain Islamic principles, in particular the prohibition of speculation and the payment of interest or any charge simply related to time.

Though Islam frowns on speculation, it does approve of partnerships and risk sharing. Sukuk are based on partnership risk-sharing ideas. When investing in such bonds, the Sukuk holder is effectively becoming a part owner of the asset being financed, sharing in profits it generates or losses it incurs. The arrangement is achieved through a special purpose vehicle (SPV) which buys the asset to be financed with the funds raised and acts on behalf of all the Sukuk investors.

In any partnership there are at least two parties involved who may contribute capital, skill and effort, or both. With Sukuk, the parties are:

- Rab al Mal - provides capital
- Mudarib - provides skill and effort

The main types of issue are:

- Mudaraba Sukuk** - This is the primary type of Sukuk contract where the SPV is the Rab al Mal and the company needing finance is the Mudarib. In such an arrangement, all profits are shared as defined in the Sukuk contract, and all losses are absorbed by the Rab al Mal. As part of the contract it is normal for the Mudarib to contract to buy the financed asset at maturity in order to redeem the Sukuk holders. The result of this arrangement can be very similar to that of Western asset-backed bonds depending on how the profit-sharing arrangements are structured.
- Musharaka Sukuk** - Where all parties contribute both capital and effort. All profits are shared as defined in the Sukuk contract, and all losses are absorbed in proportion to capital introduced. This is very dissimilar to Western bonds, since Western bondholders would not expect to contribute anything other than capital.
- Salam Sukuk** - Has a structure similar to a short-term zero-coupon bond which is achieved through a combination of spot and deferred payment sales.
- Istisn'a Sukuk** - Used in construction contracts where the profits are generated from rents received and the ultimate sale of the property constructed.
- Ijara Sukuk** - Has a structure similar to a leasing arrangement. This is the most common form of Sukuk structure.



### Context example: Sukuk

In 2014, the UK became the first country outside the Islamic world to issue sovereign Sukuk (government bonds). The £200 million issue matures in 2019. The profit rate was 2.036%, similar to the yield available on UK government bonds (gilts) with the same maturity. The Sukuk has an ijara structure, and the profits for investors will be obtained from rentals on three government properties. The Sukuk issue was intended to demonstrate that the UK can be a successful base for Islamic finance.

Demand for the bond in 2014 was fierce from investors in the UK, Middle East and Asia. Later that year Luxembourg also issued a sovereign sukuk - the first AAA-rated government to issue a euro-based Islamic bond.

Hopes that the international sukuk market would enjoy exponential growth have not quite met with expectations. One reason is that the oil market has been depressed, and this has weighed on the wealth and exchange rates of many Muslim countries.

In a low interest rate environment, Western issuers are less interested by the diversification benefits of sukuk bonds and more worried about their lack of liquidity. The market is also being hampered by a lack of standardisation, with fundamental disagreement among Islamic scholars as to what constitutes an Islamic-compliant financial product.

Illustrating this problem is the ongoing Dana Gas case. The case rests on whether or not the United Arab Emirates-based energy company Dana Gas can, as it claims, restructure some \$700 million of its debt based on the fact the bonds it originally sold are no longer, according to some scholars, Islamic-compliant. Its investors include Goldman Sachs and BlackRock.

The global sukuk market totals around \$400 billion according to a range of estimates, and with 65 products worth a total of \$48 billion listed on the London Stock Exchange, the UK is a major centre for Islamic bonds. Organisations such as the Islamic Financial Services Board should help the drive towards standardisation.

The Bank of England has recently announced plans for a fund-based, sharia-compliant deposit facility, and the UK Government plans to reissue its sukuk once the bond matures in 2019.

Source: <https://www.telegraph.co.uk/business/2017/10/15/can-uk-make-sukuk-islam-compliant-bond/> [Accessed 13 August 2018]

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## 4.16 Green Bonds



### Definitions

**Green bonds:** Green bonds are any type of bond instrument where the proceeds will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible green projects, and those which are aligned with the four core components of the Green Bond Principles (ICMA, 2018).

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#### 4.16.1 Green Bond Principles

The Green Bond Principles were issued by the International Capital Market Association (ICMA) in 2015 and were most recently updated in 2021. They are voluntary guidelines for issuers of green bonds. The four components of the Green Bond Principles are:

- (a) **Use of Proceeds:** it should be stated in the legal documentation for bonds that the proceeds will be used for projects that should provide clear environmental benefits
- (b) **Process for Project Evaluation and Selection:** there should be defined processes in place to determine which projects are eligible
- (c) **Management of proceeds:** the proceeds of the issue of the bonds should be kept in a separate account or tracked by the issuer
- (d) **Reporting:** the issuer should make and keep readily available information on the use of the proceeds

Environmental objectives that the GBP recognises as being eligible are **climate change mitigation, climate change adaptation, natural resource conservation, biodiversity conservation, and pollution prevention and control.**

The ICMA is also responsible for the Social Bond Principles, Sustainability Bond Guidelines and Sustainability-Linked Bond Principles.

#### 4.16.2 Market for Green Bonds

The market for Green Bonds is growing exponentially according to research from Climate Bonds Market Intelligence. This organisation estimates that during the year 2021, more than \$517 billion of green bonds were issued globally. This is up from around \$4.2 billion in the year 2012.

In September 2021, the UK government issued its first Green Gilt raising £10 billion to finance green government projects, such as zero emission buses, offshore wind farms and schemes to decarbonise homes and buildings. The Gilts are issued in accordance with the UK government's Green Bond Framework, which is aligned with the four core components of the ICMA Green Bond Principles.

## 5 Bond markets



### Section overview

Companies wishing to issue bonds have a choice. Large multinational firms with good credit ratings are able to access the international bond market. Smaller companies will have to use the less active domestic corporate bond market.

### 5.1 Sterling domestic market

The sterling domestic bond market is for UK companies and non-UK companies wishing to issue sterling denominated bonds in the UK market, for sale predominantly to UK investors. The UK domestic market progressively declined in importance since the 1970s.

However, as government bond markets have declined, corporate issuance has risen. In the UK, the size of the corporate bond market is now greater than the size of the government debt market. There are a number of reasons for this change:

- (a) Banks have come under increasing regulation and consequently have been less able to lend from their own balance sheets. It therefore makes sense for them to arrange debt issuance.
- (b) Companies have become increasingly concerned about the efficiency of their capital structure.
- (c) Mergers and acquisition activity is further fuelling this need for new debt capital.
- (d) As government bond markets contract, the investment opportunities shrink. Investors are therefore compelled to take an interest in corporate debt.
- (e) Within the Euroland bloc, the advent of the single currency has removed an element of risk (forex risk arising from cross-border investment) and therefore reduced reward. Consequently, investors are seeking extra reward by moving down the credit curve.
- (f) Individual Savings Accounts allow the creation of tax-free collective investment vehicles offering the enhanced returns that bonds offer over bank accounts without the risks of equity.

These factors have all come together in order to stimulate an increase in issuance.

The secondary market in corporate bonds involves the buying and selling of bonds after the initial offering. The corporate bond secondary market is almost entirely an OTC market.

Trading on unregulated OTC markets carries risks. Liquidity may be low. There may be a price disadvantage due to unfavourable price spreads. Brokers' commission must be taken into account. Consequently, the market is not particularly structured, with relatively little involvement of market makers.

In 2010, the Order Book for Retail Bonds (ORB) was launched. Rather than constituting a separate market, ORB is a trading platform for gilts and corporate bonds listed on the LSE.

### 5.1.1 Interbank rates

Key reference interest rates are produced from this primarily interbank market. The key UK reference rate is Sterling Overnight Index Average (SONIA) which is based on actual transactions greater than or equal to £25 million in value. SONIA is therefore set in arrears because it is based on actual transactions. SONIA reflects the average of the rates at which interest is paid on sterling short-term wholesale funds in circumstances where credit, liquidity and other risks are minimal. SONIA is used in a variety of ways eg, to calculate the interest paid on swap transactions and sterling FRNs. SONIA is used to value approximately £30 trillion of assets each year.

SONIA is a risk-free rate whereas LIBOR (phased out in the UK at the end of 2021) reflected a credit risk premium for interbank lending. SONIA is an overnight rate, based on actual market rates and reset on a daily basis in arrears. LIBOR included forward-looking term rates set at the start of a period. LIBOR also embedded a liquidity premium for longer dated rates.

There is industry discussion about creating a forward-looking 'term SONIA' rate. At the time of writing (May 2021), the Bank of England plans to publish overnight index swap (OIS) rate yield curves to longer maturities as soon as operationally possible.

#### LIBOR reform outside the UK

LIBOR in British pounds, euro, Swiss francs and Japanese yen plus 1-week and 2-month US dollar will cease in December 2021. Other major US dollar LIBOR tenors (overnight, 1-month, 3-month, 6-month and 12-month) will cease in mid-2023. US regulators are encouraging no new US dollar LIBOR contracts to be initiated after 31 December 2021, while allowing most legacy contracts to mature before US dollar LIBOR ceases.

In the US, the Secured Overnight Funding Rate (SOFR) is used from 2022. SOFR is administered by the Federal Reserve Bank of New York. SOFR is the average rate at which banks can borrow US dollars overnight while posting US Treasury bonds as collateral. SOFR is a secured borrowing rate, whereas LIBOR is a rate for unsecured borrowing.

## 5.2 International market

The international bond market is an international market in debt. Companies issuing debt in the market have their securities traded all around the world and are not limited to one domestic marketplace. The market only accepts highly rated companies, since international bonds are unsecured debt.

Primary market bond issuance is through the process of **placing**. A large borrower will have a relationship with a number of bond 'houses' (investment banks specialising in bonds). The decision to issue can come either from the borrower who perceives the need for finance or from the issuing house who perceives that there is an opportunity to issue a reasonably priced bond into the market.

Another key decision to be taken is whether or not to **list** the bond on one of the various exchanges. Almost inevitably a bond will be listed, normally on either the London or Luxembourg Exchange. The reason for this is that certain institutions and investors by their trust deeds are prohibited from investing in securities that are not listed on a formal exchange.

There is no formal marketplace for international bond trading. The market is telephone driven (or, increasingly, driven by electronic trading platform) and the main bond houses for international bonds are based in London.

Settlement is conducted for the market by two independent clearing houses, Euroclear and Clearstream. These clearing houses immobilise the stocks in their vaults and then operate electronic registers of ownership.

**An effect of low government bond yields** appears to have been to make corporate bond yields more attractive for both issuers and investors. Issuers can benefit from the low interest rates in the bond markets, and investors are able to obtain a higher yield on corporate bonds than on government bonds.

## 5.3 Bond markets in other countries

### 5.3.1 US

The US government bond market is the largest in the world, having expanded rapidly in the 1980s. This size is evident in both the quantity of issuance in the primary market and the volumes of activity in the secondary market. The US Treasury is responsible for the issuance of new securities. Issuance takes place on a regular calendar with weekly issues of three- or six-month Treasury bills, monthly issues of one-year bills and two- and five-year notes, and quarterly issues in set cycles of longer- dated stocks.

Central to the operation of the secondary market in government bonds are the **primary dealers**. These firms are the market makers. They are authorised to conduct trades by the Federal Reserve (the Fed) and are obliged to make markets in all issues.

Federal agencies are quasi-governmental institutions established to fill gaps in the US financial markets. They are backed by the guarantee of the US Government via the Fed and are therefore riskless.

Unlike the UK, the US corporate sector has been able to borrow substantial sums via the issue of debt securities. In part, this has been forced on them by the highly fragmented nature of the domestic banking market. Equally, however, investors are willing to hold corporate debt as part of their portfolios in a way UK investors are not.

A Yankee is a dollar-denominated bond issued in the US by an overseas borrower. Given that international dollar-denominated bonds may not be sold into the US markets until they have **seasoned** (a period of 40 days), there is still a divide between the international bond market and the domestic US bond market. Apart from the access to a different investor base, the market also allows issuers to raise longer-term finance, since the US domestic investors are prepared to accept longer maturities.

The US corporate bond market is very large and there is an active market in bonds with a low credit rating (even a non-investment grade credit rating – junk bonds). Investors are willing to accept the higher risk of default by borrowers in order to earn higher yields on their investment.

In the US, corporates are allowed to issue bonds into the private placement market without seeking full SEC registration. This access to the market is available to both domestic and foreign issuers, though the market is dominated by US domestic issuers who have chosen not to enter the public market. The buy side of the market is restricted to certain institutional investors (primarily insurance companies) who are predominantly 'buy and hold' investors. Reflecting the nature of the market as in effect a one-to-one contract, new issue terms are negotiated between the issuer and the lender. This process can take up to eight weeks to complete. Equally, as a consequence, borrowers tend to have to pay a premium over the public market yields. However, they do not have the cost of seeking a credit rating, nor are they bound by the rules of the SEC.

### 5.3.2 Japan

The **bond market** in **Japan** is dominated by government bonds. This domination is not in terms of volume, where **Japanese government bonds (JGBs)** account for only half the market, but in the secondary market where they account for over 80% of the secondary market trading.

JGBs trade on both the TSE and the Broker-Broker (OTC) market. The market tends to focus on the 'benchmark' issues, with occasionally 90% of the volume taking place in that stock.

International borrowers are able to access the domestic pool of savings through the issue of Samurai (publicly issued yen bonds) and Shibosai (yen bonds issued via private placement).

### 5.3.3 France

The French bond market has developed into one of the key international bond markets, mainly due to the economic transformation that took place since the introduction of the 'Franc fort' policy in 1985. The development of MATIF (the French financial futures market, now part of Euronext) and the trading of the 'Notional' future into the French long bond were also vital components in the reform of the market.

The French Government issues three **types of bond**, each with a different maturity. All French government issues are now in book entry form with no physical delivery.

Over half the market is made up of debt issues from the **public corporations**. These stocks are not, for the most part, guaranteed by the Government, but the corporations concerned do possess strong credit ratings. They have established their own market structure in order to facilitate trading in their stocks. All issues are by way of a placing through a syndicate of mainly local banks.

### 5.3.4 Germany

The German bond market, including government bonds, domestic bonds and international bonds, is the third largest in the world and one of the largest in Europe (the second largest after Italy).

Unlike the UK, Germany has a strong **corporate debt market** and a relatively weak equity market. The bulk of finance for industry is still provided through the banks, either as lenders or shareholders, with debt securities (other than international bonds) being less significant. Within the context of debt issuance, banks issue bonds and then lend the money on to the corporate sector.

## 5.4 Islamic bond markets

Sukuk markets are relatively new and are not yet as developed and standardised as Western markets. They were originated by government entities, particularly that of Malaysia, and government entities still dominate the market, though corporate issues are gaining in importance.

Issuance is achieved in a similar manner to corporate bond issues in the UK, with investment banks underwriting and managing the issues.

Sukuk other than the short-term Salam Sukuk are traded by being listed on stock exchanges, though liquidity levels are currently quite low and many issues are held to maturity.

# 6 Bond valuation and yields



## Section overview

- Bonds are an important source of finance for companies.
- Bonds can be priced at par, at a premium or at a discount when they are issued and throughout their lives.

- Returns on bonds can be measured using flat yield and/or gross redemption yield. Yield is a measure of the return on the bond as a percentage of the bond's market value.
  - There is an inverse relationship between bond yields and bond prices. As interest rates rise, the price of bonds falls (and bond prices rise when yields fall).
  - The yield curve is a graphical representation of the structure of interest rates, where the yield offered by bonds is plotted against maturity.
  - The yield that investors require from a bond is made up of a number of elements, including a risk-free return plus return to compensate for credit and default risk, liquidity and marketability risk, issue-specific risk and fiscal risk.
  - The volatility of a bond is the sensitivity of the bond to movements in the yield/interest rate.
  - Duration is the weighted average length of time to the receipt of a bond's benefits (coupon and redemption value), the weights being the PV of the benefits involved.
- 

## 6.1 Bond pricing

Bonds can be priced at par, at a premium or at a discount. Like shares, the price of a bond will depend on the market forces of supply and demand; the demand for bonds from investors depends on the yield that they require on the bond. The required yield will depend on factors such as the coupon rate on the bond, the credit rating of the bond issuer and the period to redemption (the maturity) of the bond.

### 6.1.1 General method

The price of a bond is the sum of the PVs of all expected coupon payments plus the PV of the redemption value at maturity - in other words, all you are doing is discounting the future cash flows of the bond at the rate of return (yield) required by the bond investors.

The PV spreadsheet function is used to calculate the market price (issue price) of a bond, this is covered in more detail in the chapter Spreadsheet formulae and illustrated in the example below.



### Worked example: Bond pricing

A bond has a face value of £2,500 which is to be redeemed in 15 years' time at par. The coupon rate of the bond is 8% and there is a required yield of 10%. Coupon payments are made every 6 months and the next payment is due in six months' time.

#### Requirement

What is the price of the bond?

#### Solution

The first thing we have to do is calculate the number of coupon payments that will be made. As two payments are made every year for 15 years, there will be 30 payments in total.

What is the value of each coupon payment? As the payments are made twice a year, you should divide the coupon rate in half - which gives a rate of 4%. Each semi-annual coupon payment will be 4% of £2,500 = £100.

Likewise, with the required yield, divide by two, giving a yield of 5%. If we did not reduce the yield, the bond price would be too low.



We can now use the PV spreadsheet function to calculate the bond price:

To calculate the PV, the following variables need to be input to the PV function.

B5 =PV(B1,B2,B3,B4)		
	A	B
1	Rate of return required over the period	0.05
2	Nper = the number of periods	30
3	Pmt= the amount (of interest) paid in any single period	100
4	Fval = the future value (the amount paid at maturity).	2,500
5	Present value (issue price)	-2,115.69

Bond price = £2,115.69

The bond is trading at a discount - the bond price of £2,115.69 is less than the par value of £2,500. This is because the required yield is greater than the coupon rate. Investors will have to be attracted by a discount in order to invest in the bonds, as they could earn greater interest elsewhere at the prevailing rate.

### 6.1.2 Zero-coupon bonds

The pricing of zero-coupon bonds is actually quite straightforward, all you have to do is calculate the PV of the redemption value at maturity.



#### Worked example: Zero-coupon bonds

What is the price of a zero-coupon bond that matures in 10 years' time, has a required yield of 7% and a redemption value of £3,200? Assume that coupon payments occur semi-annually.

#### Solution

As the coupon payments occur semi-annually, we have to adjust the yield to its equivalent semi-annual payment rate. This means that the number of periods for the zero-coupon bond will be doubled from 10 to 20.

The yield will also have to be adjusted, giving a yield of 3.5%.

B5 =PV(B1,B2,B3,B4)		
	A	B
1	Rate of return required over the period	0.035
2	Nper = the number of periods	20
3	Pmt= the amount (of interest) paid in any single period	0
4	Fval = the future value (the amount paid at maturity).	3,200
5	Present value (issue price)	-1,608.21

= £1,608.21

Zero-coupon bonds always trade at a discount, otherwise there would be no chance for the investor to make any money and thus no incentive to invest in such bonds.

## 6.2 Flat yield

### 6.2.1 Calculation of the flat yield

The simplest measure of return in the bond market is the flat yield. This is also referred to as the running yield or the interest yield. It looks at the cash return generated by an investment over the cash price. In simple terms, what is the income that you generate on the money that you invest?

$$\text{Flat yield} = \frac{\text{Annual coupon payment}}{\text{Market price}} \times 100\%$$



### Worked example: Flat yield

5% loan stock

Redemption date five years from now at par Current market price £97.25

#### Solution

The flat yield for the above would be:  $5 / 97.25 \times 100 = 5.14\%$

---

### 6.2.2 Limitations of the flat yield

This measure is of some use, particularly in the short term, but it has important drawbacks for the investment markets.

- With all equities and some bonds (eg, floating rate notes), the return in any one period will vary. If the coupon is not constant, then the measure is only of historical value unless the predicted return is used.
- In addition to the coupon flows, bonds will have return in the form of the payment at maturity (the 'redemption monies'). Where the bond has been purchased at a price away from par, this will give rise to potential gains or losses arising from the difference between the purchase price for the bond and its redemption value.
- The calculation completely ignores the time value of money. If an investor were to be offered the choice between the receipt of £10 now or in two years' time, the logical choice would be to take the £10 now, since the money could then be invested to generate interest.

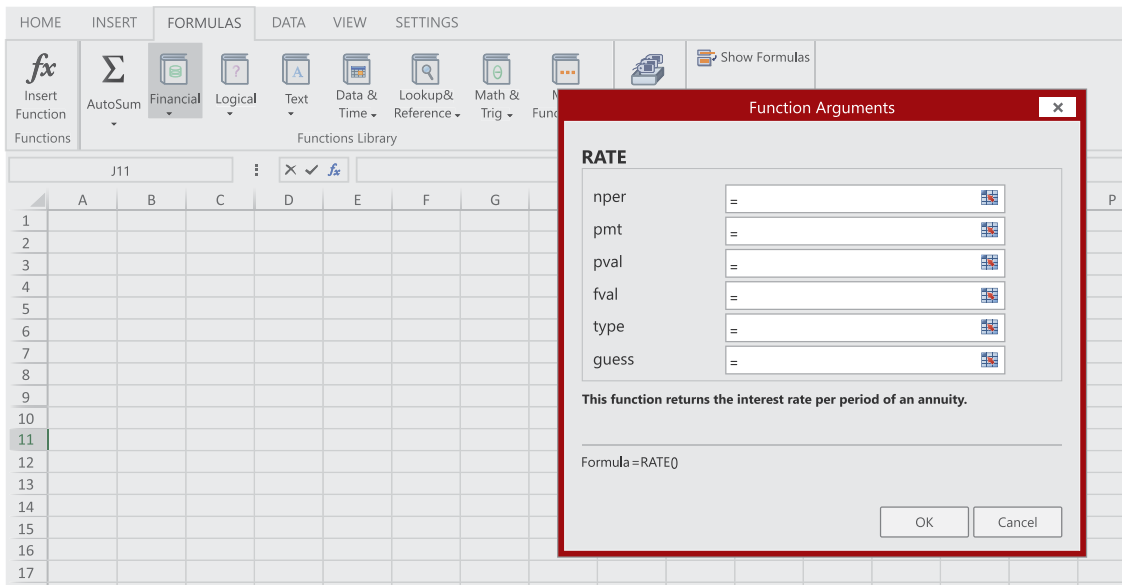
These limitations combine to make the flat yield of marginal use only.

## 6.3 Gross redemption yield (yield to maturity)

The gross redemption yield considers the flows of money arising from a bond.

Each flow is then converted into its PV by discounting the future flow. The RATE spreadsheet function is used to calculate the gross redemption yield. This is covered in more detail in the chapter Spreadsheet formulae.

The following information will need to be input into the RATE function:



Nper = the number of periods

Pmt= the amount (of interest) paid in any single period

Pval= the present value of the asset (its market price), inserted as a negative number Fval = the future value (the amount paid at maturity).

Type and guess can be left blank for the SBM&L exam.

This will give the gross redemption yield over a given period.

To calculate an annual yield the value will need to be multiplied by the number of periods in a year eg, if payments are made over 6 months, as there are two six-month periods in a year so multiply the RATE calculated by 2.

It can be seen that the GRY is simply the internal rate of return of the bond's flows, where the current price is treated as an outflow and the future interest and capital repayment flows are treated as inflows.



### Worked example: GRY

5% loan stock (annual coupon)

Three years to redemption

Current market price £97.25

#### Solution

	A	B
B5	=RATE(B1,B2,B3,B4)	
1	Nper = the number of periods	3
2	Pmt= the amount (of interest) paid in any singleperiod	5
3	Pval= the present value of the asset (its marketprice)	-97.25
4	Fval = the future value (the amount paid ataturity).	100
5	Gross yield	0.063

The GRY of this bond is 6.03%.

### 6.3.1 Problems with the GRY

We have noted that the yield that has been calculated so far is in effect the internal rate of return of the flows generated by a bond.

As a measure of predicted return, the yield is limited, since it assumes that any coupon receipts are reinvested at the same rate as the current yield. If the investor is only able to reinvest the coupon at a lower rate, then the overall return generated by the bond will be lower than the yield.

## 6.4 The relationship between bond prices and interest rates

One of the fundamental correlations in bond markets is that as the interest rate rises and bond yields go up, the price of a bond will fall. When interest rates and bond yields fall, bond prices will rise.

There is an inverse relationship between yield and price.

This can be demonstrated either through the flat or the gross redemption yield. Suppose the flat yield was calculated as:

$$\frac{10}{97.25} \times 100 = 10.283\%$$

If the market interest rate were to rise to 12% then the holders of the bond would be encouraged to sell the bond and invest their money into assets yielding 12%. The result of this would be that the supply of the bond would rise and the demand fall, leading to a fall in the price. As the price falls to £83.33, the yield rises to 12% thereby removing the incentive to switch out of the bond:

$$\frac{10}{83.33} = 12\%$$

The GRY can prove the same result using the RATE function.

If the interest rate increases then the flows received in future periods will have a lower PV and consequently the value of the bond (its price) falls.

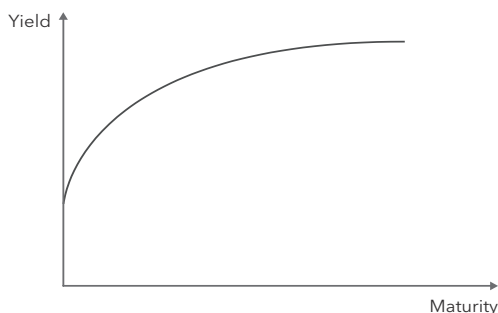
## 6.5 The yield curve

### 6.5.1 What is the yield curve?

The yield curve (Figure 13.3) is a graphical representation of the term structure of interest rates, where the yield offered by bonds is plotted against maturity. It is often calculated by reference to the GRY.

A 'normal' yield curve is upward sloping, which means that the yields required by investors are higher for longer-dated debt instruments.

Figure 13.3: The yield curve



## 6.5.2 The shape of the curve Liquidity preference

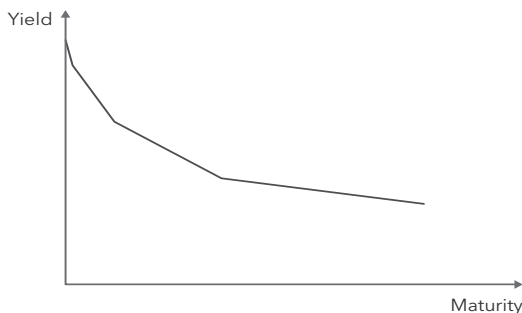
If an investor's money is invested in longer-term (and therefore riskier) debt, then they will require a greater return – a risk premium. Short-term liquid debt carries a lower risk and therefore requires a lower return. This gives rise to the normal upward sloping yield curve.

### Expectations theory

Expectations theory states that the yield curve is a reflection of the market's expectation of future interest rates. If the market believes that the yield at the long end of the yield curve is high and is likely to fall then, in order to profit from the increase in prices that this will create, investors will buy long-dated stocks. As a result, the demand for these stocks will rise. This demand pressure will force the price to rise. As a consequence, the yield will fall, reflecting the expectation of a fall.

On the other hand, if the market believes that rates will have to rise, then the forces will work in the opposite direction and this will lead to a fall in the price and a rise in the yield.

The expectations of the market can clearly be seen in an inverted yield curve (Figure 13.4).  
Figure 13.4: An inverted yield curve



Here, short-term rates are unusually high, but the market anticipates that this cannot last for long. The longer end of the market has anticipated this change by forcing yields down. This can lead to the anomalous situation where the long end of the market remains constant because it has anticipated change and the short end (which is technically the least volatile) exhibits all the movement.

Another key element of the market's expectations will be the expectation of inflation. If the market believes that inflation will rise in the future then the yields on the longer-dated stocks will have to rise in order to compensate investors for the fall in the real value of their money. The expectation of inflation is much more of a problem with the long – rather than the short – end.

### Preferred habitat and market segmentation

Certain maturity ranges are appropriate to particular types of investors. In the UK, the short end of the market is dominated by the financial sector maintaining a proportion of their assets in liquid investments, whereas the long end is dominated by institutional investors such as pension funds. In effect, this gives rise to two markets and may be reflected in a discontinuity, or hump, in the yield curve.

### Supply-side factors

The availability of debt in certain maturity ranges may lead to either an excess or a shortage of debt and consequently an anomalous yield on some debt.

## 6.5.3 Yield curve and interest rates

The yield curve on a range of long-dated bonds provides the best means of inferring market estimates of future interest rates. The steepness of the yield curve reflects market expectations about the change in forward rates.

## 6.6 Composition of the yield

The yield on any bond is made up of a number of elements.

- (a) **The real return** - This is the real rate of return that the investment has to earn. Effectively, it represents the opportunity cost of saving over immediate consumption.
- (b) **Inflation premium** - As inflation rises then the yield on a bond will have to increase in order to compensate the holder. Inflation is basically negative interest, eroding the value of savings, whereas interest adds to them.

Together, the real return and the inflation premium form the yield on government bonds and are therefore said to approximate to the interest rate. In the case of non-government bonds, the required return is a yield in excess of the risk-free rate (the rate obtainable on government bonds) to compensate investors for the additional investment risks:

- (a) **Credit and default risk** - This is the risk of the issuer defaulting on its obligations to pay coupons and repay the principal. The ratings issued by commercial rating companies can be used to help assess this risk.
- (b) **Liquidity and marketability risk** - This is the ease with which an issue can be sold in the market. Smaller issues are particularly subject to this risk. In certain markets the volume of trading tends to be concentrated in the 'benchmark' stocks, thereby rendering most other issues illiquid. Other bonds become subject to 'seasoning' as the initial liquidity dries up and the bonds are purchased by investors who wish to hold them to maturity.
- (c) Even if an issuer has a triple A credit rating and is therefore perceived as being at least as secure as the Government, it will still have to offer a **yield above that offered by the Government** due to the smaller size (normally) and the thinner market in the stocks.
- (d) **Issue specific risk** - For example, risk of call. If the company has the right to redeem the bond early, then it will only be logical for it to do this if it can refinance at a lower cost. What is good for the issuer will be bad for the investor and, thus, the yield will have to be higher.
- (e) **Fiscal risk** - The risk that withholding taxes will be increased. For foreign bonds, there would also be the risk of the imposition of capital controls locking your money into the market.

## 6.7 Sensitivity to yield

### 6.7.1 Introduction

All the risks of holding a bond come together in the yield. As we have already seen, there is an inverse relationship between the price of a bond and its yield. It is possible to define this relationship mathematically and predict the way in which a selection of bonds will perform. This is sometimes referred to as the volatility of the bond.

The sensitivity of any bond to movements in the yield/interest rate will be determined by a number of factors.

### 6.7.2 Sensitivity to maturity

Longer-dated bonds will be more sensitive to changes in the interest rate than shorter-dated stocks.

### 6.7.3 Sensitivity to coupon

Lower coupon stocks demonstrate the greatest level of sensitivity to the yield. It should be noted that the relationship between yield and price is not symmetrical. This is a relationship that is known as convexity.

### 6.7.4 The impact of the yield

If yields are particularly high, then the flows in the future are worth relatively little and the sensitivity is diminished. Conversely, if the yield is low then the value of flows in the future is enhanced and the bond is more sensitive to the changing GRY.

### 6.7.5 Summary of volatility

High volatility		Low volatility
Long dated	>	Short dated
Low coupon	>	High coupon
Low yields	>	High yields

While these simple maxims are good indicators of the likely sensitivity to fluctuations in the rate of interest, they do not allow for two bonds to be directly compared. For example, which of the following is likely to be the more sensitive to a rise in interest rates – a high-coupon, long-dated stock, or a low-coupon, short-dated stock? In order to enable two such bonds to be compared, a composite measure of risk known as the **duration** can be used.

## 6.8 Duration

### 6.8.1 What is duration?

A bond may be thought of as a combination of cash flows with different timings, each with its own sensitivity to interest rate movements. Hence, a measure of the sensitivity of a bond price to changes in interest rates must be a weighted average of the sensitivities of those individual cash flows. This measure is a bond's **duration**.



#### Definition

**Duration:** The weighted average length of time to the receipt of a bond's cash flows, the weights being the present value of each cash flow. The calculation gives each bond an overall risk weighting that allows two bonds to be compared. In simple terms, it is a composite measure of the risk expressed in years.

Mathematically, duration (also known as Macaulay duration) can be expressed using the following formula:

$$\text{Duration (D)} = \frac{\sum(t \times PV_t)}{\text{Price}}$$

Where:  $PV_t$  = present value of cash flow in period  $t$  (discounted using the redemption yield)  $T$  = time period when cash flow occurs



#### Worked example: Duration

Calculate the duration of a three-year 9% annual coupon bond trading with a GRY of 8%.

#### Solution

Time	Cash Flow (£)	Discount Factor	Present Value (£)	Weighted ( $t \times PV_t$ )
1	9.00	1/1.08	8.33	8.33
2	9.00	1/1.08 <sup>2</sup>	7.72	15.44
3	109.00	1/1.08 <sup>3</sup>	86.53	259.59
			102.58	283.36

Using the above:  $\text{Duration} = \frac{283.36}{102.58} = 2.7623$  years

Note that the duration on any bond that pays coupons will always be less than the maturity, because there is always some amount of the total payments that are going to arrive before the maturity date.

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### 6.8.2 Modified duration

The measurement of duration can be converted into another measure, known as **modified duration**.



#### Definition

**Modified duration:** Used to determine the effect that a change in interest rates will have on the price of a bond. Modified duration =  $\text{Duration}/(1 + i)$ , where  $i$  is the yield required by the bond investors.

---

To apply the modified duration of a bond to calculate the change in price that would occur with a change in interest rates, the following formula is used:

$$-D_m \times P \times i$$

$D_m$  is the measure of modified duration and  $P$  is the current price of the bond before the price change. The longer the modified duration, the bigger will be the change in bond price given a change in the required yield.



#### Worked example: Modified duration

Continuing with our example above of a three year 9% bond paying annual coupons with a GRY of 8%, we can use modified duration to calculate the expected change in price if the yield were to rise to 9%.

#### Solution

Using the information from the above example:

$$\text{Modified duration} = \frac{2.7623}{1.08} = 2.5577$$

In this example, if the bond yield increases by 1% the change in the bond price will be:

$$-2.5577 \times 102.58 \times 0.01 = -2.62.$$

The bond price will fall from 102.58 to 99.96

---

It must be remembered that this is an inverse relationship. A rise in yields will lead to a fall in bond prices and vice versa.

### 6.8.3 Properties of duration

The basic features of sensitivity to interest rate risk will all be reflected by its measure of duration.

- (a) **Longer-dated bonds** will have longer durations.
- (b) **Lower-coupon bonds** will have longer durations. The ultimate low-coupon bond is a zero-coupon bond where the duration will be the maturity.



- (c) **Lower yields** will give longer durations. In this case, the PV of flows in the future will rise if the yield falls, extending the point of balance, therefore lengthening the duration.

The duration of a bond will shorten as the lifespan of the bond decays. However, the rate of decay will not be at the same rate. For example, a five-year bond might have a duration of 4.157 years. In a year's time the bond might have a remaining life of four years and a duration based on the same GRY of 3.480 years. The lifespan has decayed by a full year, but the duration by only 0.677 of a year.

## 7 Credit risk



### Section overview

- Credit risk is the risk for a lender that the borrower will default either on interest payments or on the repayment of principal on the due date, or on both.
- The credit spread is the premium required by an investor in a corporate bond to compensate for the credit risk of the bond.

### 7.1 Credit (default) risk



#### Definition

**Credit risk:** also referred to as **default risk**, is the risk for a lender that the borrower will default either on **interest payments** or on the **repayment of principal** on the due date, or on both.

#### 7.1.1 Credit risk aspects

Credit risk arises from the inability of the borrower to fulfil its obligation under the terms of a contract. Creditors to companies such as corporate bondholders and banks are exposed to credit risk.

The credit risk of an individual loan or bond is determined by the following two factors:

(a) **The probability of default**

This is the probability that the borrower or counterparty will default on its contractual obligations to repay its debt.

(b) **The recovery rate**

This is the fraction of the face value of an obligation that can be recovered once the borrower has defaulted. When a company defaults, bondholders do not necessarily lose their entire investment. Part of the investment may be recovered depending on the **recovery rate**.



#### Definition

**Loss given default (LGD):** is the difference between the **amount of money owed** by the borrower and the **amount of money recovered**.

For example, a bond has a face value of £100 and the recovery rate is 80%. The **LGD** in this case is:  $LGD = £100 - £80 = £20$



## Definition

**Expected loss (EL):** from credit risk shows the **amount of money the lender should expect to lose** from the investment in a bond or loan with credit risk.

The **EL** is the product of the **LGD** and the **probability of default (PD)**.  $EL = PD \times LGD$  If the PD is, say, 10%, the EL from investing in the above bond is:

$EL = 0.10 \times 20 = £2$  per £100 nominal value of the bond.

For all bonds, regardless of their credit rating, the PD increases with the future time period covered. For example, the PD for a bond may be a 0.05% PD within the next two months, a 1.2% PD within two years, a 2.0% PD within the next three years, and so on.

### 7.1.2 Credit risk measurement

The measurement of credit risk is quite complex. All the approaches concentrate on the estimation of the default probability and the recovery rate.

The oldest and most common approach is to assess the PD using financial and other information on the borrowers and assign a rating that reflects the EL from investing in the particular bond. This assignment of credit risk ratings is done by credit rating companies such as Standard & Poor's, Moody's Investor Services and Fitch. These ratings are widely accepted as indicators of the credit risk of a bond. The table below shows the credit rating used by the two largest credit rating agencies.

Standard & Poor's	Moody's	Description of category
AAA	Aaa	Highest quality, lowest default risk
AA	Aa	High quality
A	A	Upper medium grade quality
BBB	Baa	Medium grade quality
BB	Ba	Lower medium grade quality
B	B	Speculative
CCC	Caa	Poor quality (high default risk)
CC	Ca	Highly speculative
C	C	Lowest grade quality

S&P also use + and - symbols to refine its credit ratings. For example, the credit ratings below AAA are AAA- and then AA+, AA, AA-, A+ and so on. The lowest 'investment grade' credit rating is BBB-. Moody's uses the numbers 1, 2 and 3 to refine its credit ratings, for example Aa1, Aa2 and Aa3.

Both credit rating agencies estimate default probabilities from the empirical performance of issued corporate bonds of each category.

It would be very difficult for any company without a credit rating to raise money in bond markets, and the market itself is confined to dealing with high credit-worthy stocks exclusively in the investment grade.

A bond may be placed on credit watch as a prelude to a potential downgrade. If a bond is placed on credit watch then it is likely that its credit spread will widen with the consequence of a fall in price.

This impact is less pronounced for the higher rated (investment grade) bonds but becomes quite significant for non-investment grade bonds or those falling from investment grade to non-investment grade.

The more a bond gets downgraded, the fewer investors that will find it to be of interest. There are specialist high yield funds. However, as a general rule the major investors prefer the higher rated bonds.

One big step is when a bond falls from investment grade to non-investment grade, or high yield. At this stage there tends to be many forced sellers, and prices can be expected to decline dramatically.

### 7.1.3 Credit migration

There is another aspect of credit risk which should be taken into account when investors are investing in corporate bonds, beyond the PD.

A borrower may not default, but due to changing economic conditions or management actions the borrower may become more or less risky than at the time the bond was issued. As a result, the bond issuer will be assigned by the credit agency a different credit rating. This is called credit migration. The significance of credit migration lies in the fact that the assignment of lower credit rating will decrease the market value of the corporate bond.

## 7.2 Credit spreads and the cost of debt capital



### Definition

**Credit spread:** is the premium required by an investor in a corporate bond to compensate for the **credit risk** of the bond.

The yield to a government bondholder is the compensation to the investor for forgoing consumption today and saving. However, corporate bondholders should require compensation not only for forgoing consumption, but also for the credit risk to which they are exposed. Assuming that a government bond such as the ones issued by the US and UK Governments is **free of credit risk**, the yield on a corporate bond will be:

Yield on corporate bond = Risk-free rate + Credit spread Or in symbols  $y = r + s$

Where:  $y$  = yield on the corporate bond  
 $r$  = risk-free rate, ie, the rate on a government bond with no default risk  
 $s$  = credit spread

Since **credit spreads** reflect the **credit risk** of a bond, they will be inversely related to the credit quality of the bond. Low credit quality bonds will be characterised by large spreads and high credit quality bonds will be characterised by low spreads.

### 7.2.1 The cost of debt capital

The cost of debt capital for a company will therefore be determined by the following:

- its credit rating
- the maturity of the debt

- the risk-free rate at the appropriate maturity
- the corporate tax rate

Cost of debt capital =  $(1 - \text{Tax rate})(\text{Risk-free rate} + \text{Credit spread})$



### Worked example: Cost of debt capital

Consider a corporate bond with a maturity of four years and a credit rating of BBB. The 4-year risk-free rate is 5% and the credit spread is 200 basis points. The tax rate is 24%. Find the cost of debt capital.

#### Solution

Cost of debt capital =  $(1 - 0.24)(5\% + 2\%) = 5.32\%$

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## 8 Leasing



### Section overview

- Rather than buying an asset outright, using either available cash resources or borrowed funds, a business may lease an asset. This method of financing is extremely popular with airlines (which typically lease their aircraft) and companies with carpools; it has also been used extensively in the printing industry.
  - The financial reporting implications of leasing are covered in more detail in section 11 of this chapter.
- 

### 8.1 Leasing

Leasing is a commonly used source of finance, especially for small or medium sized entities. It is a form of debt finance that can be very useful where capital is rationed. Rather than buying an asset outright, using either available cash resources or borrowed funds, a business may lease an asset.

IFRS 16 abolished the distinction between operating and finance leases for lessees, although not for lessors. It introduces a single lessee accounting model and requires a lessee to recognise assets and liabilities for all leases with a term of more than 12 months, unless the underlying asset is of low value. The financial reporting implications of leasing are covered in more detail in section 11.

### 8.2 Sale and leaseback

Sale and leaseback occurs when a business that owns an asset agrees to sell the asset to a financial institution and then lease it back on terms specified in a sale and leaseback agreement. The business retains use of the asset and has the funds from the sale, but as a consequence has to pay rent in the future. Sale and leaseback arrangements are particularly appropriate for highly specialised assets that may have a low realisable value and therefore would be poor security for a more traditional loan.



## Context example: Tesco

Tesco is one of the biggest corporate owners of property in the UK and the company has used leasing arrangements extensively for its properties. For example, in 2008 Tesco sold 113 of its stores and a depot to raise cash to fund its growth plans, and immediately leased them back under sale and leaseback agreements.

In 2014 Tesco obtained a new store in Sale, Manchester, under a 20-year leasing agreement. The agreement gives the tenant the right to break the agreement after 10 years. There are regular lease rental reviews with changes in payments linked to the Retail Prices Index, but with a collar of 1% and 4% limiting the scale of any annual increase.

### 8.3 Attractions of leasing

Attractions include the following.

- (a) The supplier of the equipment is paid in full at the beginning. The equipment is sold to the lessor, and, apart from any guarantees, the supplier has no further financial concern about the asset.
- (b) The lessor invests finance by purchasing assets from suppliers and makes a return out of the lease payments from the lessee. The lessor will also get capital allowances on his purchase of the equipment.
- (c) Leasing may have advantages for the lessee:
  - (1) The lessee may not have enough cash to pay for the asset, and would have difficulty obtaining a bank loan to buy it. If so, the lessee has to rent the asset to obtain use of it at all.
  - (2) Leasing may be cheaper than a bank loan.
  - (3) The lessee may find the tax relief available advantageous.

### 8.4 Lease or buy?

The decision whether to lease or buy an asset involves two steps.

- (a) The **acquisition decision**: Is the asset worth having? Test by discounting project cash flows at a suitable cost of capital.
- (b) The financing decision: If the asset should be acquired, compare the cash flows of purchasing against those of leasing or hire purchase arrangements. The cash flows can be discounted at an **after-tax cost of borrowing**.

The traditional method is complicated by the need to choose a discount rate for each stage of the decision. In the case of a **non-taxpaying organisation**, the method is applied as follows.

**Step 1** The cost of capital that should be applied to the cash flows for the acquisition decision is the cost of capital that the organisation would normally apply to its project evaluations.

**Step 2** The cost of capital that should be applied to the (differential) cash flows for the financing decision is the cost of borrowing.

- We assume that if the organisation decided to purchase the equipment, it would finance the purchase by borrowing funds.
- We therefore **compare** the **cost of borrowing** with the **cost of leasing** (or hire purchase) by applying this cost of borrowing to the financing cash flows.

In the case of a **taxpaying organisation**, taxation should be allowed for in the cash flows, so that the traditional method would recommend:

**Step 1 Discount** the cash flows of the acquisition decision at the firm's **after-tax cost of capital**.

**Step 2 Discount** the cash flows of the financing decision at the **after-tax cost of borrowing**.



### Worked example: Lease or buy decisions 1

Mallen and Mullins Co has decided to install a new milling machine. The machine costs \$20,000 and it would have a useful life of 5 years with a trade-in value of \$4,000 at the end of the fifth year.

Additional net cash generated from the machine would be \$8,000 a year for 5 years. A decision still has to be taken about the method of financing the project. Two methods of finance are being considered:

- The company could purchase the machine for cash, using bank loan facilities on which the current rate of interest is 13% before tax.
- The company could lease the machine under an agreement which would entail payment of \$4,800 at the end of each year for the next five years.

The company's weighted average cost of capital, normally used for evaluating projects, is 12% after tax. The rate of company tax is 21%. If the machine is purchased, the company will be able to claim an annual tax depreciation allowance of 20% of the reducing balance.

#### Requirement

Advise the management on whether to acquire the machine, on the most economical method of finance, and on any other matter which should be considered before finally deciding which method of finance should be adopted.

#### Solution

The traditional method begins with the **acquisition decision**. The cash flows of the project should be discounted at 12%. The first writing-down allowance is assumed to be claimed in the first year resulting in a saving of tax at Year 2.

#### Tax depreciation

Year		\$
1	20% of \$20,000	4,000
2	20% of \$(20,000 - 4,000)	3,200
3	20% of \$(16,000 - 3,200)	2,560
4	20% of \$(12,800 - 2,560)	2,048
		11,808
5	\$(20,000 - 11,808 - 4,000)	4,192
		16,000

Taxable profits and tax liability Year	Cash profits \$	Tax-allowable depreciation \$	Taxable profits \$	Tax at 21% \$
1.	8,000	4,000	4,000	840
2	8,000	3,200	4,800	1,008
3	8,000	2,560	5,440	1,142
4	8,000	2,048	5,952	1,250
5	8,000	4,192	3,808	800

NPV calculation for the acquisition decision

	A	B	C	D	E
1	Year	Equipment	Cash profits	Tax	Net cash flow
2		\$	\$	\$	\$
3	0	(20,000)			(20,000)
4	1		8,000		8,000
5	2		8,000	(840)	7,160
6	3		8,000	(1,008)	6,992
7	4		8,000	(1,142)	6,858
8	5	4,000	8,000	(1,250)	10,750
9	6			(800)	(800)
10	PV@12% T1-6				25,611 <sup>1</sup>
11	Less outlay@T0				(20,000)
12	NPV				5,611

<sup>1</sup> The formula in cell E10 is =NPV(0.12,E4:E9)

### Conclusion

The net present value (NPV) is positive, so the machine should be acquired, regardless of the method used to finance the acquisition.

The second stage is the financing **decision**, and cash flows are discounted at the after-tax cost of borrowing, which is at  $13\% \times 79\% = 10.27\%$ , say 10%. The only cash flows that we need to consider are those which will be affected by the choice of the method of financing. The operating savings of \$8,000 a year, and the tax on these savings, can be ignored.

- The present value (PV) of purchase costs

	A	B	C
1	Year	Item	Cash flow
2			\$
3	0	Equipment cost	(20,000)
4		Tax savings from allowances	
5	1		0
6	2	21% × \$4,000	840
7	3	21% × \$3,200	672
8	4	21% × \$2,560	538
9	5	21% × \$2,048 + Trade-in value	4,430
10	6	21% × \$4,192	880
11		PV@10% T1-6	4,814 <sup>1</sup>
12		Less outlay @T0	(20,000)
13		NPV	(15,186)

<sup>1</sup> The formula in cell C11 is =NPV(0.1,C5:C10)

- The PV of leasing **costs**

It is assumed that the lease payments are fully tax allowable.

### Savings in tax

Year	Lease payment \$	(21%) \$	Discount factor 10%	PV \$
1-5	(4,800) p.a.		3.791	(18,197)
2-6		1,008 p.a.	3.446	3,474
			NPV of leasing	(14,723)

The cheaper option would be to lease the machine. However, other matters should be considered.

- **Running expenses**

The calculations assume that the running costs are the same under each alternative. However, expenses like maintenance, repairs and insurance may differ between the alternatives.

- **The effect on cash flow**

Purchasing requires an immediate outflow of \$20,000 compared to nothing for leasing. This effect should be considered in relation to the company's liquidity position, which in turn will affect its ability to discharge its debts and pay dividends.

- **Alternative uses of funds**

The proposed outlay of \$20,000 for purchase should be considered in relation to alternative investments.

- **The trade-in value**

The NPV of purchase is materially affected by the trade-in value of \$4,000 in the fifth year. However, this figure may prove to be inaccurate.

## 8.5 Other issues

Once a company has made the decision to acquire an asset, the comparison of lease vs buy only needs to include the costs that differ; the costs that are common to each option need not be included.

A disadvantage of the traditional approach to making a lease or buy decision is that if there is a negative NPV when the operational cash flows of the project are discounted at the firm's cost of capital, the investment will be rejected out of hand. However, the costs of leasing might be so low that the project would be worthwhile provided the leasing option were selected. This suggests that an investment opportunity should not be rejected without first giving some thought to its financing costs.

**Other methods** of making lease or buy decisions are as follows.

- (a) **Make the financing decision** first. Compare the cost of leasing with the cost of purchase, and select the cheaper method of financing; then calculate the NPV of the project on the assumption that the cheaper method of financing is used.
- (b) **Combine the acquisition and financing decisions together into a single-stage decision.** Calculate an NPV for the project if the machine is **purchased**, and secondly if the machine is **leased**. Select the method of financing which gives the higher NPV, provided that the project has a positive NPV.





## Context example: Lease or buy decisions 2

In the case of Mallen and Mullins Co, the NPV with purchase would be + \$5,611. This was calculated above. The NPV with leasing would be as follows. A discount rate of 12% is used here.

Year	Profit less leasing cost	Tax at 21%	Net cash flow	Discount factor	PV
	\$	\$	\$	12%	\$
1	3,200		3,200	0.893	2,858
2-5	3,200	(672)	2,528	2.528	6,856
6		(672)	(672)	0.507	(341)
					NPV = 9,373

Using this method, leasing is preferable, because the NPV is \$3,762 higher.

Remember that the decisions made by companies are not solely made according to the results of calculations like these. Other factors (short-term cash flow advantages, flexibility, and use of different costs of capital) may be significant.



### Professional skills focus: Applying judgement

When considering the lease or buy decision you will need to analyse not only the financial factors but also the strategic and operational factors impacted by the decision. You will therefore have to apply judgement when recommending whether a company should lease or buy an asset.

## 9 Derivatives



### Section overview

**Derivatives** are instruments based on (derived from) underlying assets such as bonds, shares, indices, commodities, currencies and property. They enable investors to reduce risk or enhance returns on these investments.

- Derivatives include **forwards, futures, options and swaps**.



### Definition

**Financial derivative:** A financial derivative is a financial instrument or contract with the following characteristics:

- Its value is based on (derived from) the value of an underlying asset, such as a quantity of shares, bonds or foreign currency, or a bank deposit.
- Its value changes in response to the change in the price of the underlying item, such as

a change in the share price, currency exchange rate or interest rate.

- (c) It is a contractual agreement involving an agreement to buy or sell the underlying item, or to exchange payments based on the price of the underlying item.
  - (d) Acquiring a financial derivative requires no initial net investment, or only a small initial investment. Most of the eventual receipt or payment occurs at a future settlement date for the instrument.
  - (e) It is settled at a future date, specified in the agreement or contract creating the derivative.
- 

Common **examples** of derivatives include:

- (a) **Forward contracts:** agreements to buy or sell an asset at a fixed price at a fixed future date
- (b) **Futures contracts:** similar to forward contracts except that contracts are standardised and traded on an exchange
- (c) **Options:** rights (but not obligations) for the option holder to exercise at a pre-determined price; the option writer loses out if the option is exercised
- (d) **Swaps:** agreements to swap one set of cash flows for another (normally interest rate or currency swaps) In addition to financial derivatives, there are widely traded derivatives in commodities such as oil, wheat and precious metals.

You covered the basics of some derivatives in earlier studies. To recap:

At the heart of derivative products is the concept of deferred delivery. The instruments allow you, albeit in slightly different ways, to agree **today** the price at which you will buy or sell an asset at some time in the future. This is unlike normal everyday transactions. When we go to a supermarket, we pay our money and take immediate delivery of our goods. Why would someone wish to agree today a price for delivery at some time in the future? The answer is **certainty**.

Imagine a farmer growing a crop of wheat. To grow such a crop costs money for seed, labour, fertiliser and so on. All this expenditure takes place with no certainty that, when the crop is eventually harvested, the price at which the wheat is sold will cover these costs. This is obviously a risky thing to do and many farmers are unwilling to take on this burden. How can this uncertainty be avoided?

By using derivatives, the farmer is able to agree **today** a price at which the crop will ultimately be sold, in maybe four or six months' time. This enables the farmer to achieve a minimum sale price for his crop. He is no longer subject to fluctuations in wheat prices. He knows what price his wheat will bring and can thus plan his business accordingly.

Derivatives may either be:

- (a) **Exchange-traded** - ie, where there is an active secondary market accessible to participants
- (b) **Off-exchange** - ie, contracts entered directly between counterparties on the **OTC** market

The nature of derivatives often gives rise to **particular problems**. The **value** of a derivative (and the amount at which it is eventually settled) depends on **movements** in an underlying item (such as an exchange rate). This means that settlement of a derivative can lead to a very different result from the one originally envisaged. A company which has derivatives is exposed to **uncertainty and risk** (potential for gain or loss) and this can have a very material effect on its financial performance, financial position and cash flows.

Yet because a derivative contract normally has **little or no initial cost**, under traditional accounting it **may not be recognised** in the financial statements at all. Alternatively, it may be recognised at an amount which bears no relation to its current value. This is clearly **misleading** and leaves users of the financial statements unaware of the **level of risk** that the company faces. IASs 32 and 39 were developed in order to correct this situation.

Derivatives can be used for one of two purposes:

- (a) **Speculation** - Speculation involves trading in derivatives for the purpose of attempting to make a gain from a favourable movement in the price of the underlying item. A speculator will seek to make a large gain from a relatively small initial investment in the derivative instruments.
- (b) **Hedging** - Hedging involves using derivatives to reduce the market risk in an investment position (ie, the risk of an adverse movement in the price of the underlying item).



### Interactive question 3: Loan agreement as derivatives

Two entities make loans to each other for the same amount and on the same terms except that one is based on a fixed rate of interest and the other on a variable rate of interest. There are no transfers of principal at inception of the transaction since the two entities have a netting agreement.

#### Requirement

Does the transaction fit the definition of a derivative?

See **Answer** at the end of this chapter.

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## 9.1 Forward contracts



### Definition

**Forward contract:** A forward contract is an off-exchange binding agreement to buy or sell an item for settlement at an agreed price on a future date.

Forward contracts allow businesses to set the price of an item in advance. They are particularly suitable in currency markets, and commodity markets such as gold, oil and agriculture where prices can be volatile.

Because a forward contract is an 'OTC' transaction between two parties, all terms of the contract can be tailored individually to meet the buyer's and seller's needs.



### Context example: Commodity forward contract

A manufacturer needs to purchase a quantity of corn for future production in three months' time and wants to fix a price for it now.

The manufacturer can achieve this by agreeing with a grower to purchase a specified quantity for delivery at a specific date in the future at a price agreed now.

In July, when the price of a consignment of corn is (say) \$50,000, the grower agrees a price

with the manufacturer of \$52,000 for delivery at the end of September. The price for both parties is now set – and thus whilst the market price in September may be higher or lower than the agreed price of

\$52,000, the benefit for both parties is that they have certainty, and so are better able to plan.

Forward contracts are tailor-made: the specific terms of a contract are agreed between the two parties and are not dealt on any exchange.

As a contract, they are binding on both parties. Whilst this is useful as a means of giving each party what they want, they are difficult for one party to cancel because agreement is needed from the counterparty. This is one of the reasons why a futures contract may be preferred to a forward contract (see below). Nevertheless, forward markets for some commodities flourish, and the forward market in foreign exchange is also large.

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The key advantage of forwards is that they allow much greater flexibility to suit particular circumstances.

The main disadvantages are a **lack of liquidity** in comparison to exchange-traded futures and **increased credit risk for both buyer and seller**, as there is no clearing house to act as a central counterparty. This is known as counterparty risk.

The most common type of forward contract is the forward exchange contract.

## 9.2 Forward rate agreement (FRA)

A forward rate agreement or FRA is an OTC agreement between a company and its bank that fixes a future short-term interest rate. For example, a 3v9 FRA fixes an interest rate for a period beginning at the end of the third month from the date the FRA agreement is made and ending at the end of the ninth month. So it is an agreement that fixes a six-month interest rate for a period starting in three months' time. Similarly, a 2v5 FRA fixes a three-month interest rate for a period starting in two months' time.

Essentially, the two counterparties agree upfront to exchange a fixed rate of interest for a floating rate of interest on a predetermined notional deposit of cash, for a specific period of time in the future. One party to the FRA agrees to pay a fixed interest rate on the deposit and in return receive interest at a variable rate (a benchmark or reference rate that is specified in the FRA agreement). The other party agrees to receive the fixed interest rate on the deposit and in return pay interest at the variable rate. For example, in a 3v9 FRA, the benchmark variable rate may be the six-month SONIA rate. One party to the FRA is a bank, and the fixed rate in the FRA is determined by the bank.

An FRA is essentially a contract for difference. Rather than actually exchanging the interest payments at the variable and fixed rates, an FRA is settled by a payment of the net amount by one party to the other. For example, if the fixed rate in an FRA is 5.5% and the floating benchmark rate at settlement is 6.0%, the payer of the floating rate in the FRA will make a net payment to the other party for the difference between the fixed rate of 5.5% and the floating rate of 6%.

Because an FRA is settled immediately, at the beginning of the notional interest rate period, the amount payable/receivable is discounted from its end of interest period value to a PV as at the settlement date.

- (a) **Buying an FRA.** The buyer of an FRA agrees to pay the fixed interest rate and receive the floating rate. Buying an FRA can fix the rate of interest on a future short-term loan.

The FRA buyer will receive compensation when interest rates rise above the fixed FRA contract rate.

- (b) **Selling an FRA.** This will provide compensation when interest rates fall below the FRA contract rate. It protects an implied lender.



### Context example: FRA

A company has a variable rate loan of £10 million from its bank at SONIA + 1% and the fixing date for the next interest period is in six months' time. The company is concerned about the prospect of an increase in interest rates in the next six months and so buys a 6v12 FRA from its bank on notional principal of £10 million. The fixed rate in the FRA is 5%. This will fix the company's effective borrowing cost at 6% (5% + 1%).

At settlement date for the FRA, which coincides with the fixing date for the bank loan, the six-month SONIA rate might have risen to 7%. The company will have to pay interest at 8% on its bank loan.

However, it will receive compensation under the terms of the FRA for the difference between the FRA fixed rate of 5% and the SONIA rate of 7% - ie, 2%. The net cost of borrowing will therefore be 8% - 2% = 6%.

Suppose instead that at settlement date for the FRA, the six-month SONIA rate has fallen to 3.5%. The company will pay interest at 4.5% on its bank loan. However, it will pay compensation under the terms of the FRA for the difference between the FRA fixed rate of 5% and the SONIA rate of 3.5% - ie, 1.5%. The net cost of borrowing will therefore be 4.5% + 1.5% = 6%.

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## 9.3 Futures



### Definition

**Futures contract:** A future is an exchange-traded **standardised contract** to **buy** or **sell** a **specific amount** of a commodity, currency or financial instrument at an **agreed price** on a **stipulated future date**. Futures are the oldest form of investing in commodities.

**Futures** are derivatives which have their origins in the markets for commodities such as wheat, coffee, sugar, meat, oil, and base and precious metals.

- The prices of all of these commodities fluctuate **seasonally** and are also subject to change because of unpredictable events such as storms, drought, wars and political unrest.
- Historically, in order to avoid the uncertainty arising from large swings in prices, buyers and sellers came together to agree quantities and prices in advance. This encouraged investment in production and helped both buyers and sellers by enabling them to plan.

Originally the buyer and seller would agree a forward price for settlement by actual delivery of an agreed amount of the commodity on an agreed date. As a protection against defaulting on the deal, both parties would put down a deposit. However, the commodity futures markets developed further when the contracts were **standardised** in terms of **delivery date** and **quantity**. This enabled futures contracts to be traded purely on the basis of price; this is now what separates the futures market from the physical commodity market.

There are two parties to a futures contract - a buyer and a seller - whose obligations are as follows.

- The buyer of a future enters into an **obligation** to buy the specified asset on a specified date.
- The seller of a future is under an **obligation** to sell the specified asset on a future date.

**Futures contracts** are traded on an exchange with the contract terms clearly specified by the rules of the exchange. The first futures market was established in the 19th century in Chicago. The largest group of futures exchanges in the world is still owned and operated by CME Group Inc (Chicago Mercantile Exchange). Futures based on the prices of agricultural commodities allow farmers to be sure of the profit they will receive from the commodities months in advance of the commodities being produced. The main derivatives exchange in the UK is NYSE Liffe. Although some exchanges trade the same or similar contracts, most futures contracts are unique to the exchange that trades them.

There is a large number of commodity futures, but financial futures are also traded in currencies, interest rates, bonds, shares and stock indices.

Futures markets are wholesale markets in risk – markets in which risks are transferred from the cautious to those with more adventurous (or reckless) spirits. The users fall into one of three categories – the **hedger**, the **speculator** and the **arbitrageur** – whose motivations are as follows:

- **Hedger** – someone seeking to reduce risk
- **Speculator** – a risk taker seeking large profits
- **Arbitrageur** – seeks riskless profits from exploiting market inefficiencies (mispricing)

### 9.3.1 The main elements of futures transactions

<b>The contract size</b>	The <b>contract size</b> is the fixed quantity which can be bought or sold with one futures contract. Dealing on futures markets must be in a whole number of contracts. The implication of this is that the amount of an exposure and the amount covered by a futures hedge may not match exactly.
<b>The contract price</b>	The <b>contract price</b> is the price at which the futures contract is bought or sold. Prices for futures change continually, which means that holders of positions in futures will make a gain or loss on their position when they eventually close it. The gain or loss on a position is the difference between the original buying or selling price to open the position and the price obtained to close it at a later date (or to settle the contract at the settlement date).
<b>The settlement date</b>	The <b>settlement date</b> (or delivery date, or expiry date) is the date when trading on a particular futures contract stops and all accounts are settled. For example, the settlement dates for all currency futures are at the end of March, June, September and December.
<b>The initial margin</b>	When futures contracts are bought or sold, a <b>deposit</b> known as the <b>initial margin</b> must be paid to the futures exchange. The size of this margin depends on the futures contract but may typically amount to about 5% of the value of contracts dealt in. This deposit is refunded when the contract is closed out. The objective of the initial margin is to cover any possible losses made from the first day's trading. Thereafter, any variations in the contract price are covered by a <b>variation</b> margin. Profits are advanced to the trader's account but losses must be covered by advancing further margin. This process is known as <b>marking to market</b> .

<b>Basis</b>	<p>The price of a futures contract will normally be different from the spot price on any given date. This difference is called the <b>basis</b>. The exception is on the settlement date for the contract date, when the basis is zero (because the exchange settlement price and the spot market price are the same on this date).</p> <p><b>Basis</b> = spot price - futures price</p> <p>The effect of basis is to <b>prevent</b> hedges from being 100% efficient, and the change in the spot <b>over a period</b> is not matched exactly by the change in the futures price. This means that there is basis risk for anyone hedging a position with futures.</p> <p>You will not be asked to calculate basis in the examination, but just to recognise that it causes hedges to be less than 100% efficient.</p>
<b>Hedge efficiency</b>	<p>The only risk to hedgers is that the futures market does not always provide a perfect hedge.</p> <p>(a) The first reason is that the value of the commodity being hedged (whether it is shares, currency or interest) must be <b>rounded to a whole number of contracts</b>, causing inaccuracies.</p> <p>(b) The second reason is <b>basis risk</b> as noted above.</p> <p>A measure of <b>hedge efficiency</b> compares the profit made on the futures market with the loss made on the cash or commodity market, or vice versa.</p>

### 9.3.2 Long and short positions

- (a) Someone who **buys futures opens a long position** in the contract, and will make a gain if the market value of the contract rises. This long position can be closed at any time before settlement date by selling an equal number of the same contracts.
- (b) Someone who **sells futures opens a short position**, and will make a gain from any fall in the futures price. This short position can be closed at any time before settlement date by buying an equal number of the same contracts.

Positions that are still open at the settlement date for the contract are settled by the futures exchange at a settlement price decided by the exchange. This will be the current spot price for the underlying item in the contract.

In practice, most positions in futures are closed before the settlement date for the contract.



#### Context example: Commodity futures - long position

##### 1 July

- (a) On 1 July the spot price of wheat is 410c per bushel.
- (b) Miller plc knows that it wants to buy a consignment of 200,000 bushels of wheat on 30 September, which at the spot rate would cost \$820,000. It decides to reduce its exposure to any price rise using the wheat futures market.
- (c) It creates a long position on the futures market by buying three-month wheat futures contracts at 415c per bushel that expire on 30 September, to cost \$830,000. (Wheat contracts are standardised at 5,000 bushels, so in this example Miller would buy 40 standard contracts in order to make up the total consignment of wheat that it requires.)

##### 30 September

- (a) Miller buys its physical consignment of wheat on 30 September from the wheat market. At this date the spot price is 420c per bushel, so the wheat will cost 420c × 200,000 bushels = \$840,000.
- (b) The futures contract in wheat is not settled by the physical exchange of wheat for cash.

Instead, it is settled for the cash difference between the original price for buying the futures in July and the closing settlement price on the futures exchange at the end of September.

- (c) The closing settlement price on the futures exchange will be the spot market price at 30 September. So Miller will sell its futures contracts for \$840,000, having bought them for \$830,000. It will make a gain of \$10,000 ( $200,000 \text{ bushels} \times (420\text{c} - 415\text{c})$ ).
- (d) This gain on the futures position can be set against the spot purchase it made in the wheat market.

Net cost = \$840,000 - \$10,000 = \$830,000

This means that the effective net price that Miller has paid for the wheat is the \$830,000 price that it contracted in July, when it opened its futures position.



### Context example: Commodity futures - short position

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#### 1 July

- (a) On 1 July the spot price of cotton is 70c per pound weight.
- (b) Field plc knows that it wants to sell a consignment of 1,000,000 pounds weight of cotton on 30 September, which at the spot rate would give it \$700,000. It decides to reduce its exposure to any price falls between July and September using the cotton futures market.
- (c) It creates a short position on the futures market by selling 1,000,000 pounds weight of cotton in three-month cotton futures at 65c per pound weight that expire on 30 September, to receive \$650,000. (Cotton contracts are standardised at 50,000 pounds weight, so in this example Field would sell 20 standard contracts in order to make up the total consignment.)

#### 30 September

- (a) Field sells its physical consignment of cotton on 30 September to the cotton market. At this date the spot price is 60c per pound weight, so the cotton will fetch  $60\text{c} \times 1,000,000 \text{ pounds} = \$600,000$ .
- (b) The closing settlement price on the futures exchange will be the spot market price at 30 September. So Field will buy its futures contracts for \$600,000, having sold them for \$650,000. It will make a gain of \$50,000 ( $1,000,000 \text{ pounds weight} \times (65\text{c} - 60\text{c})$ ).
- (c) This gain on the futures position can be added to the spot sale it made in the cotton market. Net proceeds = \$600,000 + \$50,000 = \$650,000

This means that the effective net price that Field has received for the cotton is the \$650,000 price that it contracted in July, when it opened its futures position.



### Context example: Currency futures

A company may wish to sell £740,000 in two months' time in exchange for US dollars. It could do this by arranging a forward contract with a bank. Alternatively it could deal in British £ sterling futures.

Each futures contract is for £62,500, so to sell £740,000 it would need to sell 11.84 contracts - ie, 12 contracts.

It might sell the contracts at a rate of, say,  $\$1.5200 = £1$ , creating a short position of 12 futures contracts. After 2 months it will close the position by purchasing 12 contracts. Suppose the price to buy the contracts is  $\$1.5050 = £1$ . It will make a gain on the futures



dealing of \$0.0150 per £1, or  $(\$0.0150 \times 62,500 \times 12 \text{ contracts}) = \$11,250$  in total.

It will sell the £740,000 in the spot FX market, at whatever the spot price happens to be, and will receive \$11,250 in profit from the futures exchange (which takes on responsibility for the settlement of all futures contracts).



### Worked example: Interest futures

Nicol Inc will shortly be making a short-term investment and wants to borrow \$5 million for three months, starting in three months' time. However, interest rates are currently volatile and it is worried about adverse movements in these rates before it takes out the loan.

Nicol Inc is considering using interest rate futures to hedge the \$5 million loan. It is now 1 March and the current futures prices are (for standard \$1 million three-month contracts):

March delivery	97.00
June delivery	97.10
September delivery	97.20

These contracts will expire at the end of the quoted months. The spot 3-month SONIA rate is 2.5% and Nicol can borrow at a rate of approximately SONIA + 1%.

At 1 June, the price of the June futures contract is 96.07 and the price of the September futures contract is 96.10.

#### Requirement

Assuming that Nicol takes out a loan at a rate of SONIA + 1% on 1 June, illustrate the outcome of hedging with the futures contract if SONIA at that date is 3%.

#### Solution Set up

Sell futures to hedge against the risk of an increase in the interest rate.

Choose the futures contract with the next delivery date/settlement date following the date when it is intended to close the position. In this case the company should sell June futures on 1 March.

How many contracts?  $\frac{\text{Exposure}}{\text{Contract size}} \times \frac{\text{Loan period}}{\text{Length of contract}} = (\$5\text{m}/\$1\text{m}) \times (3/3) = 5 \text{ contracts}$

Contract size    Length of contract

#### Closing the position on 1 June

Original sale price on 1 March	97.10
Buying price to close the position on 1 June	96.07
Gain per contract	1.03

Total gain on futures = 103 ticks  $\times$  \$25 per tick  $\times$  5 contracts = \$12,875.

	%		\$
Interest cost on loan (SONIA + 1%)	4.00	$(\$5,000,000 \times 4\% \times 3/12)$	50,000
Gain on futures contract	(1.03)		(12,875)
Net cost	2.97		37,125

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### 9.3.3 Index futures

Index futures are futures contracts on a portfolio of shares represented by a stock market index.

These can be used to protect investors against future falls in the value of a portfolio of shares. They can be of real importance to organisations with significant investments, such as pension funds.

There are futures on the FTSE100 share index. The **transaction costs** of investing in these futures are much less than the costs of actually selling and buying the underlying shares. Buying or selling futures is an alternative to adjusting a share portfolio, which may not be appealing because of the time and cost involved.

Each FTSE100 index futures **contract** is for a notional value of the futures price multiplied by £10. Thus, if the FTSE index futures price stands at 6,700, the notional value of a contract is £67,000.

Index futures can be useful to an investor in a number of ways, either for **speculative purposes** or as a **'hedge'** against risk of adverse movements in stock market prices generally.

Index futures are used by speculators because it is possible to take a very large position in share prices for a relatively small cost. With futures, there is a deposit to pay (the margin) for having an open or closed position, but the cost is much less than buying the underlying shares themselves. The speculator hopes to make a big profit from a favourable movement in the stock market index for a relatively small investment.



#### Worked example: Index futures I

The investment manager of Moonstar Pension Fund is concerned that share prices may fall over the next month and wishes to hedge against this using FTSE100 June stock index futures. The fund's pension portfolio comprises investments which have a market value of £7 million on 1 June 20X8.

On 1 June 20X8 the following prices are observed:

The prevailing value (ie, spot value) of the FTSE100 index is 7,000 The price quote for June FTSE100 index futures is 6,970

The face value of a FTSE100 index contract is £10 per index point.

Using the futures price of the FTSE100 index, this gives a contract value of  $6,970 \times £10 = £69,700$

#### Requirement

Demonstrate what hedge should be undertaken to protect the portfolio against a fall in share prices.

#### Solution

##### Calculate number of contracts

**Sell** futures to protect the value of the portfolio.

If the stock market index falls, the investment manager will make a profit by closing the futures position and buying futures at a lower price than the original selling price. The gain

on the futures position will offset the loss incurred from the fall in the stock market index (and so a fall in the value of shares in the pension fund's portfolio).

$$\begin{aligned}\text{Number of contracts} &= \frac{\text{Market value of portfolio}}{\text{Value of one contract}} \\ &= £7,000,000/£69,700 \\ &= 100.4 \text{ rounded to } 100 \text{ contracts}\end{aligned}$$



### Worked example: Index futures II

On 30 June 20X8, the settlement date for the June futures contract, the FTSE100 index and the futures settlement price had fallen to 6,700. The market value of the shares in the portfolio changed exactly in line with the change in the index ie,  $(6,700/7,000) \times £7,000,000 = £6.7$  million.

#### Requirement

Calculate the outcome of the hedge that Moonstar has undertaken.

#### Solution Step 1

##### Position in spot market

$$\begin{aligned}\text{Loss on portfolio} &= £6.7 \text{ million} - £7 \text{ million} \\ &= £0.30 \text{ million}\end{aligned}$$

#### Step 2

##### Calculate gain or loss on futures

Buy futures at lower price than they were sold for (closing out). The price to close out the position is 6,700.

$$\begin{aligned}\text{Gain on futures} &= (6,970 - 6,700) \times £10 \times 100 \text{ contracts} \\ &= £270,000\end{aligned}$$

#### Step 3

##### Calculate net position

$$\begin{aligned}\text{Net position} &= £270,000 \text{ gain on futures} - £300,000 \text{ loss on share portfolio} \\ &= £(30,000) \text{ loss overall}\end{aligned}$$

**Note:** The hedge is less than 100% effective because of basis (ie, the 1 June FTSE index value and the futures price on 1 June are different) and the rounding of the number of contracts.



### Worked example: Index futures III

Suppose in the previous example that on 30 June 20X8, the market value of the shares in the portfolio had risen to £7.2 million, and the FTSE100 index and the index futures settlement price were both 7,200 on that date.

#### Requirement

Explain what would happen as a consequence of the hedge.

### Solution Step 1

#### Position in spot market

Gain on portfolio = £7.2 million - £7 million = £0.2 million

#### Step 2

**Calculate gain or loss on futures** Initially sold futures for 6,970 Now buy futures for 7,200

Loss on closing out futures  $(230) \times £10 \times 100$  contracts = £230,000

#### Step 3

#### Calculate net position

Net position 200,000 gain on portfolio (230,000) loss on futures

£(30,000) loss overall

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### 9.3.4 The impact of a futures hedge

The objective of a futures hedge is to remove price risk by fixing the price in advance. The benefit is that downside risk is eliminated; the disadvantage is that any upside is also removed.

To summarise the above worked examples:

	If market rises	If market falls
Value of portfolio	7,200,000	6,700,000
Gain (loss) on futures market	(230,000)	270,000
Net effect	£6,970,000	£6,970,000

### 9.3.5 Forwards versus futures

The differences between forward contracts and futures contracts are summarised in the following table.

Attribute	Futures	Forward contracts
Traded	Exchange traded	OTC
Quality and quantity	Standardised by the exchange for all products	Specified in the contract
Delivery dates	Standard fixed settlement dates, but positions can be closed at any	Specified in the contract

Attribute	Futures	Forward contracts
	time before the settlement date	
Liquidity/ability to close out	Generally good liquidity/easy to close out	May be limited
Counterparty risk	None due to the workings of the clearing and settlement system	Default risk exists: risk of default by bank
Costs/margin	Relatively low initial costs (margin)	Arrangement costs specifically agreed; no payments for transaction until future settlement date

Regulation	Significant regulation and investor protection	Less regulated
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### Professional skills focus: Concluding, recommending and communicating

you are expected to be able to make evidence-based recommendations which can be justified by reference to supporting data and other information. A recommended hedging strategy must be based on your technical knowledge and the entity specific information provided in the question.

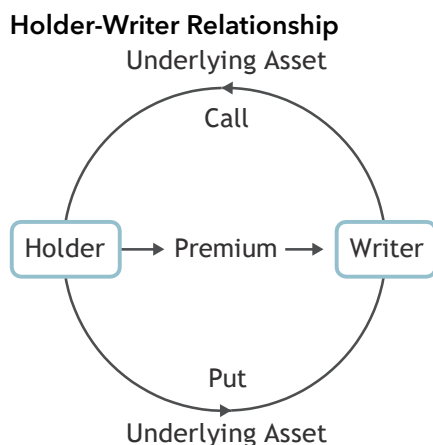
## 9.4 Options

An option is a contract that gives its holder/buyer the right, but not the obligation, to buy or sell an underlying asset at a given price (the exercise price or strike price) on or before a given date (the expiry date for the option). If the rights under the option agreement are not exercised by a stated time on the expiry date, the option lapses and cannot be exercised.

The right to buy the underlying item at the exercise price is known as a **call option**. The right to sell the underlying item at the exercise price is known as a **put option**.

The rights to buy (call) or sell (put) are held by the person buying the option who is known as the **holder**. The person selling an option is known as a **writer**. The following diagram shows the relationship between the holder and the writer.

Figure 13.5: The relationship between holder and writer in an option contract



The purchase cost of an option is known as its **premium**. It is paid by the holder to the writer: the amount of the premium will depend on the perceived value of the option rights that the option buyer is acquiring.

The holder is obliged to pay the premium to acquire the option, and the premium is payable even if the holder does not subsequently exercise the option. Depending on the option specification, the premium may be paid on the purchase of the option (**upfront**) or on exercise or expiry of the option (**onclose**).

In return for receiving the premium, the writer agrees to fulfil the terms of the contract, and sell the underlying item at the exercise price if a call option is exercised, and buy the underlying item at the exercise price when a put option is exercised. The holder has to pay a premium because the holder can take advantage of the upside risk without exposure to the

downside risk.

Options are available in a range of different **exercise styles** which are specified when the options are traded. There are a number of potential styles:

- (a) **American style options** – in which the option can be exercised by the holder at any time after the option has been purchased.
- (b) **European style options** – when the option can only be exercised on its expiry date.
- (c) **Asian style options** – when the option is exercised at the average underlying price over a set period of time. Similar to these are Traded Average Price Options. These are fixed strike price, but are exercised against an average underlying price.

A person describing an option will specify its:

- underlying asset
- expiry date
- exercise price
- call/put

For example, Cocoa (**Underlying asset**) May (**Expiry date**)

600 (**Exercise price**) Call (**Call/Put**)

#### 9.4.1 Exercising options

The holder of a call option will exercise the option at (or before) expiry only if the exercise price for the option is more favourable than the current market price of the underlying asset. When the exercise price is more favourable than the market price of the underlying item, the option is said to be 'in the money'.

When the exercise price is less favourable than the market price of the underlying item, the option is said to be 'out of the money'. An option will not be exercised if it is out of the money.

- (a) A call option will be exercised if the exercise price is less than the current market price of the underlying asset, because the option holder can use the option to buy the asset for less than its current market value.
- (b) A put option will be exercised if the exercise price is higher than the current market price of the underlying asset, because the option holder can use the option to sell the asset for more than its current market value.

### 9.5 Factors affecting option value

The option premium is the price paid to buy an option, but the value of an option changes over time between its creation and its expiry date. The value of a **call option** at any time up to expiry depends on:

- (a) **Current asset price.** If the market price of the underlying asset rises, the value of a call option will increase. For currency options, the relevant 'price' is the spot exchange rate.
- (b) **Exercise price of the option.** The higher the exercise price, the lower the value of a call option.
- (c) **Asset price volatility or standard deviation of return on underlying share.** The higher the volatility in the market price of the underlying asset (ie, measured statistically as a standard deviation), the higher the value of a call option, because there is more likelihood that the asset price will rise above the option price.

- (d) **Time to expiry of the option.** The longer the period to expiry, the higher the value of a call option because there is more time for the asset price to rise above the option's exercise price.
- (e) **Risk-free rate of interest.** The higher the risk-free rate of interest, the higher the value of a call option. As the exercise price will be paid in the future, its PV diminishes as interest rates rise. This reduces the cost of exercise and thus adds value to the option.

### 9.5.1 Share options

The widespread use of derivatives involving options has resulted in much attention being paid to the valuation of options for financial reporting purposes and for measuring profits or gains. Exchange-traded share options (equity options) are a common form of option, giving the right but not the obligation to buy or sell a quantity of a company's shares at a specified price within a specified period.

The value of an equity option is made up of:

- 'intrinsic value'
- 'time value'

The intrinsic value of an option depends on:

- share price
- exercise price

If the option is in the money and the current market price of the underlying shares is higher than the exercise price of a **call option** on the shares, the intrinsic value of the option is the difference between the market price and the exercise price. If the option is out of the money and the exercise price is higher than the current market price of the underlying asset, the intrinsic value of a call option is zero.

The time value of an option is based on the probability that the option is affected by:

- time period to expiry
- volatility of the underlying security
- general level of interest rates

### 9.5.2 Summary of determinants of option prices

Summary of determinants of option prices		
↑ in	Call price	Put price
Share price	↑	↓
Exercise price	↓	↑
Volatility	↑	↑
Time to expiry	↑	↑
Risk-free rate of return	↑	↓

### 9.6 The Black-Scholes formula

The Black-Scholes formula for the valuation of European call options was developed in 1973 (European options are options that can only be exercised on the expiry date, as opposed to American options, which can be exercised on any date up until the expiry date). The formula is based on the principle that the equivalent of an investment in a call option can be set up by combining an investment in shares with borrowing the PV of the option exercise price.

The formula requires an estimate to be made of the volatility in return on the shares. One way of making such an estimate is to measure the volatility in the share price in the recent

past and to make the assumption that this volatility will apply during the life of the option.

The formula is part of the wider **Black-Scholes-Merton model**, which models a financial market containing derivative investment instruments.

### 9.6.1 Assumptions of the Black-Scholes formula

In order to incorporate **volatility** and the **probabilities** of option prices into the formula, the following assumptions are needed:

- Returns are normally distributed.
- Share price changes are log-normally distributed.
- Potential price changes follow a random formula.
- Volatility is constant over the life of the option.

The Black-Scholes formula is also based on the following other important assumptions:

- Traders can trade continuously.
- Financial markets are perfectly liquid.
- Borrowing is possible at the risk-free rate.
- There are no transaction costs.
- Investors are risk neutral.

### 9.6.2 The Black-Scholes formula

The Black-Scholes formula for the value of a **European call option** is given by:

$$c = P_a N(d_1) - P_e N(d_2)e^{-rt}$$

Where:  $P_a$  = current price of the underlying asset

$P_e$  = exercise price

$r$  = continuously compounded risk-free rate

$t$  = time to expiration as a fraction of one year, (eg,

$t = 0.5$  means 6 months)

$e$  = base of the natural logarithms and is the constant value 2.7182818

$N(x)$  = normal probability distribution up to a value of  $x$

$$d_1 = \frac{\ln\left(\frac{P_a}{P_e}\right) + (r + 0.5s^2)t}{s\sqrt{t}}$$

$$d_2 = d_1 - s\sqrt{t}$$

Where:  $s$  = the volatility of share price movement (expressed as a standard deviation)

$\ln\left(\frac{P_a}{P_e}\right)$  is the natural logarithm of the spot price over the exercise price.

(A natural logarithm is the power to which 'e' would have to be raised, to equal the number in question. For example, the natural logarithm of 10 is 2.302585 because  $10 = e^{2.302585}$ .)

### 9.6.3 Value of European put options

The value of a **European put option** can be calculated by using the Put Call Parity.

$$p = c - P_a + P_e e^{-rt}$$



Where:  $p$  = value of the put option  
 $c$  = value of the call option

To calculate the value of a put option, we can calculate the value of a corresponding call option, and then obtain the value of the put option using the put-call parity equation.

#### 9.6.4 Value of American call options

Although American options can be exercised any time during their lifetime it is **never optimal** to exercise an option earlier. The value of an American option will therefore be the same as the value of an equivalent European option and the Black-Scholes formula can be used to calculate its price.

#### 9.6.5 Value of American put options

Unfortunately, no exact analytic formula for the value of an American put option on a non dividend paying stock has been produced. Numerical procedures and analytic approximations for calculating American put values are used instead.



#### Worked example: Black-Scholes formula

In this example, the Black-Scholes formula is used to calculate the value of an option on shares.

##### Requirement

Consider the situation where the share price six months from the expiry of an option is \$42, the exercise price of the option is \$40, the risk-free interest rate is 10% p.a. and the volatility is 20% p.a. This means  $P_a = 42$ ,  $P_e = 40$ ,  $r = 0.10$ ,  $s = 0.20$ , and  $t = 0.5$ .

##### Solution

$$d_1 = \frac{\ln(42/40) + (0.1 + \frac{0.2^2}{2})0.5}{0.2\sqrt{0.5}} = 0.7693 = 0.77$$

$$d_2 = 0.7693 - 0.2 \times \sqrt{0.5} = 0.6279 = 0.63$$

and

$$P_e e^{-rt} = 40e^{-0.1 \times 0.5} = 40e^{-0.05} = 38.049$$

The values of the standard normal cumulative probability distribution: these can be found from normal distribution tables and are:

$$N(0.77) = 0.7794$$

$$N(0.63) = 0.7357$$

Hence if the option is a European call, its value is given by:

$$c = (42 \times 0.7794) - (38.049 \times 0.7357) = 4.76$$

If the option is a European put, its value is given by:

$$p = 4.76 - 42 + 38.049 = 0.81$$

The share price has to rise by \$2.76 for the purchaser of the call to break even. Similarly, the share price has to fall by \$2.81 for the purchaser of the put to break even.



#### Interactive question 4: Black-Scholes formula

The current share price of Cathlynn plc is £3.50. Using the Black-Scholes formula, estimate

the value of a European call option on the shares of the company that has an exercise price of £3.30 and three months to run before it expires. The risk-free rate of interest is 8% and the variance of the rate of return on the share has been 12%.

See **Answer** at the end of this chapter.

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### 9.6.6 Limitations of Black-Scholes formula

- (a) The formula is **only designed** for the valuation of **European call options**.
- (b) The basic formula is based on the assumption that **shares pay no dividends**.
- (c) The formula assumes that there will be **no transaction costs**.
- (d) The formula assumes knowledge of the **risk-free rate of interest**, and also assumes that the risk-free rate will be constant throughout the option's life.
- (e) Likewise, the formula also assumes accurate knowledge of the **standard deviation of returns**, which is assumed to be constant throughout the option's life.

### 9.6.7 Accounting requirements

The pricing of options using Black-Scholes must be considered in the light of the requirements of IFRS 13, *Fair Value Measurement*.

The Black-Scholes formula contains assumptions that correspond to different levels of the IFRS 13 hierarchies. This is most likely to be an issue for volatility. Historical volatility, volatility derived from historical prices, would be classed as a Level 3 input. Historical volatility generally does not represent current market participants' expectations about future volatility. It may be possible to gain stronger, Level 2, evidence, for example by observing prices for options with varying terms and extrapolating from those.

## 9.7 Monte Carlo simulation model

The Monte Carlo simulation model is widely used in situations involving uncertainty. It is particularly useful for non-traded derivatives, where the Black-Scholes formula is not appropriate. The method amounts to adopting a particular probability distribution for the uncertain (random) variables that affect the option price and then using simulations to generate values of the random variables.

To deal with uncertainty the Monte Carlo method assumes that the uncertain parameters or variables follow a specific probability distribution.

The basic idea is to generate through simulation thousands of values for the parameters or variables of interest and use these variables to derive the option price for each possible simulated outcome. From the resulting values we can derive the distribution of the option price.

The Monte Carlo simulation model is particularly relevant for IFRS 2, *Share-based Payment*. This standard requires that share-based transactions are recognised in the financial statements at their fair value at the grant date.

One of the major challenges of this statement is measuring the value of the equity instruments (such as share options). The statement requires such instruments to be included in the financial statements at fair value, which should be based on market prices if available. If market prices are not available, the Monte Carlo simulation model is often used to estimate the fair value of the instruments.

## 9.8 Swaps

A swap is an OTC contract that commits two counterparties to exchange, over an agreed period, two streams of cash or commodities. The contract defines the dates when the cash flows are to be paid and the way in which they are to be calculated. Usually the calculation of cash flows involves the future values of one or more market variables.

Examples of swaps include:

- (a) **Interest rate** - where the two payments exchanged are calculated using different interest rates (discussed in the chapter Financial risk management).
- (b) **Currency** - where two streams of interest payments in different currencies are exchanged (discussed in the chapter Financial risk management).
- (c) **Equity** - where one cash flow is based on a reference interest rate such as SONIA, the other is based on the performance of an equity, a basket of equities or an equity index.
- (d) **Commodity** - where one party offers at a fixed single price a series of cash-settled future contracts which the other party will buy or sell at an agreed date. Cash settlement is calculated on the difference between the fixed price and the price of an agreed index for a stated notional amount of the underlying asset.
- (e) **Credit swaps** - discussed below.

## 9.9 Credit derivatives



### Definition

**Credit derivative:** A derivative whose value is derived from the credit risk associated with an asset.

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Participants in the credit derivatives market include commercial banks, investment banks, insurance companies, hedge funds, pension funds and other corporate entities.

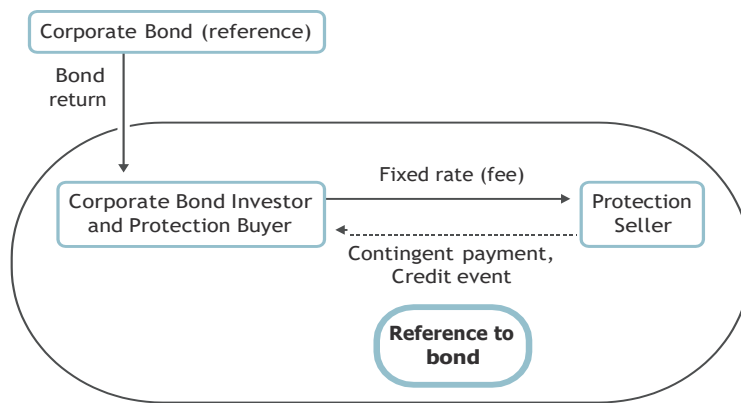
In its simplest form, a credit derivative is very similar to an insurance policy on an amount of debt. The buyer of the derivative pays a fee (in a lump sum or in periodic payments) to the seller. In return the seller undertakes to make a compensation payment to the buyer if there is a default on the underlying debt.

For example, an investor may buy a credit derivative on £5 million nominal value of a fixed rate bond issued by ABC plc. If ABC plc defaults on a payment of the bond before the expiry date of the credit derivative, the seller of the derivative must pay an amount in compensation to the buyer.

The credit derivative is therefore a way of buying protection against the risk of default on a debt. It is also a way of speculating that the borrower, in this case ABC plc, will default. An investor does not need to have lent any money to ABC plc in order to buy a credit derivative and speculate on default. This makes credit derivatives different from a traditional insurance policy.

The key concept underlying the credit derivative market is isolation. The buyer of a credit derivative wishes to 'isolate' the credit risk of an underlying security from its other key risks, interest rate and foreign exchange risk.

Figure 13.6: Credit derivatives



Credit derivatives are divided into two main categories: those which are funded and those which are unfunded. The funded instruments include credit linked notes and collateralised debt obligations.

They are unique because the purchaser of the derivative is buying 'protection' and the cash flows from the underlying security together. In an unfunded credit derivative only the protection is purchased.

One of the most important aspects of credit derivatives is to define exactly what situations will result in the 'insurance' policy being triggered. These are known as 'default events'. The International Swaps and Derivatives Association (ISDA) has defined five 'default events' within its ISDA 2003 Credit Derivatives Definitions:

- **Bankruptcy** - Reference entity voluntarily or involuntarily files for bankruptcy or insolvency protection.
- **Failure to pay or default** - Failure of the reference entity to make aggregate payments due (at least US\$1 million) following a grace period.
- **Restructuring** - Reference entity agrees to, or announces, a change in terms of an obligation (minimum US\$10 million) as a result of deterioration in the financial condition of the reference entity.
- **Repudiation/Moratorium** - Any change in the owner status or independence of the asset or company is considered a credit event, as is any significant change in the asset ownership structure.
- **Obligation default** - A situation where one or more obligations have become capable of being declared due and payable before they would otherwise have been due and payable.

If a credit event does take place the seller of the 'protection' will be contractually obliged to settle the transaction by either taking '**physical delivery**' of the underlying asset from the buyer or via **cash settlement** which is paid to the buyer. An independent valuer will then assess the residual value of the reference asset with the difference between that value and nominal value being paid to the protection buyer.

Another important aspect of credit derivatives is the pricing mechanism and how it changes as the credit quality of the underlying security changes. Market participants have developed models that track the credit rating of the underlying corporate and adjust the value of the derivative accordingly.

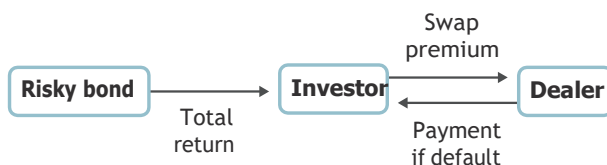
As credit ratings rise, credit derivative values fall and vice versa. These **credit transitions** are pivotal to the effective valuing of the underlying derivative.

### 9.9.1 Credit default swaps (CDSs)

Credit default swaps (CDSs) are the most common form of credit derivative. They are mostly based on a single asset. Effectively a purchase of a credit derivative is buying an insurance policy against a credit event, such as bankruptcy, that will affect the value of the underlying security.

The spread of a CDS is the annual amount the protection buyer must pay the protection seller over the length of the contract (like an insurance premium), expressed as a percentage of the notional amount. The more likely the risk of default, the larger the spread. For example, if the CDS spread of the reference entity is 50 basis points (or 0.5%) then an investor buying \$10 million worth of protection from a bank must pay the bank \$50,000 per year. These payments continue until either the CDS contract expires or the reference entity defaults.

Figure 13.7: Credit default swaps



Unlike insurance, however, CDSs are unregulated. This means that contracts can be traded – or swapped – from investor to investor without anyone overseeing the trades to ensure the buyer has the resources to cover the losses if the security defaults.

CDSs are often used to manage the credit risk that arises from holding debt. For example, the holder of a corporate bond may hedge their exposure by entering into a CDS contract as the buyer of protection. If the bond goes into default, the proceeds from the CDS contract will cancel out the losses on the underlying bond.

#### CDS markets

An original CDS can go through as many as 15 to 20 trades. Therefore, when a default occurs, the so-called ‘insured’ party or hedged party does not know who is responsible for making up the default or indeed whether the end party has the funds to do so.

When the economy is booming, CDSs can be seen as a means of making ‘easy’ money for banks. Corporate defaults in a booming economy are few, thus swaps were a low-risk way of collecting premiums and earning extra cash.

The CDS market expanded into **structured finance** from its original confines of municipal bonds and corporate debt and then into the secondary market where **speculative investors** bought and sold the instruments without having any direct relationship with the underlying investment. Their behaviour was almost like **betting** on whether the investments would succeed or fail.



#### Context example: CDSs

At one time credit derivatives were a relatively obscure financial instrument for banks and bondholders. However, CDSs gained prominence during the global financial crisis due to the activities in the market of American International Group (AIG).

AIG – the world’s largest insurer – could sell CDSs without putting up any real collateral as long as it maintained a triple-A credit rating. There was no real capital cost to selling these

swaps; and there was no limit. Thanks to fair value accounting, AIG could book the profit from, say, a five-year CDS as soon as the contract was sold, based on the expected default rate. In many cases, the profits it booked never materialised.

When the financial crisis began in the US in 2007, the prospect of default by many banks and other corporate borrowers increased significantly. On 15 September 2007 the bubble in the CDS market burst when all the major credit rating agencies downgraded AIG, due to the soaring losses in its CDSs. The first big write-off came in the fourth quarter of 2007, when AIG reported an \$11 billion charge. It was able to raise capital once, to repair the damage. But the losses kept growing. The moment the downgrade came, AIG was forced to come up with tens of billions of dollars in additional collateral, immediately. This was on top of the billions it owed to its trading partners. It didn't have the money. The world's largest insurance company was bankrupt.

As soon as AIG went bankrupt, all the institutions that had hedged debt positions using AIG CDSs (or which had speculated on defaults by various borrowers) had to mark down the value of their assets. For lending banks holding AIG CDSs, this meant a reduction in their ability to lend. Investment banks had no ability to borrow, as the collapse in the CDS market meant that no one was willing to insure their debt.

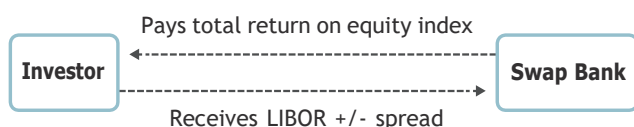
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### 9.9.2 Total return swaps (TRSs)

A total return swap (TRS) is a type of swap in which one counterparty agrees to pay a floating reference rate such as SONIA and in exchange will receive the total return, interest and capital gains, generated by an underlying asset. This transaction is specifically designed to transfer the credit risk and the market risk of an underlying security to the counterparty and effectively enables the party to derive an economic benefit from an underlying asset without actually buying it.

TRSs can be used with any underlying asset that generates a return but are most commonly used in the equity markets.

Figure 13.8: Total return swaps



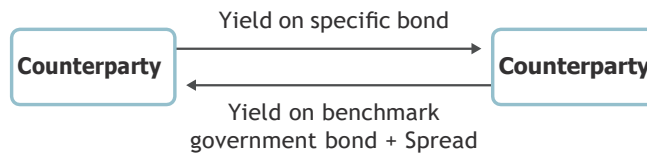
Note that if the equity markets actually fell in value, the receiver of the SONIA payments would be paying a negative amount of money to its counterparty. Hence the investor would actually be receiving money.

Bond markets also have two types of return associated with holding bonds: the price return and the coupon. TRSs are also increasingly popular in the credit derivatives market where the holder of a bond can not only swap the price exposure of a bond (based on coupon and price), but also the credit exposure can be swapped into the deal.

### 9.9.3 Credit spread swaps

A credit spread swap allows firms to trade smaller shifts in a borrower's credit rating short of outright default. One party makes payments based on the yield to maturity of a specific issuer's debt and the other makes payments based on the yield on a comparable sovereign bond plus a spread reflecting the difference in credit ratings between the bonds.

Figure 13.9: Credit spread swaps



If the above two flows are equal at inception of the swap, any change in credit rating of the specified bond relative to the benchmark will result in a payment being made from one party to the other.

This, like the total return swap, allows an investor to lock in a specific spread above a benchmark yield. One of the prime causes of the spread is the difference in credit rating between the corporate bond and the government bond.

Variations could see a swap between yields on a specific bond above a benchmark and the yield between two other bonds, or a swap on the spread on one security above a benchmark with a spread on another security above a benchmark.

## 9.10 Collateralised debt obligations (CDOs)

The overall market for asset-backed securities (ABSs) is known as the Collateralised Debt Obligation (CDO) market, where the ABS shifts credit risk on a pool of homogenous assets.



### Definition

**Collateralised debt obligation:** is an investment-grade security that is backed or collateralised by a pool of actual bonds, loans or other assets.

CDOs are a common form of funded credit derivative. From the viewpoint of the issuer, a CDO is designed to remove debt assets (eg, mortgages, loans and credit card receivables), and their associated credit risk, from an originator's balance sheet in return for cash. The originator is typically a bank, seeking to remove assets from its balance sheet - either to reduce its regulatory capital requirements or to obtain more cash to make more loans.

To achieve this, the **assets (loans) are sold** by the originator to an **SPV** for cash, the cash having been raised by the SPV through the issue of bonds to investors. The interest on the SPV's bonds will be paid out of the cash flows from the debts that it has purchased from the originator.

Buyers of the SPV's bonds are therefore investing directly in a portfolio of banking assets (loans), but are not investing in the bank itself.

The value of the CDO should be directly linked to the value of the underlying securities that are used to collateralise it. Interest payments from the underlying securities will effectively be passed through to the CDO holders. Buyers of collateralised instruments can also participate in collateralised mortgage obligations and collateralised bond obligations, where the underlying assets held by the SPV are mortgage loans or bonds.

One of the most attractive aspects of investing in a CDO is that the issuer will normally issue a range of different classes of CDO for a single pool of assets. These classes are known as tranches and are split according to a credit rating. The higher the credit rating, the more senior the tranche. Losses will first affect the equity tranche, next the mezzanine tranches,

and finally the senior tranche. Each tranche pays a periodic payment (the swap premium), with the junior tranches offering higher yields.

### 9.10.1 Synthetic CDOs



#### Definition

**Synthetic collateralised debt obligation:** An issued security like a CDO but instead of being backed by a pool of actual underlying assets it is backed by a pool of CDSs.

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As discussed above, the value of a CDS is derived from the credit rating of the underlying asset and is therefore only a representation of that asset and not the asset itself. The CDO is therefore synthetic, as it is made up of a pool of these manufactured credit exposures.

From the issuer's viewpoint, the synthetic CDO acts to remove credit risk on assets that the issuer cannot or does not wish to sell. There may be adverse tax consequences from selling certain assets or legal restrictions on their sale, especially on certain foreign debt. A bank may not wish to sell a particular loan as it wishes to maintain a relationship with the client.

Like a cash CDO, the risk of loss on the CDO's portfolio is divided into tranches. A synthetic CDO issues various tranches of security to investors as with a normal CDO, but then invests any cash raised in a high-quality bond portfolio paying a safe, but low, return with minimal credit risk. They then boost this income by selling CDSs, thereby taking on the credit risk of the issuer's asset portfolio.

In a synthetic CDO, frequently some of the investors have an unfunded exposure to the risk of the credit default insurance provided, ie, they face exposure to the risk of the loss on an asset but have not contributed the associated capital which they may need to if the credit event arises. Arguably, the unfunded nature of many synthetic CDO structures has exacerbated the impact of debt defaults in a manner that would not arise with a funded CDO structure, thereby exaggerating the effects of the credit crisis.

## 9.11 Limitations of using derivatives

It might be assumed that derivatives should always be used to hedge interest rate and foreign exchange rate risk. However, in many instances organisations could have perfectly legitimate reasons for not using derivatives or forward contracts.

### 9.11.1 Cost

Many organisations will be deterred from using derivatives by the costs, including transaction costs and possibly brokerage fees. Companies may feel that the maximum losses if derivatives are not used are too small to justify incurring the costs of derivatives, either because the size of transactions at risk is not particularly large, or because the risks of large movements in interest or exchange rates is felt to be very small. Using natural hedging methods, such as matching receipts and payments in the same currency as far as possible, avoids the costs of derivatives. Matching may be particularly important for countries trading in Europe with countries that use the euro.

### 9.11.2 Attitudes to risk

The desirability of hedging must also be seen in the wider context of the organisation's strategy and its appetite for taking risks. For example, directors may be reluctant to pass up the chance of making exchange gains through favourable exchange rate movements. They



may therefore choose the riskier course of not hedging, rather than fixing the exchange rate through a forward contract and eliminating the possibility of profits through speculation.

There will also be occasions when a company's treasurer takes the view that exchange rates or interest rates will move favourably rather than adversely; or that they will remain stable for the foreseeable future. In these circumstances, a decision may be taken that hedging the risk is unnecessary, and the company should wait until it needs to make the transaction before dealing at the spot rate at that time.

### 9.11.3 Uncertainty over payments and receipts

There may not only be uncertainties over movements in rates. Uncertainties may also affect the amount and timing of settlement of the transactions being hedged. Uncertainties over timing may be particularly significant if the hedging transaction has to be settled on a specific date, for example an exporter having to fulfil a forward contract with a bank even if its customer has not paid.

### 9.11.4 Lack of expertise

If a business is making a lot of use of derivatives, or using complex derivatives, the potential losses from poor decision-making due to lack of expertise may be unacceptably high. These must be weighed against the costs of obtaining specialist external advice or maintaining an in-house treasury function, in order to reduce the risks of poor management of hedging.

For smaller companies with only limited knowledge of the derivatives markets, the lack of expertise will also mean that the time and effort required to get involved in derivatives is not worth the potential benefits, because the risks involved are not excessive.

## 10 Derivative markets



### Section overview

Derivatives can only exist when the market for the underlying asset or item allows buyers and sellers to freely influence the market price. Those underlying markets include the FX markets for exchange rates and money markets for short-term interest rates.

### 10.1 Markets

Derivative products have developed out of a desire of users in the underlying markets to manage their continuing price exposure in those markets. The main derivatives markets are:

- **foreign exchange** (FX)
- **money markets** (short-term interest rate markets)
- **fixed income markets** (government and non-government)
- **equity markets**
- **commodity markets** (eg, crude oil, metals and soft commodities)
- **credit markets**

#### 10.1.1 Floor versus voice versus electronic

For the Exchange Traded Derivatives Markets (the 'ETD' markets), trading takes place both electronically and via open outcry, on centralised physical trading floors. The trend is towards more electronic marketplaces with the evolution of technology and the desire for banks and brokerage to use the most cost-effective trading platforms. Some marketplaces adopt both.

The OTC derivatives market, by contrast, does not have centralised trading floors. It consists of a combination of telephone brokering and electronic trading. Just like the ETD markets, the shift is towards electronic broking and trading.

### 10.1.2 Quote driven versus order driven

For derivatives markets, price discovery is generated through two different types of market systems. A quote-driven market is one where prices are determined by designated market makers or dealers.

This is sometimes described as a 'price-driven' market. An order-driven market is one where the buy and sell orders placed in the trading system result in the best bid price and lowest offer price, resulting in a transaction taking place.

The difference between these two market systems lies in what is displayed in the market in terms of orders and bid and ask prices. The order-driven market displays all bids and asks, while the quote-driven market focuses only on the bids and asks of market makers and other designated parties. For example, NYSE Liffe, which is an organised ETD market, is a centralised, order-driven market on which continuous trading is supported by brokers.

OTC derivatives trade via a combination of quote-driven and order-driven systems.

### 10.1.3 Price taker versus price giver

All quote-driven transactions around the world involve one participant providing a two-way price on request (a price at which the market maker is willing to buy and a price at which they are willing to sell). Clearly their sell price is higher. A perfect day's trading for a market maker is one where he or she has simultaneously entered into buy and sell orders throughout the day with matching volumes. At the end of the day, they will have earned the difference between the buy price and the sell price on the volume that they have traded. The market maker is known as the price giver. Their counterparty to the deals is known as the 'price taker'. The price giver will always aim to make a profit that is equal to the difference between the buy price and the sell price that they are quoting. The price taker (known as the 'client') must accept that they will always pay the higher price quoted when they are buying and sell to the lower price quoted by the market maker when they are selling.

Central banks, investment banks, brokerage houses and insurance companies tend to be the typical price givers. Asset managers, corporations and private clients tend to be the typical price takers.

## 10.2 OTC vs exchange-traded markets

As discussed above, derivatives may be either **exchange traded** (where there is an active secondary market accessible to participants) or contracts entered directly between counterparties (on the **OTC** market). The table below summarises the differences between the OTC and exchange-traded market.

	Exchange-traded	OTC
<b>Quantity and accuracy of hedging</b>	The quantity covered by each contract is determined by the exchange. Only whole contracts may be traded	Can be tailored to meet the need of the investor exactly
<b>Quality</b>	Defined by the contract specification	Can be varied according to need
<b>Delivery/ expiry dates</b>	Only allowed on dates fixed by the exchange	Can be tailored to meet the customer's needs
<b>Liquidity</b>	Generally good, but dependent on the product	May be limited; market may be made by just one firm
<b>Counterparty risk</b>	No counterparty risk to the clearing member once contract registered	Risk exists of default, therefore credit rating of counterparty very important
<b>Margin</b>	Margin will normally be required	Normally no margin
<b>Regulation and confidentiality</b>	Subject to significant regulation and disclosure	Less actively regulated. May not be suitable for certain categories of customer

The differences between hedging using exchange-traded products and hedging on the open markets can be further summarised. (You may wish to refer back to this table when you have worked through the chapter Financial risk management, which deals with hedging.)

	Exchange-traded	OTC
<b>Exposure characteristics</b>	In the ETD market, it is much harder to match the exposure due to the standardisation of the contracts. Expiry dates are fixed, contracts have a minimum trading size and for commodities especially, the quality and location of the underlying delivery is fixed and may not match that of the exposure.	OTC hedges can be tailored to meet the exact exposure of the underlying position. This includes the size of the exposure, the timing of the exposure and also, if a commodity, the exact quality and location of delivery of the underlying commodity.
<b>Cost of putting on the hedge/closing hedging</b>	Fees are transparent with ETD contracts. A broker will outline exactly what they will charge a client for executing and clearing futures and options contracts.	With OTC transactions, the fees to transact them are disguised within the prices that are quoted. However, the more tailor-made the hedge, the higher the embedded costs will be to the hedger.
<b>Ease of adjusting or closing the hedge</b>	Successful futures contracts are extremely liquid and will have tight bid/ask spreads. Hence the cost of adjusting a hedge position or closing a hedge out is very small when executed on the ETD markets.	There are two options for a hedger to close down an OTC hedge position. Firstly and most obviously, they can go back to the counterparty that they initiated the hedge with. They are then at the mercy of the price offered by that counterparty. In an illiquid marketplace, or if the hedge is very unique in its construction, then a hedger will have no option but to trade with this counterparty. Secondly, if the hedge is of straightforward construction, the trader will be able to ask for quotes from other banks and perhaps trade an equal and opposite OTC deal to their original hedge with the new counterparty. Having two counterparties will obviously increase the administration of the deals and use two credit lines which may not be attractive for the trader's company.

	Exchange-traded	OTC
<b>Counterparty exposure vs centralised clearing</b>	Trading directly on the exchange as a clearing member effectively eliminates any counterparty exposure as they have the clearing house as counterparty. Of course, if the trader is simply a client of a member of the exchange, they will have counterparty exposure to that clearing member.	All OTC transactions that are bilateral agreements involve counterparty exposure. The credit rating of the trader's company will thus have an impact on the prices that he is able to achieve with the OTC counterparties.
<b>Price transparency</b>	Exchanges sell real-time prices to quote vendors who then disseminate those prices into dealing rooms. Hence all dealers and traders know exactly what the current prices are at all times.	The OTC market has no formal price discovery process if a trader wishes to trade direct with a counterparty. A certain amount of price discovery exists when traders use OTC brokers/IDBs to ascertain the prices available for trading. However, those OTC brokers only collate and quote prices for 'standardised OTC' contracts. If a trader wants to trade a more complex hedge, they are at the mercy of the OTC counterparty for pricing.
<b>Best execution</b>	When a trader leaves an order with an ETD broker or dealer, they expect best execution.	Best execution can be achieved by OTC brokers for standardised OTC contracts. For anything more complex, a trader will simply have to compare quotations themselves from willing counterparties.
<b>Documentation</b>	ETD documentation is more straightforward as the relationship with the exchange is standardised therefore no Master Agreements are required. Nevertheless, there still needs to be legal confirmation of each transaction and this is provided by contract notes, which are similar in content to the term sheets produced for OTC derivatives.	OTC transactions between counterparties are governed by the framework detailed in the Master Agreement. The individual transactions each have a trade confirmation or 'term sheet' which serves as a record.
<b>Settlement mechanism</b>	For exchange-traded derivatives all transactions are centrally cleared by the clearing house. In the UK LCH. Clearnet is the key clearer and facilitates the margin procedures and delivery/expiry processes. All transactions on exchange will be guaranteed by the clearing house.	Settlement of OTC transactions can be completed either bilaterally between the two counterparties or via a clearing house such as SwapClear. In the former, the counterparties deal directly with each other and are responsible for managing credit risk, overseeing cash flow transfers and facilitating settlement. In the latter, the entire process is managed and guaranteed by the clearing house.

### 10.2.1 Features of exchange trading

Futures and option contracts are traded on an organised exchange in a centralised location. These exchanges are also regulated by the local regulatory bodies in each country and are described as Recognised Investment Exchanges. They charge a membership fee and levies on contracts traded to cover the operational costs of the business.

## 10.2.2 Features of OTC markets

The process of agreeing an OTC transaction is normally conducted over the phone directly with the counterparty or via an IDB. Once verbally agreed the contract terms will be sent to each counterparty for confirmation. Historically, OTC derivatives have been time consuming and therefore expensive to process because each trade would be unique with different terms and conditions and therefore had to be confirmed individually, then settled and finally cash flows reconciled. However, the advent of technology and the semi-commoditisation of certain portions of the OTC derivatives markets has facilitated the introduction of several trade processing systems which are being used in the OTC market. These include MarkitWire, SwapClear and DTCC Deriv/Serv.

OTC products can present considerable **counterparty risk exposure**. To minimise this risk, participants normally undertake a lengthy due diligence investigation of their counterparty to avoid entering into contracts that may be subject to default. There is also a growing use of central counterparty clearing services provided by LCH. Clearnet, which accepts certain OTC contracts as intermediary, protected by a margining system. Credit risks are also minimised through the netting of cash flows in products such as interest rate swaps and, more broadly, by favouring products that are settled on a difference rather than by delivering the physical underlying.

Counterparties to an OTC product are at risk if either the paperwork does not operate as envisaged in the case of a default, or if one party is acting in a capacity for which it is not authorised. The documentary risk is less intense than before, as the ISDA has produced a standard master agreement to cover most bilateral OTC derivatives transactions.

Valuing OTC positions can be difficult. While exchange-traded markets provide daily mark to markets against authoritative settlement prices, many OTC products are valued by the issuing bank. This may not provide the objectivity required by many trustees and custodians.

## 10.3 Participants in markets

For markets to operate in the most efficient and effective way possible (which is what market users are looking for), some marketplaces require additional market participants to help with access, execution and clearing services. These market participants include:

- (a) **Intermediaries** - IDBs. These participants are the lifeblood of the OTC derivatives markets. They provide price discovery services and quotation for the buyers and sellers.
- (b) **Primebrokers** - These are brokers who act as settlement agents, provide custody for assets, provide financing for leverage, and prepare daily account statements for its clients, who are money managers, hedge funds, market makers, arbitrageurs, specialists and other professional investors. They often also offer securities lending services for their hedge fund clients.
- (c) **Futures commission merchants** - This is mostly a generic US term for an exchange traded clearing and/or execution broker. They must be registered by the Commodity Futures Trading Commission in the US.
- (d) **Execution broker** - This is a brokerage corporation or individual who executes client orders on a derivatives exchange.

**Note:** The execution and clearing broker could be the same company or a separate company.

- (e) **Clearing broker** - This is a brokerage/bank which is normally a member of an organised derivatives exchange. They offer clearing and settlement services internally and to clients who execute transactions on a derivatives exchange.

# 11 Financial reporting and financial instruments



## Section overview

- The use of financial derivatives has implications for financial reporting and profitability. The three accounting standards that currently apply to financial instruments including derivatives are IAS 32, IFRS 9 and IFRS 7.
- IFRS 16 deals with accounting for leases.

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There are three accounting standards on financial instruments:

- (a) IAS 32, *Financial Instruments: Presentation*, which deals with:
  - (1) the classification of financial instruments between liabilities and equity
  - (2) presentation of certain compound instruments
- (b) IFRS 7, *Financial Instruments: Disclosures*, which revised, simplified and incorporated disclosure requirements previously in IAS 32.
- (c) IFRS 9, *Financial Instruments* replaced IAS 39, *Financial Instruments: Recognition and Measurement*. The standard covers:
  - (1) recognition and derecognition
  - (2) the measurement of financial instruments
  - (3) impairment
  - (4) general hedge accounting

IFRS 9 is mandatory for accounting periods beginning on or after 1 January 2018.



## Professional skills focus: Structuring problems and solutions

You are expected to be able to identify and anticipate problems that may arise from a decision. When advising a company whether it should use hedging, you will need to consider not only the financial benefits that can be obtained from hedging but also the risks that a particular hedging strategy exposes the company to. The use of financial derivatives also has implications for financial reporting which must be considered when developing a hedging strategy.

### 11.1 IFRS 9 and the recognition of financial instruments

A financial asset or a financial liability should be recognised in the statement of financial position when the reporting entity becomes a party to the contractual provisions of the instrument.

For example, if a company takes out a forward contract to buy/sell an amount of currency at a future date, the contract is a financial derivative and should be recognised immediately, instead of waiting until the settlement date of the contract to recognise it in the accounts.

A financial instrument should initially be measured at cost. This is the fair value of the consideration given or received. Transaction costs under IFRS 9 are incremental costs associated with the acquisition, issue or disposal of a financial instrument. Transaction costs are added to the cost of financial assets classified as measured at amortised cost, or where an irrevocable election has been made to take all gains and losses through other comprehensive income, thereby increasing the cost of the asset. Transaction costs decrease

the amount initially recognised as financial liabilities classified as measured at amortised cost. Transaction costs for other financial instruments are accounted for in profit or loss when they are incurred.

The value of financial instruments should be reassessed at each reporting date. The method of reassessment depends on the category of financial instrument.

When the carrying amount of a financial instrument is reassessed at fair value, there will be a difference between its previous carrying amount and its new carrying amount (new fair value). This difference is a gain or loss, which must be accounted for.

The method of accounting for the gain or loss on reassessment of the carrying amount depends on the class to which the financial instrument belongs. The following two tables summarise the accounting treatment of each category of financial asset and financial liability under IFRS 9, provided they have not been designated as hedged items. (The accounting treatment of hedged items follows different rules and these are discussed in the chapter Financial risk management.)

### 11.1.1 Summary of accounting treatments - financial assets and financial liabilities **Financial assets**

		<b>Initial measurement (IFRS 9: para. 5.1.1)</b>	<b>Subsequent measurement (IFRS 9: paras. 4.1.2-4.1.5, 5.7.5)</b>
(1)	<b>Investments in debt instruments</b> Business model approach: (a) Held to collect contractual cash flows; and cash flows are solely principal and interest	Fair value + transaction costs	Amortised cost
	(b) Held to collect contractual cash flows <b>and to sell</b> ; and cash flows are solely principal and interest	Fair value + transaction costs	Fair value through other comprehensive income (with reclassification to profit or loss (P/L) on derecognition) NB: interest revenue calculated on amortised cost basis recognised in P/L
(2)	<b>Investments in equity instruments not 'held for trading'</b> (optional irrevocable election on initial recognition)	Fair value + transaction costs	Fair value through profit or loss by default If irrevocable election made on initial recognition, fair value through other comprehensive income (no reclassification to P/L on derecognition) NB: dividend income recognised in P/L
(3)	<b>All other financial assets</b> (and any financial asset if this would eliminate or significantly reduce an accounting mismatch)	Fair value (transaction costs expensed in P/L)	Fair value through profit or loss

#### **Financial liabilities**

		Initial measurement (IFRS 9: para. 5.1.1)	Subsequent measurement (IFRS 9: para. 4.2.1)
(1)	<b>Most financial liabilities</b> (eg, trade payables, loans, preference shares classified as a liability)	Fair value less transaction costs	Amortised cost
(2)	<b>Financial liabilities at fair value through profit or loss</b> <ul style="list-style-type: none"> <li>• 'Held for trading' (short-term profit making)</li> <li>• Derivatives that are liabilities</li> <li>• Designated on initial recognition at 'fair value through profit or loss' to eliminate/significantly reduce an 'accounting mismatch'</li> <li>• A group of financial liabilities (or financial assets and financial liabilities) managed and performance evaluated on a fair value basis in accordance with a documented risk management or investment strategy</li> </ul>	Fair value (transaction costs expensed in P/L)	Fair value through profit or loss

### Example

A company purchases a financial investment for £25,000 on 1 May 20X5. At the end of its financial year, on 31 December 20X5, the fair value of the asset is remeasured as £31,000. The asset is subsequently sold on 16 March 20X6 for £35,500.

- (a) If the asset is classified as an asset at fair value through profit or loss, a profit of £6,000 is recorded at 31 December 20X5 and the asset is revalued to £31,000. A further profit of £4,500 is recorded in the following year when the asset is sold.
- (b) If the asset is classified as an asset at fair value through other comprehensive income, it is revalued to £31,000 on 31 December 20X5, and a gain of £6,000 is reported in other comprehensive income and taken to equity. When the asset is sold in March 20X6, a profit of

£10,500 is recorded. The equity reserve is reduced by £6,000 and there is also a debit of £6,000 in other comprehensive income for 20X6, to avoid a double counting of the gain/profit of £6,000 that would otherwise occur.

Note that in the case of investments in equity instruments not held for trading where the irrevocable election has been made to report changes in fair value in other comprehensive income, all changes in fair value up to the point of derecognition are reported in other comprehensive income.

Therefore, a gain or loss in profit or loss will only arise if the investments in equity instruments are not sold at their fair value and for any transaction costs on derecognition.

### 11.1.2 Subsequent measurement: amortised cost

When financial assets or liabilities are subsequently measured at amortised cost, the asset or liability is revalued at the end of each accounting period as follows.



	Financial asset	Financial liability
	Opening balance	Opening balance
Add	Interest income recognised in profit or loss (using the effective interest rate)	Interest expense in profit or loss (using the effective interest rate)
Subtract	Interest actually received	Interest actually paid
Equals	Closing balance	Closing balance

### Example

A company issues a two-year bond on the first day of its financial year. The bond has a coupon rate of interest of 4% and interest is payable annually. The bond is issued at a price of £96.00 and will be redeemed at par. The effective rate of interest on the bond is 6.1875%. The effective rate of interest is the rate that exactly discounts estimated future cash payments or receipts across the expected life of the financial instrument to the net carrying amount of the financial asset or liability. You could be asked to calculate the effective rate of interest using the IRR technique.

### Interest charge at

Year	Opening balance	6.1875% (P/L)	Interest paid	Closing balance
	£	£	£	£
1	96.00	5.94	(4.00)	97.94
2	97.94	6.06	(4.00)	100.00
Redeemed				(100.00)
				0.00



### Worked example: Classification and measurement of financial asset at fair value

DG acquired 500,000 shares in HJ, a listed entity, for £3.50 per share on 28 May 20X9. The costs associated with the purchase were £15,000 and were included in the cost of the investment. The directors plan to realise this investment before the end of 20X9. The investment is held within a business model whose objective is achieved by selling financial assets and was designated on acquisition as a financial asset at fair value through profit or loss. There has been no further adjustment made to the investment since the date of purchase. The shares were trading at £3.65 each on 30 June 20X9.

### Requirement

Explain how the financial instrument should be classified, initially measured and subsequently measured. Prepare any journal entries required to correct the accounting treatment for the year to 30 June 20X9.

### Solution

The investment is initially measured at fair value, in this case the cost of £1.75 million (500,000 shares × £3.50). Transaction costs are excluded from the initial fair value of a financial asset that is classified as held for trading. These costs are charged to profit or loss immediately, and not included in the cost of the investment. The investment is subsequently measured (at 30 June 20X9) at fair value of £1.825 million (500,000 shares × £3.65) with the gain of £75,000 (£1.825m - £1.75m) being recorded in profit or loss. The following adjustments are therefore required:

DEBIT	Administrative expenses	£15,000	
CREDIT	Financial asset		£15,000

Being the correction in respect of transaction costs

DEBIT	Financial asset	£75,000	
CREDIT	Gain on investment (P/L)		£75,000

Being the gain on the investment being credited to the statement of profit or loss



### Worked example: Classification and measurement of financial asset at amortised cost

DG purchased a bond with a par value of £5 million on 1 July 20X8. The bond carries a 5% coupon, payable annually in arrears and is redeemable on 30 June 20Y3 at £5.8 million. The bond is held within a business model whose purpose is to hold financial assets in order to collect contractual cash flows and DG fully intends to hold the bond until the redemption date. The bond was purchased at a 10% discount. The effective interest rate on the bond is 10.26%. The interest due for the year was received and credited to investment income in the statement of profit or loss.

#### Requirement

Explain how the financial instrument should be classified, initially measured and subsequently measured. Prepare any journal entries required to correct the accounting treatment for the year to 30 June 20X9.

#### Solution

The bond purchased by DG should be classified as a financial asset at amortised cost, as DG intends to hold it to redemption, it is quoted (a bond) and it has fixed payments (5% interest, £5.8 million redemption value). It is initially recorded at the net cost of £4.5 million and then subsequently measured at amortised cost using the effective interest rate (10.26%). Only the interest received of

£250,000 (5% × face value of £5m) has been recorded in the statement of profit or loss. The following adjustment is therefore required to bring the finance income up to the effective interest rate and to correct the carrying amount of the asset:

DEBIT	Financial asset	£211,700	
CREDIT	Finance income		£211,700

Being the additional finance income to be recognised in profit or loss

#### WORKING

	£'000
1 July 20X8 purchased (£5m × 90%)	4,500
Finance income (£4.5m × 10.26%)	461.7
Interest received (£5m × 5%)	(250)
30 June 20X9 balance c/d	4,711.7

The financial asset will be held at £4.7117 million and a further £211,700 (£461,700 - £250,000) will be credited to the statement of profit or loss.



## Worked example: Investment in equity instrument

Atlantic Bank acquires an equity investment on 25 February 20X6 with the intention of holding it in the long term. The investment cost £100,000 and transaction costs were £6,000. Atlantic Bank has elected to present the equity investment at fair value through other comprehensive income.

At Atlantic Bank's year end of 31 December 20X6, the market price of the investment is £122,000.

### Requirement

How is the asset initially and subsequently measured?

### Solution

Asset measurement:

- The asset is initially recognised at the fair value of the consideration, being £100,000 plus transaction costs of £6,000. A total amount of £106,000 is initially recognised.
- At the period end it is re-measured to £122,000. This results in the recognition of £16,000 in other comprehensive income.

The gains or losses accumulated in other comprehensive income are never recycled to profit or loss. Only dividend income is recognised in profit or loss.



## Worked example: Measurement of financial liability

On 1 January 20X3 Wallace issued £600,000 loan notes. Issue costs were £200. The loan notes do not carry interest, but are redeemable at a premium of £152,389 on 31 December 20X4. The effective finance cost of the loan notes is 12%.

### Requirement

What is the finance cost in respect of the loan notes for the year ended 31 December 20X4?

### Solution

The premium on redemption of the loan notes represents a finance cost. The effective rate of interest must be applied so that the debt is measured at amortised cost.

At the time of issue, the loan notes are recognised at their net proceeds of £599,800 (600,000 - 200). The finance cost for the year ended 31 December 20X4 is calculated as follows:

	B/f	Interest @ 12%	C/f
	£	£	£
20X3	599,800	71,976	671,776
20X4	671,776	80,613	752,389

The finance cost in respect of the loan notes for the year ended 31 December 20X4 is £80,613.

### 11.1.3 Financial reporting of derivatives: disclosure and measurement

As a reminder, a derivative is a financial instrument:

- whose value changes in response to the change in price of an underlying security, commodity, currency, index or other financial instrument(s)
- where the initial net investment is zero or is small in relation to the value of the underlying security or index
- that is settled at a future date

If a derivative is a financial asset, then it should be classified as a financial asset at fair value through profit or loss, being treated as a financial asset held for the purpose of selling in the short term.

If it is a financial liability, it will also be treated at fair value through profit or loss.

If there is no active market for a particular financial instrument, fair value should be determined using a valuation technique. Such techniques could include recent market transactions, transactions in other shares or securities that are substantially the same, discounted cash flow models and option pricing models. The inputs to such models should be market based.

Establishing a fair value for non-traded derivatives may be problematic. Their value will be very dependent on the assumptions used, particularly those relating to the timing and size of future cash flows.



#### Worked example: Derivatives - purchased option

On 31 December 20X0 Entity Theta purchases put options over 100,000 shares in Omega which expire on 31 December 20X2. The exercise price of the option is £2, the market price on 31 December 20X0, and the premium paid is £11,100.

#### Requirement

The intrinsic value of the option (ie, the exercise price less the price per share, times the number of shares specified in the option contract) is zero at acquisition. The cost of £11,100 reflects the time value of the option which depends on the time to expiration, the price of the stock and its volatility.

If the stock price falls below £2 the put becomes in the money by the amount below the £2 strike price times the number of option shares. For instance, if the price of Omega stock fell to £1.90, the intrinsic value gain on the put option is £0.10 per share. If the stock price rises and stays above £2 for the term of the contract, the put option expires worthless to the buyer because it is out of the money. The purchaser of the put option loses the premium which is kept by the seller (writer).

#### Solution

##### Economic assumptions

The value of the shares in Omega and the put options is shown in the table below. The value of the put option increases as the stock price decreases.

Omega shares	<b>31.12.20X0</b>	<b>30.6.20X1</b>	<b>31.12.20X1</b>
Price per share (£)	2.00	1.90	1.85
Value of put option (£)	11,100	13,500	15,000

On 31 December 20X1, Theta sells the option.

Accounting entries:

	Debit	Credit
	£	£
<b>31 December 20X0</b>		
Financial asset – put option	11,100	
Cash		11,100
(To record the purchase of the put option)		
<b>30 June 20X1</b>		
Financial asset – put option (13,500 – 11,100)	2,400	
Profit or loss – gain on put option		2,400
(To record the increase in the fair value of the put option)		
<b>31 December 20X1</b>		
Financial asset – put option (15,000 – 13,500)	1,500	
Profit or loss – gain on put option		1,500
(To record the increase in the fair value of the put option)		
Cash	15,000	
Financial asset – put option		15,000
(To record the sale of the put option on 31.12.20X1)		



### Worked example: Derivatives – Forward contract

On 1 November 20X5, a company enters into a forward contract with its bank to sell US\$750,000 on 1 February 20X6 in exchange for sterling, at a forward rate of \$1.50 = £1. The company's year end is 31 December. At 31 December 20X5, the \$/£ rate has changed to \$1.55 and at settlement on 1 February 20X6 the spot exchange rate is \$1.60.

#### Requirement

How should this forward contract be accounted for by the company?

#### Solution

The asset is classified as a financial asset or liability at fair value through profit or loss. On 1 November 20X5 it has no value as an asset or liability.

At 31 December 20X5, the financial instrument should be revalued to  $\$750,000/1.55 = £483,871$ . The company will be receiving £500,000 on 1 February; therefore it has gained from the exchange rate movement. The gain of £16,129 ( $£500,000 - £483,871$ ) should be recognised in profit for the year to 31 December 20X5.

On 1 February 20X6 when the forward contract is settled, the spot value of the dollars that the company must pay to receive £500,000 is now just £468,750 ( $\$750,000/1.60$ ). The total gain on the forward contract has been £31,250. As £16,129 was recognised in profit or loss for 20X5, a further £15,121 will be recognised in profit for the year to 31 December 20X6.

Accounting for derivatives where the derivatives are used for hedging is described in the chapter Financial risk management.

### 11.1.4 Embedded derivatives

Certain contracts that are not themselves derivatives (and may not be financial instruments) include derivative contracts that are 'embedded' within them. An embedded derivative is a derivative instrument that is included within a different type of contract, known as the 'host' contract.

An embedded derivative may be identified if contracts contain:

- rights or obligations to exchange at some time in the future
- rights or obligations to buy or sell
- provisions for adjusting the cash flows according to some interest rate, price index or specific time period
- options which permit either party to do something not closely related to the contract
- unusual pricing terms (eg, a bond which pays interest at rates linked to the FTSE 100 yield contains an embedded swap)

A key characteristic of embedded derivatives is that the embedded derivative cannot be transferred to a third party independently of the instrument. For example, a bond with a detachable warrant, which gives the right to the owner to exercise the warrant and buy shares while retaining the bond, is not a hybrid or combined instrument. The warrant is a separate financial instrument, not an embedded derivative.

#### Examples of host contracts

Possible examples include:

- (a) An investment in a debt instrument that is convertible into ordinary shares of the issuer. The debt instrument is the host contract and conversion option is the embedded derivative.
- (b) A debt instrument with an extension option with the interest rate in the extension period reset to 1.2 times the market rate. The debt instrument is the host contract with embedded extension option.
- (c) A lease contract has a rent adjustment clause based on changes in the local inflation rate. The lease is the host contract with inflation-related rentals being the embedded derivative.

#### Examples of embedded derivatives

Possible examples include:

A bond which is redeemable in five years' time with part of the redemption price being based on the increase in the FTSE 100 Index:

'Host' contract	Bond	Accounted for as normal ie, amortised cost
Embedded derivative	Option on equities	Treat as derivative ie, remeasured to fair value with changes recognised in profit or loss

A construction contract priced in a foreign currency. The construction contract is a non-derivative contract, but the changes in foreign exchange rate is the embedded derivative.

#### Accounting treatment of embedded derivatives

IFRS 9 requires embedded derivatives that would meet the definition of a separate derivative instrument to be **separated** from the host contract **unless**:

- (a) the economic characteristics and risks of the embedded derivative are **closely related** to those of the host contract;

- (b) the hybrid (combined) instrument is measured at **fair value through profit or loss**;
- (c) the host contract is a financial **asset** within the scope of IFRS 9; or
- (d) the embedded derivative **significantly modifies the cash** flows of the contract.



### Worked example: Convertible bond

QWE issued 10 million 5% five year convertible £1 bonds on 1 January 20X0. The proceeds of £10 million were credited to non-current liabilities and debited to bank. The 5% interest paid has been charged to finance costs in the year to 31 December 20X0.

The market rate of interest for a similar bond with a five-year term but no conversion terms is 7%.

#### Requirement

Demonstrate how this convertible instrument would be initially measured in accordance with IAS 32 **and** subsequently measured in accordance with IFRS 9 in the financial statements for the year ended 31 December 20X0.

#### Solution

A convertible instrument is considered part liability and part equity. IAS 32 requires that each part is measured separately on initial recognition. The liability element is measured by estimating the present value of the future cash flows from the instrument (interest and potential redemption) using a discount rate equivalent to the market rate of interest for a similar instrument with no conversion terms. The equity element is then the balance, calculated as follows:

	£
PV of the principal amount £10m at 7% redeemable in 5 yrs ( $£10m \times 0.713$ )	7,130,000
PV of the interest annuity at 7% for 5 yrs ( $5\% \times £10m \times 4.100$ )	2,050,000
Total value of financial liability element	9,180,000
Equity element (balancing figure)	820,000
Total proceeds raised	10,000,000

The equity element will not be remeasured; however, the liability element will be subsequently remeasured at amortised cost recognising the finance cost using the effective interest rate of 7% and deducting the coupon interest paid. The financial statements will include:

#### Statement of profit or loss and other comprehensive income for the year ended 31 December 20X0 (within profit or loss)

	£
Finance cost ( $7\% \times 9,180,000$ )	642,600

#### Statement of financial position as at 31 December 20X0

	£
Equity	820,000
Financial liability (W)	9,322,600

## WORKING

	£
Liability recognised 1.1.X0	9,180,000
Finance cost (7% × 9,180,000)	642,600
Interest paid (5% × 10,000,000)	(500,000)
At 31.12.X0	9,322,600

## 11.2 Assurance over fair values

ISA 540, *Auditing Accounting Estimates, Including Fair Value Accounting Estimates, and Related Disclosures* provides guidance on accounting estimates contained in financial statements and requires auditors to obtain sufficient, appropriate audit evidence for such accounting estimates. It treats fair values as a type of accounting estimate.



### Definition

**Accounting estimate:** An accounting estimate is an approximation of a monetary amount in the absence of a precise means of measurement.

The ISA gives the following examples of fair value estimates:

- complex financial instruments, which are not traded in an active and open market
- share-based payments
- property or equipment held for disposal
- certain assets and liabilities acquired in a business combination, including goodwill and intangible assets

Directors and management are responsible for making accounting estimates included in the financial statements. The determination of fair value will generally be more difficult than determining historical cost, and it will certainly be more difficult to establish whether fair value is reasonable for complex assets and liabilities than for those more straight forward assets or liabilities which have an actively traded market. Such estimates are therefore often made in conditions of uncertainty regarding the outcome of events, and involve the use of judgement, or frequently the application of a formula based upon past experience. Others may have complex systems for determining fair value if they have a large number of assets and liabilities which they account for at fair value.

Not all financial statement items requiring measurement at fair value involve estimation uncertainty. In the chapter Business and securities valuation, we saw that in accordance with IFRS 13, entities should maximise the use of relevant observable inputs. For example, if using a Level 1 input (eg, the unadjusted quoted price in an active market of equity shares in a listed company), there is no estimation uncertainty.

For others, however, there may be moderate (eg, Level 2 inputs) or relatively high estimation uncertainty (eg, Level 3 inputs), particularly where they are based on significant assumptions, for example:

- fair value estimates for derivative financial instruments not publicly traded
- fair value estimates for which a highly specialised entity-developed model is used or for which there are assumptions or inputs that cannot be observed in the marketplace

ISA 540 requires auditors to assess the entity's process for determining fair value



measurements and disclosures, and their related control activities. When a firm is engaged to undertake an assurance engagement over fair values of financial instruments (or in reviewing fair value measurements as part of an audit) the general principles and approach to assurance should apply. Assurance engagements have been described in some detail in the chapter Data analysis.

The general approach to an assurance exercise in relation to the valuation of financial instruments should be to:

- establish the method or model that has been used for the valuation of the financial instrument(s); and
- consider whether this selected model is suitable for the purpose of the valuation.

In practical terms, this would include considering the following:

- the valuation techniques adopted (ie, Level 1, 2 or 3)
- the market in which the transaction is assumed to have taken place
- the relevant control activities over the process (eg, controls over data and the segregation of duties between those committing the entity to the underlying transaction and those responsible for undertaking the valuations)
- the expertise and experience of those persons determining the fair value measurements
- the significant management assumptions used (particularly where Level 3 unobservable inputs are used)
- documentation supporting management's assumptions

controls over the consistency, timeliness and reliability of the data used in valuation models. If the values that have been used for each of the variables in the model are considered suitable and appropriate, the financial instruments should be valued using the model to assess whether the model has been used correctly by the client. This valuation should be compared to the client's valuation.

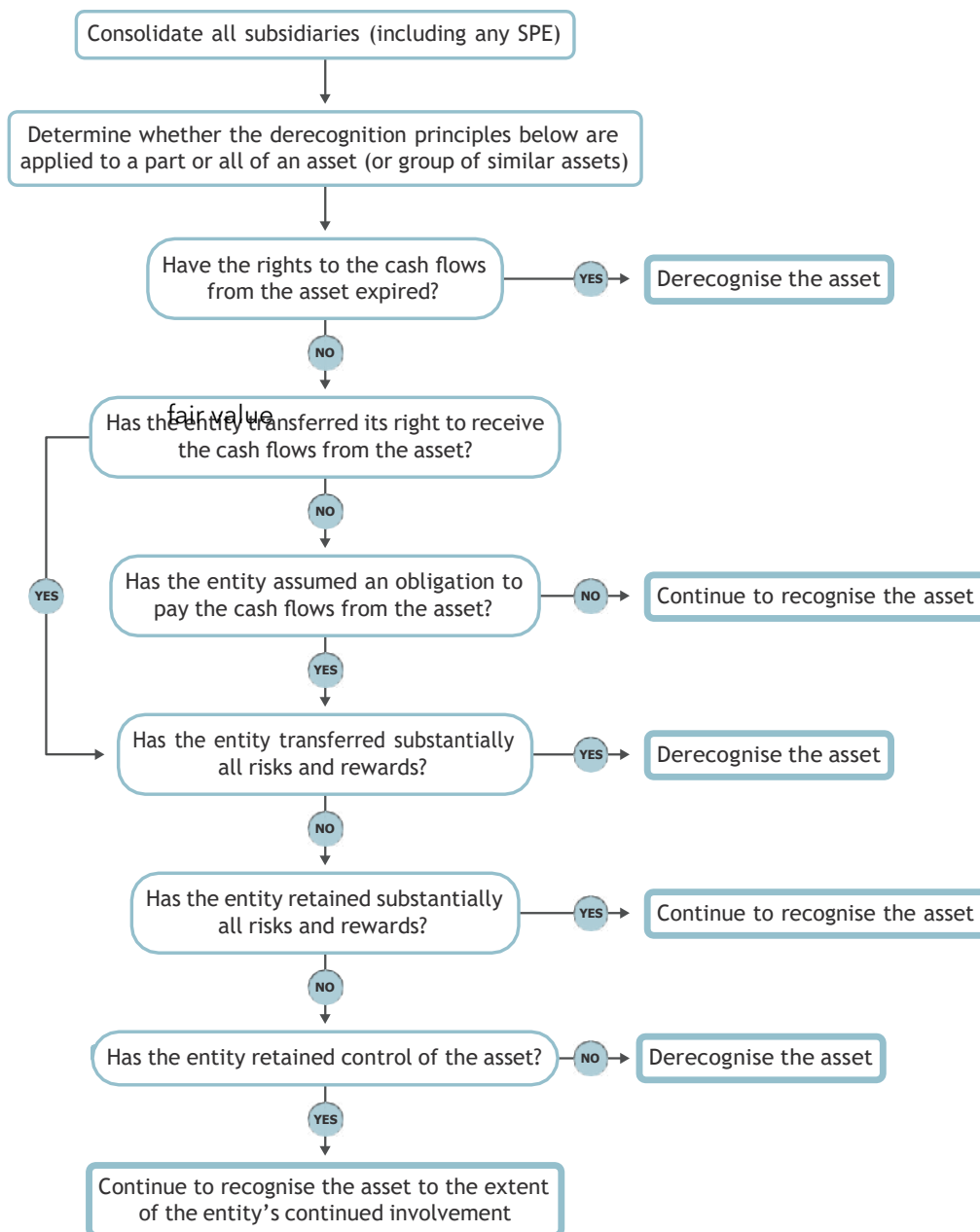
Reasonable assurance can be provided if the valuation obtained in the assurance exercise conforms in all material respects with the client's valuation.

### 11.3 Derecognition

The complexity of financial transactions and the difficulty of establishing whether the transfer of legal title leaves residual risk and reward exposure as well as control and involvement has prompted the IASB to produce a fairly prescriptive set of rules to aid companies in the derecognition of financial assets.

The following flowchart is included in the application guidance which accompanies IFRS 9 as an integral part of the standard. It summarises the evaluation of whether, and to what extent, a financial asset should be derecognised.

Figure 13.10: Flowchart



The following points relate to this flowchart:

- If the **contractual rights** to receive the cash flows from the asset have **expired** or have been wholly transferred, the whole of the asset should be derecognised. This is also the case if the contractual rights have been retained by the entity but it has assumed a contractual obligation to pay the cash flows to one or more recipients.
- If an entity has sold just a portion of the cash flows arising from an asset, only part of the asset should be derecognised.
- If substantially **all the risks and rewards** of ownership have been **transferred**, the financial asset should be derecognised; if they have not, it should not.
- If the entity has neither retained nor transferred all the risks and rewards of ownership, it should determine whether it has **retained control** of the financial asset. If it has, it continues to recognise the asset to the extent of its continuing involvement.

When a derivative is derecognised, the difference between the carrying amount and any consideration received should be recognised in profit or loss. Any accumulated gains or losses that have been recognised in other comprehensive income should also be reclassified to profit or loss on derecognition of the asset.

Where a financial asset such as a bond is sold with a simultaneous agreement to buy it back at some future date at a specified price, the substance of the transaction is that the risks and rewards of ownership have not been transferred. In effect, the proceeds of the sale are collateralised borrowing. The asset should continue to be recognised and the amount received recognised as a financial liability. Similarly, the asset should not be derecognised if it is sold but there is a total return swap transferring the market risk exposure back to the entity selling the asset.



### Worked example: Derecognition

The Polyact Company purchased £60,000 of shares, which were classified as a financial asset at fair value through profit or loss. Later that year Polyact sold 50% of the shares for £40,000.

#### Requirement

What is the amount of the gain or loss on the disposal to be recognised in profit or loss?

#### Solution

On derecognition of the financial asset the difference between the carrying amount and any consideration received should be recognised in profit or loss. On the assumption that the asset was not remeasured during the year, the carrying amount of 50% of the asset is £30,000. The proceeds from the sale of 50% of the asset are £40,000, yielding a gain of £10,000 to be recognised in profit or loss.

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For securitisations, whether the securitised assets will be derecognised depends on whether the SPV has assumed all the risks and rewards of the ownership of the assets and whether the originator has ceded control of the assets to the SPV. If the SPV is a mere extension of the originator and it continues to be controlled by the originator, then the SPV should be consolidated and any securitised assets should continue to be recognised in the group accounts. Securitisation will not in this case lead to derecognition.

Even when the SPV is not controlled by the originator, the risks and rewards of ownership will not have passed completely to the SPV if the lenders to the SPV require recourse to the originator to provide security for their debt, or if the originator retains the risk of bad debts.

For total return swaps, the originator is prohibited from derecognising the asset that it has transferred.



### Interactive question 5: Derecognition of financial assets and liabilities

Discuss whether the following financial instruments should be derecognised.

#### Requirements

- AB Co sells an investment in shares, but retains a call option to repurchase those shares at any time at a price equal to the market value current at the date of repurchase.
- CD Co sells an investment in shares and enters into a 'total return swap' with the buyer. Under a 'total return swap' arrangement, the buyer returns any increases in value to the seller, and the seller compensates the buyer for any decrease in value plus interest.

- (c) EF Co enters into a stock lending agreement where an investment is lent to a third party for a fixed period of time for a fee.

See **Answer** at the end of this chapter.

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## 11.4 Accounting for equity

Accounting for equity (share capital and reserves) follows the requirements of company law and accounting standards, and IAS 32 and IFRS 9 do not contain many rules with regard to equity (with the exception of equity derivatives such as options).

It may be useful, however, to note the accounting treatment of treasury shares - buybacks of its own shares by a company, in the market or from shareholders. For example, a listed company may buy back 100,000 of its own shares in the market at a price of £4.80 per share. These treasury shares must be accounted for.

The basic rule is that no gain or loss must be recognised on the purchase or subsequent disposal or cancellation of treasury shares. The consideration paid for the shares should be recognised directly in equity. In the above, if a listed company buys back 100,000 of its own shares in the market at a price of £4.80 per share, the accounting entry should be to credit cash £480,000 and debit a Treasury shares account. In the statement of financial position, the balance on this account should be deducted from equity, and not included within assets.

## 11.5 Reclassification of financial assets

### 11.5.1 Reclassification of financial assets

IFRS 9 requires that when an entity changes its business model for managing financial assets, it should reclassify all affected financial assets. This is expected to be a rare event.

A change in an entity's business model will occur only when an entity begins or ceases to perform an activity that is significant to its operations - for example, when the entity has acquired, disposed of or terminated a business line.

The examples of **change in a business model** include the following:

- An entity has a portfolio of commercial loans that it holds to sell in the short term. The bank acquires an entity that manages commercial loans and has a business model that holds the loans in order to collect the contractual cash flows. The portfolio of commercial loans is no longer for sale, and the portfolio is now managed together with the acquired commercial loans and all are held to collect contractual cash flows.
- An entity decides to shut down its retail mortgage business. That business no longer accepts new business and the bank is actively marketing its mortgage loan portfolio for sale.

If an entity reclassifies financial assets, the **reclassification is applied prospectively** from the reclassification date. When an entity reclassifies a financial asset:

- Between amortised cost measurement category and the fair value through other comprehensive income measurement category, the recognition of interest revenue will not change and the entity continues to use the same effective interest rate
- Out of the fair value through profit or loss measurement category, the effective interest rate is determined on the basis of the fair value of the asset at the reclassification date

The following are not changes in business model:

- A change in intention related to particular financial assets (even in circumstances of significant changes in market conditions)
- The temporary disappearance of a particular market for financial assets
- A transfer of financial assets between parts of the entity with different business models

When financial instruments are reclassified, disclosures are required under IFRS 7.

## 11.6 Impairment

The impairment model in IFRS 9 is based on the premise of providing for expected losses. The financial statements should reflect the general pattern of deterioration or improvement in the credit quality of financial instruments within the scope of IFRS 9.

### On initial recognition

The entity will **create a credit loss allowance/provision equal to 12 months' expected credit losses**. This is calculated by multiplying the probability of a default occurring in the next 12 months by the total lifetime expected credit losses that would result from that default. (This is not the same as the expected cash shortfalls over the next 12 months.)

### Subsequent years

If the **credit risk increases** significantly since initial recognition this amount will be replaced **by lifetime expected credit losses**. If the credit quality subsequently improves and the lifetime expected credit losses criterion is no longer met, the 12-month expected credit loss basis is reinstated.

Certain financial instruments have a low credit risk and would not, therefore, meet the lifetime expected credit losses criterion. Entities do not recognise lifetime expected credit losses for financial instruments that are equivalent to 'investment grade', which means that the asset has a low risk of default. The model requires that there is a rebuttable presumption that lifetime expected losses should be provided for if contractual cash flows are 30 days overdue.

### Amount of impairment

The amount of the impairment to be recognised on these financial instruments **depends on whether or not they have significantly deteriorated** since their initial recognition.

Figure 13.11: The impact of deterioration in credit quality

Change in credit quality since initial recognition		
Expected credit losses recognised		
12-month expected credit losses	Lifetime expected credit losses	Lifetime expected credit losses
Interest revenue recognised		
Gross basis	Gross basis	Net basis
Stage 1	Stage 2	Stage 3

Stage 1: Financial instruments whose credit quality has not significantly deteriorated since their initial recognition

Stage 2: Financial instruments whose credit quality has significantly deteriorated since their initial recognition

Stage 3: Financial instruments for which there is objective evidence of an impairment as at the reporting date

For Stage 1 financial instruments, the impairment represents the present value of expected credit losses that will result if a default occurs in the 12 months after the reporting date (**12 months' expected credit losses**).

For financial instruments classified as Stage 2 or 3, an impairment is recognised at the present value of expected credit shortfalls over their remaining life (**lifetime expected credit loss**). Entities are required to reduce the gross carrying amount of a financial asset in the period in which they no longer have a reasonable expectation of recovery.

### Interest

For Stage 1 and 2 instruments interest revenue will be calculated on their gross carrying amounts, whereas interest revenue for Stage 3 financial instruments would be recognised on a net basis (ie, after deducting expected credit losses from their carrying amount).

### Simplified approach for trade and lease receivables

For trade receivables that do not have an IFRS 15 financing element, the loss allowance is measured at the lifetime expected credit losses, from initial recognition.

For other trade receivables and for lease receivables, the entity can choose (as a separate accounting policy for trade receivables and for lease receivables) to apply the three-Stage approach or to recognise an allowance for lifetime expected credit losses from initial recognition.



### Worked example: Trade receivables provision matrix

On 1 June 20X4, Kredco sold goods on credit to Detco for £200,000. Detco has a credit period with Kredco of 60 days. Kredco applies IFRS 9, and uses a pre-determined matrix for the calculation of allowances for receivables as follows:

Days overdue	Expected loss provision
Nil	1%
31 to 1 to 30	5%
31 to 60	15%
61 to 90	20%
90 +	25%

Detco had not paid by 31 July 20X4, and so failed to comply with its credit term, and Kredco learned that Detco was having serious cash flow difficulties due to a loss of a key customer. The finance controller of Detco has informed Kredco that they will receive payment.

Ignore sales tax.

### Requirement

Show the accounting entries on 1 June 20X4 and 31 July 20X4 to record the above, in accordance with the expected credit loss model in IFRS 9.

### Solution

On 1 June **20X4**

The entries in the books of Kredco will be:

DEBIT	Trade receivables	£200,000	
CREDIT	Revenue		£200,000

### Being initial recognition of sales

An expected credit loss allowance, based on the matrix above, would be calculated as follows:

DEBIT	Expected credit losses	£2,000	
	Allowance for		
CREDIT	receivables		£2,000

**Being expected credit loss: £200,000 × 1%**

### On 31 July 20X4

Applying Kredco's matrix, Detco has moved into the 5% bracket, because it has exhausted its 60-day credit limit (note that this does not equate to being 60 days overdue!). Despite assurances that Kredco will receive payment, the company should still increase its credit loss allowance to reflect the increased credit risk. Kredco will therefore record the following entries on 31 July 20X4:

DEBIT	Expected credit losses	£8,000	
	Allowance for		
CREDIT	receivables		£8,000

**Being expected credit loss: £200,000 × 5% - £2,000**



### Worked example: Impairment of trade receivable

Included in Timpson's trade receivables at 31 October 20X8 is an amount due from its customer Thompson of £51,542,000. This relates to a sale which took place on 31 October 20X6, payable in three annual instalments of £20,000,000 commencing 31 October 20X7 discounted at a market rate of interest adjusted to reflect the risks of Thompson of 8%. Based on previous sales where consideration has been received in annual instalments, the directors of Timpson estimate a lifetime expected credit loss in relation to this receivable of £14.4 million. The probability of default over the next 12 months is estimated at 25%. For trade receivables containing a significant financing component, Timpson chooses to follow the three-stage approach for impairments (rather than always measuring the loss allowance at an amount equal to lifetime credit losses). No loss allowance has yet been recognised in relation to this receivable.

#### Requirement

How should the receivable be treated in the financial statements?

#### Solution

A loss allowance for the trade receivable should be recognised at an amount equal to 12-month expected credit losses. Although IFRS 9 offers an option for the loss allowance for trade receivables with a financing component to always be measured at the lifetime expected losses, Timpson has chosen instead to follow the three-Stage approach of IFRS 9.

The 12-month expected credit losses are calculated by multiplying the probability of default in the next 12 months by the **lifetime** expected credit losses that would result from the default. Here this amounts to £3.6 million (£14.4m × 25%).

Adjustment:		
DEBIT	Expected credit loss	£3.6m
	Allowance for receivables (this is offset against trade	
CREDIT	receivables)	£3.6m

---



### Worked example: Portfolio of mortgages and personal loans

Credito Bank operates in South Zone, a region in which clothing manufacture is a significant industry. The bank provides personal loans and mortgages in the region. The average loan to value ratio for all its mortgage loans is 75%.

All loan applicants are required to provide information regarding the industry in which they are employed. If the application is for a mortgage, the customer must provide the postcode of the property which is to serve as collateral for the mortgage loan.

Credito Bank applies the expected credit loss impairment model in IFRS 9, *Financial Instruments*. The bank tracks the probability of customer default by reference to overdue status records. In addition, it is required to consider forward-looking information as far as that information is available.

Credito Bank has become aware that a number of clothing manufacturers are losing revenue and profits as a result of competition from abroad, and that several are expected to close.

#### Requirement

How should Credito Bank apply IFRS 9 to its portfolio of mortgages in the light of the changing situation in the clothing industry?

#### Solution

Credito Bank should segment the mortgage portfolio to identify borrowers who are employed by clothing manufacturers and suppliers and service providers to the clothing manufacturers. This segment of the portfolio may be regarded as being 'in Stage 2', that is having a significant increase in credit risk. Lifetime credit losses must be recognised.

In estimating lifetime credit losses for the mortgage loans portfolio, Credito Bank will take into account amounts that will be recovered from the sale of the property used as collateral. This may mean that the lifetime credit losses on the mortgages are very small even though the loans are in Stage 2.



### Worked example: Investment in loan notes

On 1 January 20X4 Pyllon acquired an investment in £600,000 8% loan notes. The investment is measured at amortised cost.

At 1 January 20X4 there is a 6% probability that the borrower will default on the loan during 20X4 resulting in a 100% loss.

At 31 December 20X4 there is 1% probability that the borrower will default on the loan before 31 December 20X5 resulting in a 100% loss.

At 31 December 20X5 the borrower is expected to breach its covenants as a result of cash flow problems. There is a 40% probability of the loan defaulting over the remainder of its term.



At 31 December 20X6 the borrower breached its covenants and there is a 70% probability of default over the remainder of the loan term.

### Requirement

What impairment loss and interest revenue are recognised at initial recognition and in each of the years ended 31 December 20X4, 20X5 and 20X6?

### Solution

	Impairment allowance	Interest revenue
1 January 20X4 (Initial recognition)	$\% \times £600,000 = £36,000$	-
31 December 20X4 (stage 1)	$1\% \times £600,000 = £6,000$	$£600,000 \times 8\% = £48,000$
31 December 20X5 (stage 2)	$40\% \times £600,000 = £240,000$	$£600,000 \times 8\% = £48,000$
31 December 20X6 (stage 3)	$70\% \times £600,000 = £420,000$	$(£600,000 - £420,000) \times 8\% = £14,400$

An impairment loss on a financial asset at amortised cost is recognised in profit or loss, with a corresponding entry to an allowance account, which is offset against the carrying amount of the financial asset in the statement of financial position.

<b>1 January 20X4</b>		£	£
DEBIT	Profit or loss	36,000	36,000
CREDIT	Impairment allowance		
<b>31 December 20X4</b>		£	£
DEBIT	Impairment allowance (36,000 - 6,000)	30,000	
CREDIT	Profit or loss		30,000
<b>31 December 20X5</b>		£	£
DEBIT	Profit or loss (240,000 - 6,000)	234,000	234,000
CREDIT	Impairment allowance		
<b>31 December 20X6</b>		£	£
DEBIT	Profit or loss (420,000 - 240,000)	180,000	
CREDIT	Impairment allowance		180,000



### Interactive question 6: Particular defaults identified

Later in the year, more information emerged, and Credito Bank was able to identify the particular loans that defaulted or were about to default.

### Requirement

How should Credito Bank treat these loans?

See **Answer** at the end of this chapter.

## 11.7 Reporting on leasing arrangements

As you learned in your Professional level studies, one way by which businesses can obtain the use of an asset is by a leasing agreement. A contract has to meet the definition of a lease contract to be in the scope of IFRS 16, *Leases*.

IFRS 16 was published in January 2016. The effective date of IFRS 16 is for annual reporting periods beginning on or after 1 January 2019. IFRS 16 takes the approach of a lessee measuring the 'right of use' of an asset, and recognising it on the statement of financial position.



### Definitions

**Lease:** is a contract, or part of a contract, that conveys the right to use an asset, the underlying asset, for a period of time in exchange for consideration.

**Underlying asset:** is an asset that is the subject of a lease, for which the right to use that asset has been provided by a lessor to a lessee.

**Right-of-use asset:** An asset that represents a lessee's right to use an underlying asset for the lease term.

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### 11.7.1 Control

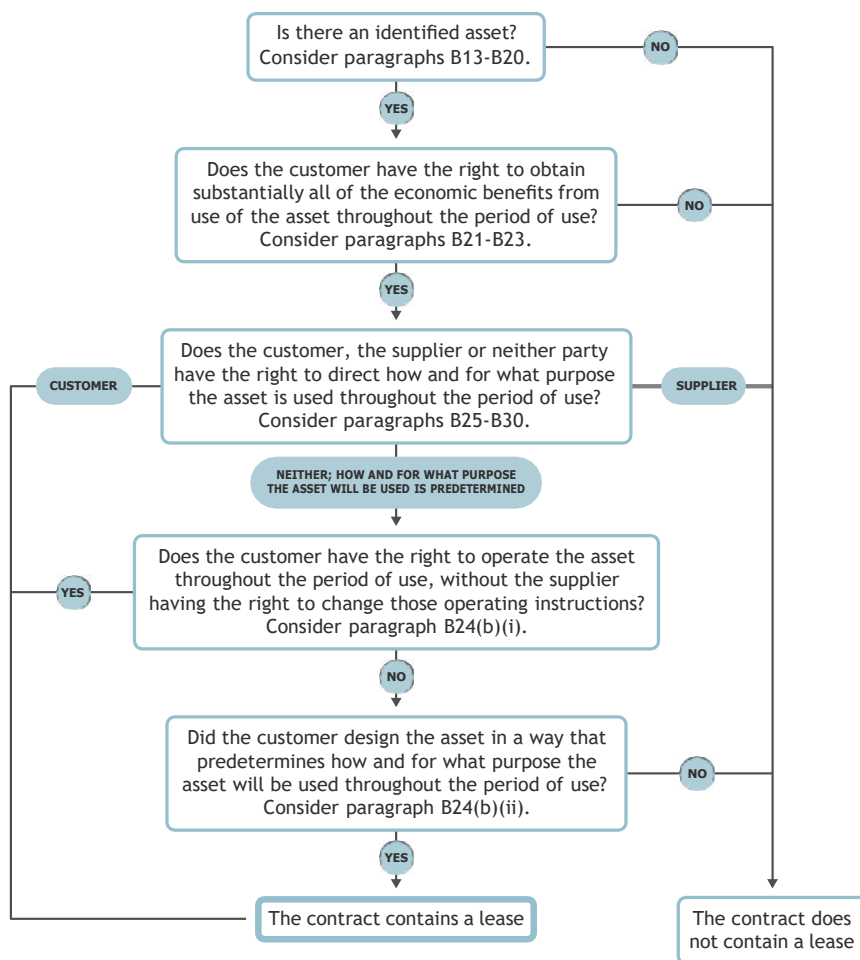
The key to identifying a lease is confirming the right to control the use of the asset. The right to control the use of an identified asset depends on the lessee having:

- (a) The right to obtain substantially all of the economic benefits from use of the identified asset; and
- (b) the right to direct the use of the identified asset. This arises if either:
  - (1) the customer has the right to direct how and for what purpose the asset is used during the whole of its period of use; or
  - (2) the relevant decisions about use are predetermined and the customer can operate the asset without the supplier having the right to change those operating instructions, or the customer designed the asset in a way that predetermines how and for what purpose the asset will be used throughout the period of use.

A lessee does not control the use of an identified asset if the lessor can substitute the underlying asset for another asset during the lease term and would benefit economically from doing so.

**The following** flowchart, taken from IFRS 16, Appendix B, paragraph B31, may assist you in determining whether a lease should be identified:

Figure 13.12: IFRS 16, Appendix B flowchart



### 11.7.2 Non-lease components

Some contracts may contain elements that are not leases, such as service contracts. These must be separated out from the lease and accounted for separately.



#### Worked example: Is this a lease?

Outandabout Co provides tours round places of interest in the tourist city of Sightsee. While these tours are mainly within the city, it does the occasional day trip to visit tourist sites further away.

Outandabout Co has entered into a three-year contract with Fastcoach Co for the use of one of its coaches for this purpose. The coach must seat 50 people, but Fastcoach Co can use any of its 50-seater coaches when required.

#### Requirement

Is this arrangement a lease within the scope of IFRS 16, *Leases*?

#### Solution

No. This is not a lease. There is no identifiable asset. Fastcoach can substitute one coach for another, and would derive economic benefits from doing so in terms of convenience. Therefore Outandabout should account for the rental payments as an expense in profit or loss.

### 11.7.3 Your exam

Recent students of the Financial Accounting and Reporting paper will be aware that lease accounting has changed significantly. Under IAS 17, *Leases*, the predecessor of IFRS 16, there was a distinction between an operating lease and a finance lease. The classification of the type of lease was essential to how the lessee and lessor would account for the transaction in their financial statements.

Questions were asked on this distinction because accounting for an item as an operating lease removed it from the lessee's statement of financial position, so companies who wished to create a favourable gearing ratio, for example, were incentivised to account for leases as operating leases.

IFRS 16 has removed the differentiation between operating and finance leases from the lessee's point of view (although it remains for lessors - see below). However, the incentive to keep liabilities off the SOFP remains, and preparers of financial statements who wish to do this may argue that a transaction is not a lease when in fact it is, and therefore should appear on the SOFP. An exam question could present an ethical dilemma, where the auditor or junior accounting staff member is under pressure to accept this incorrect financial reporting treatment.

### 11.7.4 Lessee accounting

A single lease model is applied by all lessees, with no requirement to distinguish between operating and finance leases. At the commencement of the lease, the lessee recognises:

- (a) a right-of-use asset, which represents the right to use the underlying asset; and
- (b) a lease liability which represents the obligation to make lease payments.

### 11.7.5 Initial measurement of the right-of-use asset

The right-of-use asset is initially measured at cost, which is:

- the initial measurement of the lease liability
- **plus** any lease payments made before the commencement date
- **less** lease incentives received
- **plus** initial direct costs incurred by the lessee
- **plus** estimated dismantling and restoration costs that a lessee is obliged to pay at the end of the lease term



#### Worked example: Initial measurement of the right-of-use asset

Pyllon Ltd commenced a five-year lease to acquire plant on 1 January 20X8. Pyllon Ltd has paid an initial deposit of £1,000, and received lease incentives of £300. At the commencement date the present value of the future lease payments was £15,000. Pyllon Ltd has incurred legal costs of acquiring the lease of £1,500. The plant will produce a new product, the XP2, and marketing costs for the new product have been incurred of £250.

At the end of the lease, Pyllon Ltd will have to pay £800 (at present value) to remove the plant.

#### Requirement

What is the initial measurement of the right-of-use asset?

**Solution**

	£
PVFLP	15,000
Initial deposit	1,000
Direct costs	1,500
End of term costs to remove the plant	800
Less: lease incentives	(300)
Right-of-use asset	18,000

Note that the marketing costs for the new product to be made by the plant are not included as these costs are not directly attributable to the lease. This is consistent with IAS 16 (s.19(b)), where marketing costs cannot be capitalised as part of the non-current asset.

**11.7.6 Subsequent measurement of the right-of-use asset**

Subsequently, the right-of-use asset will be measured at cost less accumulated depreciation and impairment losses in line with IAS 16, *Property, Plant and Equipment*.

The right-of-use asset will be depreciated from the commencement date to the **earlier** of the end of its useful life or the end of the lease term **unless** the asset is expected to be transferred to the lessee at the end of the lease term. In that case, the asset will be depreciated over the useful life of the asset.

**Worked example: subsequent measurement of the right-of-use asset**

Taking the information from the previous example, Pyllon has estimated that the useful life of the plant will be six years. There is no option to purchase at the end of the lease term.

**Requirement**

What is the carrying amount of the right-of-use asset at 31 December 20X8?

**Solution**

Right-of-use asset is initially measured at £18,000

The depreciation period is the shorter of the useful life (six years) or the lease term (five years).

$£18,000/5 \text{ years} = £3,600$  depreciation charge

Carrying amount of the right-of-use asset at 31 December 20X8 is £14,400 (£18,000 - £3,600)

**11.7.7 Depreciating the asset**

The asset should be depreciated over the shorter of the lease term or the asset's useful life

DR	Depreciation expense
CR	Accumulated depreciation

### Points to note

- (a) Depreciation policies adopted should be consistent with other non-current assets of the same class.
- (b) If any impairment reviews are required, these must be conducted in accordance with IAS 36, *Impairment of Assets*.
- (c) If there is reasonable certainty that the lessee will eventually own the asset, then it should be depreciated over its estimated useful life.
- (d) The lease term comprises the period for which the lessee has contracted to lease the asset and any further terms for which there is reasonable certainty at the inception of the lease that the lessee will exercise the option.

### 11.7.8 Initial measurement of the lease liability

At the commencement of the lease, the lease liability is measured at the **present value of future lease payments**, including any payments expected at the end of the lease.

Lease liability will include:

- fixed payments less any lease incentives receivable
- variable lease payments that depend on an index (eg, the consumer price index) or rate (eg, market rental rates)
- amounts expected to be payable by the lessee under residual value guarantees
- purchase options (if reasonably certain to be exercised)
- penalties for early termination (if expected to be paid)

The discount rate used is the interest rate implicit in the lease, or if this is not available, the lessee's incremental borrowing rate.



### Definition

**Lease payments:** Payments made by a lessee to a lessor in order to use an underlying asset during the lease term, less any lease incentives.

IFRS 16 requires lease payments to also include the exercise price of a purchase option if the lessee is reasonably certain to exercise that option, and any penalty payments for terminating the lease.



### Context example: Present value of future lease payments

Alpha Ltd has commenced a four-year lease on 1 January 20X8. Payments are £10,000 pa in arrears and the interest rate implicit in the lease is 10%. The present value of the future lease payments can be calculated as follows:

B5 NPV(0.1,B1:B4)		
	A	B
1	Lease payment £	10,000
2	Lease payment £	10,000
3	Lease payment £	10,000
4	Lease payment £	10,000
5	PV of future lease payments	31,699

Therefore, at 1 January 20X8, the lease liability is measured at £31,699.

### 11.7.9 Subsequent measurement of the lease liability

In future periods, the lease liability is amortised.

- Interest will accrue on the outstanding lease, at the rate stated in the lease contract.
- Payments made in respect of the lease by the lessee will reduce the outstanding liability.



#### Context example: Year 2 lease liability

Taking the example of Alpha Ltd in the previous example.

In the previous example, Alpha Ltd had calculated the initial lease liability to be £31,698 on 1 January 20X8.

Year	£
1.1.X8: Lease liability (PVFLP)	31,699
31.12.X8: Interest 10%	3,170
31.12.X8: Instalment in arrears	(10,000)
Liability at 31.12.X8	24,869

Therefore, at 1 January 20X9, the lease liability will be £24,869.

### 11.7.10 Setting up accounts in the statement of financial position

**IFRS 16** requires that, when an asset is leased, the accounting treatment should reflect the **substance of the transaction**. In the lessee's books therefore:

The amount to be recorded in this way is the present value of the future lease payments

DR	Right-of-use asset account
CR	Lease liabilities

The **initial** deposit, if any, counts as one of the lease payments and hence is included in the cost of the asset.

#### Points to note

- The entries are made at the **commencement** of the lease term, with the **values** determined at the start of the lease.
- The present value of the future lease payments is derived by discounting them at the **interest rate implicit in the lease**. If it is not practicable to determine the interest rate implied in the lease, then the lessee's **incremental borrowing rate** can be used.
- Initial direct costs can be treated as part of the cost of the asset – provided they are directly attributable to activities performed by the lessee to obtain the lease.
- Although interest is payable under the lease, this is accrued over time. The justification is that the capital could, in theory, be paid off at any time, with cancellation charges. These charges could be avoided, so they are not a 'true' long term liability. **Interest is therefore recognised as it accrues.**

### 11.7.11 Making the payment

Every period, the payments are accounted for as follows.

Each lease payment is comprised partly of a repayment of capital and partly of an interest charge for the period.

DR Payables: Lease liabilities  
 CR Cash

### 11.7.12 Finance charge

The finance charge is dealt with as follows.

DR Profit or loss: Finance cost With the amount of the interest accrued over the period  
 CR Lease liabilities

### 11.7.13 Allocating the interest charge to accounting periods

IFRS 16 requires the total finance charge to be allocated to each period during the lease term so as to produce a **constant periodic rate of interest** on the outstanding lease obligation.

As the lessee pays off the capital sum, the total capital owed falls from period to period. You would therefore also expect a reduction in the total interest payable, too, on the outstanding balance.

For example, if you owe £10,000 and pay 15%, the interest will be £1,500. After you have paid off, say, £8,000 of the capital, interest would be £300 (on £2,000). The monthly payments remain the same, but the mix of interest and capital changes over the life of the loan.

Therefore, in the earlier years, the finance charge (interest) is a higher proportion of the annual lease payments. Towards the end of the lease, the finance charge will be smaller as the outstanding lease liability is smaller.

### 11.7.14 Instalments in arrears



#### Worked example: Lease payments in arrears

A Ltd has a year-end of 31 December.

A lease commences on 1 January 20X1. Lease payments comprise three payments of £10,000 annually, commencing on 31 December 20X1.

There is no transfer of asset at the end of the lease and no purchase option. The implicit interest rate is 10%.

#### Requirement

You are required to calculate the interest charge and the year-end liability for each year of the lease. Round your discounted amounts to the nearest £10.

#### Solution

The lease liability is measured at the present value of the three payments:

B4 NPV(0.1,B1:B3)		
	A	B
1	Lease payment £	10,000
2	Lease payment £	10,000
3	Lease payment £	10,000
4	PV of future lease payments	24,869



	£
20X1 balance b/f	24,869
Interest 10%	2,487
Payment 31/12/X1	(10,000)
20X2 balance b/d	17,356
Interest 10%	1,735
Payment 31/12/X2	(10,000)
20X3 balance b/d	9,091
Interest 10%	909
Payment 31/12/X3	(10,000)
	-



### Interactive question 7: Lessee accounting

Glenmore Ltd leases an asset on 1 January 20X1. The terms of the lease are to pay a non-refundable deposit of £500 followed by seven annual instalments of £2,000 payable in arrears. The asset is expected to have a useful life of seven years.

The present value of the future lease payments (excluding the deposit) is £9,736. There is no option to purchase the asset at the end of the lease term.

The interest rate implicit in the lease is 10%.

#### Requirement

Calculate the value of the lease liability and the right-of-use asset at 31 December 20X1 and 31 December 20X2.

(Round your answers to the nearest pound)

See **Answer** at the end of this chapter.

#### 11.7.15 Instalments in advance

As we have seen in the examples above, interest accrues over time and is included in the payment at the end of each period of borrowing. However, where instalments are **paid in advance**:

- The first instalment **repays capital only** as no time has yet elapsed for interest to accrue.
- At the end of each accounting period the year-end liability will include **capital and interest** that has accrued to date but which has not been paid.
- The initial payment in advance (and/or any deposit) is **not included in the calculation of the lease liability. It is added to the right-of-use asset.**



#### Worked example: Lease payments in advance

[This is based on IFRS 16 Illustrative example 13.]

A lessee enters into a five-year lease of a building which has a remaining useful life of 10 years. Lease payments are £50,000 per annum, payable at the beginning of each year.

The lessee incurs initial direct costs of £20,000 and receives lease incentives of £5,000. There is no transfer of the asset at the end of the lease and no purchase option.

The interest rate implicit in the lease is not immediately determinable but the lessee's incremental borrowing rate is 5%.

### Requirement

Calculate the initial lease liability.  
Calculate the value of the right-of-use asset.

### Solution

At the commencement date the lessee pays the initial £50,000, incurs the direct costs and receives the lease incentives.

The lease liability is measured at the present value of the **remaining four payments**, ie, the **future lease payments**:

B5 NPV(0.05,B1:B4)		
	A	B
1	Lease payment £	50,000
2	Lease payment £	50,000
3	Lease payment £	50,000
4	Lease payment £	50,000
5	PV of future lease payments	177,297

Assets and liabilities will initially be recognised as follows:

		Debit £	Credit £
Right-of-use asset:			
Initial payment	50,000		
Discounted liability	177,298		
Initial direct costs	20,000		
Incentives received	(5,000)		
		242,298	
Lease liability			177,297
	(50,000 + 20,000 -		
Cash	5,000)		65,000
	242,298		242,298

The asset is subsequently measured at cost less accumulated depreciation and impairment losses unless the right-of-use asset is:

- a class of PPE that is measured using the revaluation model; or
- an investment property and the lessee applies the fair value model.

Where relevant, the asset is depreciated over the shorter of the useful life of the underlying asset and the lease term. Useful life is always the depreciation period when ownership of the underlying asset is transferred at the end of the lease term.

### 11.7.16 Simplified accounting

A lessee can elect to apply simplified accounting to a lease with a term of twelve months or less, or a lease for a low value asset. The election is made on a lease-by-lease basis for leases for low value assets, and by class of underlying asset for short-term leases.

In this case, the lessee recognises lease payments on a straight-line basis over the lease term.



#### Interactive question 8: Short lease

Oscar Co is preparing its financial statements for the year ended 30 June 20X6. On 1 May 20X6, Oscar made a payment of £32,000 for an eight-month lease of a milling machine.

#### Requirement

How should the transaction be recognised in the financial statements?

See **Answer** at the end of this chapter.

### 11.7.17 Lessor accounting

Lessor accounting is **largely unchanged** under IFRS 16. IFRS 16 retains the IAS 17 distinction between finance leases and operating leases.

#### Definitions

**Finance lease:** A lease that transfers substantially all the risks and rewards incidental to ownership of an underlying asset.

**Operating lease:** A lease that does not transfer substantially all the risks and rewards incidental to ownership of an underlying asset.



#### Definitions

**Finance lease:** A lease that transfers substantially all the risks and rewards incidental to ownership of an underlying asset.

**Operating lease:** A lease that does not transfer substantially all the risks and rewards incidental to ownership of an underlying asset.

Lessor accounting	
Finance lease	Operating lease
<b>Substance</b>	
<ul style="list-style-type: none"> <li>Risks and rewards with the <b>lessee</b> (or other third parties)</li> </ul>	<ul style="list-style-type: none"> <li>Risks and rewards with the <b>lessor</b></li> </ul>
<b>Accounting treatment</b>	
<ul style="list-style-type: none"> <li>Recognise a receivable equal to '<b>net investment in the lease</b>'. This is the gross investment (minimum lease payments plus any unguaranteed residual value accruing to the lessor) discounted at the interest rate implicit in the lease</li> </ul>	<ul style="list-style-type: none"> <li>Asset retained in the books of the lessor and is depreciated over its useful life</li> </ul>

<ul style="list-style-type: none"> <li>Initial direct costs incurred by the lessor are not added separately to the net investment, as they are already included in the discounted figures since they are included in the calculation of the interest rate implicit in the lease (reducing the return)</li> </ul>	<ul style="list-style-type: none"> <li>Rentals are credited to profit or loss on a straight-line basis <b>over the lease term</b> unless another systematic basis is more representative</li> </ul>
<ul style="list-style-type: none"> <li>Finance income is recognised reflecting constant periodic rate of return on the lessor's net investment outstanding</li> </ul>	

### 11.7.18 Sale and leaseback transactions

Guidance in IFRS 15, *Revenue from Contracts with Customers* (see the chapter Strategic management and brand management) is applied in order to determine whether a sale has taken place.

#### Transfer is a sale

The seller (lessee) measures the lease asset at an amount equal to the right of use retained, ie, a proportion of the previous carrying amount.

A gain or loss on disposal is therefore calculated based only on the rights transferred to the buyer (lessor).

The buyer (lessor) accounts for the purchase of the asset by applying relevant IFRS and accounts for the lease by applying IFRS 16 guidance on accounting by lessors.

If transfer proceeds do not equal the fair value of the transferred asset or lease payments are not at market rate, the following accounting adjustments are made:

- below market terms are a prepayment of lease payments
- above market terms are additional financing provided by the buyer (lessor) to the seller (lessee)

#### Transfer is not a sale

The seller (lessee) should not derecognise the asset and instead recognises proceeds as a financial liability, accounting for it in line with IFRS 9.

The buyer (lessor) should not recognise the asset and instead recognises a financial asset, accounting for it in line with IFRS 9.

#### Technique for sale and leaseback

Measure the right-of-use asset arising from the leaseback at the proportion of the previous carrying amount of the asset that relates to the **right of use retained** by the seller/lessee.

**This is calculated as:**

$$\frac{\text{Carrying amount} \times \text{discounted lease payments}}{\text{fair value}}$$

The discounted lease payments are calculated as for any other lease.

Recognise **only the amount of any gain or loss** on the sale that relates to the **rights transferred** to the buyer/lessor. Calculate in three stages:

**Stage 1:** Calculate gain = fair value (usually = proceeds) less carrying amount

**Stage 2:** Calculate gain that relates to rights retained:

$$\frac{\text{Gain} \times \text{discounted lease payments}}{\text{fair value}} = \text{Gain relating to rights retained}$$

**Stage 3:** Gain relating to rights transferred is the balancing figure:

**Gain on rights transferred** = total gain (Stage 1) less gain on rights retained (Stage 2)



### Interactive question 9: Sale and leaseback

On 1 April 20X2, Wigton Co bought an injection moulding machine for £600,000. The carrying amount of the machine as at 31 March 20X3 was £500,000. On 1 April 20X3, Wigton Co sold it to Whitehaven Co for £740,000, its fair value. Wigton Co immediately leased the machine back for five years, the remainder of its useful life, at £160,000 per annum payable in arrears. The present value of the annual lease payments is £700,000 and the transaction satisfies the IFRS 15 criteria to be recognised as a sale.

#### Requirement

What gain should Wigton Co recognise for the year ended 31 March 20X4 as a result of the sale and leaseback?

See **Answer** at the end of this chapter.





#### 11.7.19 Impact of IFRS 16

The new standard will have an impact on the statement of financial position, statement of profit or loss and statement of cash flows.

#### 11.7.20 Impact on statement of financial position

Companies will be required to report larger amounts of assets and liabilities in their statements of financial position. This will particularly affect companies that currently have much of their leasing commitments off balance sheet in the form of operating leases. For example, many airlines lease their planes and show no assets or liabilities for their future commitments. Under IFRS 16, an airline entering into a lease for an aircraft would show an asset for the 'right to use' the aircraft and an equal liability based on the current value of the lease payments it has promised to make. Possibly, as a result, loan covenants may be breached and have to be renegotiated. This has resulted in some companies entering into shorter leases than previously. By entering into a shorter lease, the lease liability is lower as there are fewer future lease rental cash flows to discount to determine the amount of the lease liability. A lower lease liability therefore reduces the impact on the gearing ratio and loan covenants.

The diagram below, taken from the IASB's IFRS 16 *Project Summary and Feedback Statement*, illustrates the impact:

	IAS 17		IFRS 16
	Finance leases	Operating leases	All leases
Assets		–	
Liabilities	\$\$	–	
Off balance sheet rights/ obligations	–	 \$\$\$\$	–

### 11.7.21 Impact on statement of profit or loss

For companies that previously held material operating leases, the pattern of expenses will change. Specifically, the lease expense will be 'front-loaded'. This is because IFRS 16 replaced the usual straight-line operating lease expense for those applying IAS 17 with a depreciation charge for leased assets, included within operating costs and an interest expense on lease liabilities included within financing costs. While the depreciation charge is usually even, the interest expense is higher in the early years of the lease but reduces over the life of the asset. The total expense will generally be the same but there will be a **difference in expense profile** between IFRS 16 and IAS 17, with a consequent effect on EBITDA and operating profit, as seen in the diagram below, also taken from the IASB's IFRS 16 Project Summary and Feedback Statement:

	IAS 17		IFRS 16
	Finance leases	Operating leases	All leases
Revenue	x	x	x
Operating costs (excluding depreciation and amortisation)	-	Single expense	-
EBITDA			↑↑
Depreciation and amortisation	Depreciation	-	Depreciation
Operating profit			↑
Finance costs	Interest	-	Interest
Profit before tax			↔

### 11.7.22 Impact on statement of cash flows

While IFRS 16 does not change the amount of cash paid by the lessee to the lessor, or the total amount of cash flows reported, it will generally change the **presentation of cash flows** in respect of leases previously accounted for as operating leases.

**Operating cash outflows**, which is where operating lease payments were reported under IAS 17, will **reduce**. However, there will be a corresponding **increase in financing cash outflows**. This is because repayments of the capital component of a lease liability are included within financing activities.

## 11.8 Debt factoring

Debt factoring is widely used as a source of finance. In a factoring transaction, one party transfers the right to cash collected from its receivables to another party for an immediate cash payment. The main reason that companies choose to factor is that they want to receive cash quickly, rather than waiting the 30 to 60 days that it can take a customer to pay.

When a company factors an invoice, the factor advances a percentage of that invoice value, retaining the rest of the amount as a security for any bad debts. It will then pay the company the balance of the invoices, minus its fees, after it collects payment from the customer. The cash advance rate will vary depending on the industry, typically ranging from 80% of an invoice value to as much as 95%.

Such transactions need to be analysed to determine whether or not the receivables need to be derecognised in accordance with IFRS 9. When determining the recognition of these transferred receivables in the financial accounts of the transferor, there are three options:

- continuing recognition of the receivables
- partial derecognition of the receivables
- derecognition of the receivables (similar to recording a sale of the receivables)

Factoring arrangements are either '**with recourse**' or '**without recourse**'.

In **factoring with recourse**, the **transferor fully or partially guarantees** the performance of the receivables. The transferor has not therefore fully transferred the credit risk to another party. In most factoring with recourse transactions, the transferor does not allow the transferee to sell the receivables, in which case the transferor still retains control over the asset. In this case the criteria for derecognition are not satisfied and the asset should not be derecognised; instead the amount advanced by the factoring company should be treated as a financial liability in the accounts (effectively a loan from the factor).

In **factoring without recourse**, the **transferor does not provide any such guarantees** about the performance of the receivables. The factoring company will bear the loss of any bad debts. In such a transaction, the entity has transferred the risks and rewards of the ownership of the receivables, and should derecognise them accordingly. Because the risk has been transferred from the transferor to the factor, 'without recourse' factoring is significantly more expensive than 'with recourse' factoring.

In practice, most factoring arrangements result in substantially all the risks and rewards being either transferred or retained, so the 'partial derecognition' noted above will not often apply.

When calculating the costs of factoring, there are two main costs involved: Interest - typical interest charges range from 1.5% to 3% over base rate.

Fees - covering administration and credit control, and typically 0.75% to 2.5% of turnover. In 'without recourse' agreements, there will also be a charge for the cost of bearing the risk of bad debts.



### Context example: Factoring with recourse

Goods plc is a trading company. Faced with an urgent cash shortage, it decides to transfer its trade receivables of \$300,000 to a factoring company for 80% of their value, for a fee of 8%. The factoring company has the full right to return the receivables back to Goods plc if they become uncollectible.

In this case, Goods plc has transferred the right to receive the receivables to the factoring company, but it still retains some of the risk resulting from the receivables to the factoring company. The credit risk associated with the clients was not transferred, because the factor has the right of return. As a result, Goods plc continues to recognise the receivables in the balance sheet, because the derecognition criteria in IFRS 9 have not been met. The receivables transferred to the factoring company are recognised as a financial liability (effectively, a loan from the factor).

Journal entries are:

- Debit Cash ( $\$300,000 \times 80\%$ ): \$240,000
- Debit Profit or loss - fee: \$24,000
- Debit Outstanding receivable from factor upon collection from customers: \$36,000
- Credit Financial liability: \$300,000

Assume that customers pay a total of \$240,000 to the factor, representing a bad debt of \$60,000. Journal entries under a with recourse agreement will be:

- (a) Based on reports sent by the factoring company, Goods plc reduces its financial liability.
    - Debit Financial liability to the factor: \$240,000
    - Credit Receivables: \$240,000
  - (b) If the clients do not pay the remaining \$60,000, the factoring company can apply its recourse right:
    - Debit Financial liability: \$60,000 (the remaining amount of uncollected receivable)
    - Credit Outstanding receivable from factor: \$36,000
    - Credit Cash: \$24,000
  - (c) The uncollected \$60,000 needs to be written off through the profit and loss account:
    - Debit Profit and loss – bad debts: \$60,000 (the amount of uncollected receivable)
    - Credit Receivables: \$60,000
- 



### Context example: Factoring without recourse

Assuming now a 'without recourse' agreement, the total transferred receivables again amount to \$300,000, but Goods plc transfers them for 80% of their value and a fee of 12%.

Goods plc has transferred all the risks and rewards resulting from the receivables to the factoring company. As a result, it derecognises the receivables fully, because the derecognition criteria in IFRS 9 are met.

Journal entries are:

- Debit Bank account ( $\$300\,000 \times 80\%$ ): \$240,000
- Debit Profit or loss – fee: \$36,000
- Debit Outstanding receivable from factor upon collection from customers: \$24,000
- Credit Receivables: \$300,000

If the clients do not pay the whole amount to the factoring company, the factoring company cannot apply to Goods plc for it to be reimbursed. On the other hand, the fees are higher than when factoring is 'with recourse'.

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### Interactive question 10: Factoring with and without recourse

On 1 January 20X7 Kitchen plc factored its accounts receivable of \$200,000 at a fee of 8%. Under the terms of the agreement, the company received \$165,000 in cash and the rest of the amount was retained by the factor as a security for any bad debts. Any excess of this security sum over the total bad debts was agreed to be returned by the factor on 31 December 20X7.

On 31 December 20X7 the full amount of the security sum was withheld because the actual bad debts totalled \$20,000. Kitchen plc had already made a provision for doubtful debts of \$25,000.

#### Requirement

Show the journal entries to record the transactions for Kitchen plc, both with and without recourse.

See **Answer** at the end of this chapter.

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# Summary

Tick off

Retained funds are a more important source of equity funding than share (rights or new) issues.	<input type="checkbox"/>
UK stock markets are the London Stock Exchange, AIM and the ISDX. Internationally the New York Stock Exchange, which has merged with Euronext, is most influential.	<input type="checkbox"/>
Bonds are an important source of finance for companies. The UK domestic market in bonds has become more active in recent years, and larger firms can use Eurobonds, bonds available internationally, denominated in another currency.	<input type="checkbox"/>
Bonds can be priced at par, at a premium or at a discount. As interest rates rise, the price of bonds falls and vice versa.	<input type="checkbox"/>
Lenders are exposed to credit risks, which is the risk that borrowers will default on interest and/or principal repayments. Credit spread is the premium required by the lender to compensate for the credit risk.	<input type="checkbox"/>
Rather than buying an asset outright, using either available cash resources or borrowed funds, a business may lease an asset.	<input type="checkbox"/>
Derivatives include forward contracts, forward rate agreements, futures, options, swaps and credit derivatives. Derivative trading is carried out both over the counter and on exchanges.	<input type="checkbox"/>
The use of financial derivatives has implications for financial reporting and profitability.	<input type="checkbox"/>
Derivative markets include the FX markets for exchange rates and money markets for short-term interest rates.	<input type="checkbox"/>

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	Can you correctly classify a financial instrument as debt or equity in accordance with IAS32, <i>Financial Instruments: Presentation</i> ? (Topic 2)
2.	Do you know the procedures for obtaining a listing on an international stock exchangesuch as the London or New York Stock Exchange? (Topic 3)
3.	Do you know the main elements of a futures transaction? (Topic 9)
4.	Do you know the main difference between hedging using exchange-traded products andOTC transactions? (Topic 10)
5.	Is your corporate reporting knowledge of financial instruments up to date? (Topic 11)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed.

Question	Learning benefit from attempting this question
Question 2 - Bonds and covenants	This is a good introductory question covering bonds and covenants. It is a revision of what you would have covered in your Financial Management studies. Work through this question carefully before attempting exam standard questions.
Question 3 - IFRS 9	This question covers the revised approach to revenue recognition under IFRS 9, <i>Financial Instruments</i> . Before attempting this question make sure your knowledge of IFRS 9 is up to date.
Question 4 - Wallace plc	This is a good question to practice the treatment of leasing under IFRS 16, <i>Leasing</i> . Refer back to your corporate reporting notes if you need to.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development before you start the next chapter.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.

# Technical reference

## 1 IAS 32, *Financial Instruments: Presentation*

- IAS 32 outlines the requirements for the presentation of financial instruments, particularly the classification of these instruments into financial assets, financial liabilities and equity instruments. The standard also provides guidance on the classification of interest, dividends and gains or losses relating to the financial instruments.

## 2 IFRS 9, *Financial Instruments*

- IFRS 9 forms a complete replacement for IAS 39 from 1 January 2018. IFRS 9 sets out the recognition and measurement requirements for financial instruments and some contracts to buy or sell non-financial items.

## 3 IFRS 7, *Financial Instruments: Disclosures*

- IFRS 7 prescribes disclosure about the significance of financial instruments to an entity's position and performance, and about the nature and extent of the risks arising from those financial instruments, in both quantitative and qualitative terms.

## 4 IFRS 13, *Fair Value Measurement*

- Defines fair value as the price that would be received to sell an asset or would be paid to transfer a liability in an orderly transaction between market participants at the measurement date. IFRS 13 defines fair value on the basis of an 'exit price' notion and uses a 'fair value hierarchy' which results in a market-based measurement rather than an entity-specific one.

## 5 IFRS 2, *Share-based Payment*

- The objective of IFRS 2 is to specify the financial reporting by an entity when it undertakes a share-based payment transaction. IFRS 2 requires an entity to recognise share-based payment transactions (such as shares granted and share options) in its financial statements. This includes transactions with employees or other parties, to be settled in cash, other assets, or equity instruments of the entity.

## 6 IFRS 16, *Leases*

- Effective from 1 January 2019 IFRS 16 effectively abolishes the distinction between operating and finance leases for lessees, although not for lessors. It introduces a single lessee accounting model and requires a lessee to recognise assets and liabilities for all leases with a term of more than 12 months, unless the underlying asset is of low value.

# Self-test questions

Answer the following questions.

## 1 Multimedia company

You have been appointed as the chief financial officer of a multimedia company which is financed by private equity. There is considerable public interest in the company and it continues a very rapid rate of growth under the leadership of its dynamic founder and chief executive officer Martin Pickle.

Martin Pickle owns over 30% of the company's equity and has also loaned the business substantial sums to sustain its overseas development. The balance of the other investors consist of some small shareholdings held by current and past employees and the remainder is in the hands of a private equity company which is represented by two directors on the board.

Recent financial information:

Year ending 31 December	Profit for the year after interest and tax	Investment in projects or capital expenditure	Dividend paid
	\$m	\$m	\$m
20X5	18	-	9
20X6	21	30	6
20X7	30	-	15
20X8	33	45	6
20X9	48	-	24

After two months in the job you are called to a meeting with Martin Pickle and the company's non-executive chairman. In that time you have made significant progress in improving the financial controls of the business and the current year end, which is three weeks away, looks very promising. The company's underlying earnings growth promises to be in excess of 20% and its cash generation is strong. The CEO tells you that he would like you to put together a plan to take the company to full listing as a first step to him undertaking a substantial reduction in his financial stake in the business.

### Requirements

- 1.1 Prepare a board paper, describing the procedure for obtaining a listing on an international stock exchange such as the London or New York Stock Exchange.
- 1.2 Prepare a briefing note, itemising the advantages and disadvantages of such a step for a medium-sized company.

## 2 Conflicts of interest

- 2.1 Discuss why conflicts of interest might exist between shareholders and bondholders.
- 2.2 Provide examples of covenants that might be attached to bonds, and briefly discuss the advantages and disadvantages to companies of covenants.

### 3 Mortgage

A bank makes mortgage loans to clients. Interest charged to these clients is SONIA (London Interbank Offered Rate) + 1%, reset monthly.

The bank recognises that in its portfolio of clients there will be some clients who will experience financial difficulties in the future and will not be able to keep up mortgage payments.

Under the mortgage agreement, the bank takes first legal charge over the mortgaged property and, in the event of a default where payments cannot be rescheduled, the property would be sold to cover unpaid debts.

#### Requirement

Discuss how revenue relating to the above would be accounted for under the revised approach to amortised cost and impairment in IFRS 9.

### 4 Wallace plc

Wallace plc obtains the use of an asset on a ten-year lease.

The terms of the lease require Wallace plc to make 10 annual lease payments of £25,000 in arrears. The discounted value of the lease payments at the implicit rate within the lease of 5% is £193,050.

There is an option to buy the machine on the final date of the lease for £20,000 (discounted value of

£12,280), which Wallace plc is expected to exercise. The useful life of the machine is 15 years.

Calculate the following values:

#### Requirements

- 4.1 The initial measurement of the right-of-use asset at the commencement of the lease on 1 January 20X1.
- 4.2 The carrying amount of the machine at 31 December 20X1.
- 4.3 The lease liability brought forward at 1 January 20X2.

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

## Answer to Interactive question 1

1.1 Conversion ratio is £100 bond = 30 ordinary shares Conversion value =  $30 \times £4.15 = £124.50$

1.2 Conversion premium =  $£(142 - 124.50) = £17.50$

$\frac{17.50}{124.50} \times 100\% = 14\%$

The share price would have to rise by 14% before the conversion rights became attractive.

## Answer to Interactive question 2

### 2.1 Call option is deeply out of the money

The investment in shares is derecognised, as the transferor has transferred substantially all the risks and rewards of ownership.

### Call option is deeply in the money

Since the transferred asset can be called back by the transferor and the call option is deeply in the money, the transfer does not qualify for derecognition. The transferor has retained substantially all the risks and rewards of ownership.

Since the call option prevents transfer of financial assets from being accounted for as a sale, the call option is not separately recognised as a derivative asset as otherwise it would result in recognising the same rights twice.

### Call option is neither deeply in the money nor deeply out of the money

If the asset is readily obtainable in the market, the asset is derecognised. This is because the bank has neither retained nor transferred substantially all the risks and rewards of ownership, and has not retained control.

If the asset is not readily obtainable in the market, derecognition is precluded to the extent of the amount of the asset that is subject to the call option because the entity has retained control of the asset.

2.2 Access Bank sells a bond and enters into a 'total return swap' with the buyer. As a result of the 'total return swap', the bank retains all the risks and rewards of ownership and hence the transfer does not qualify for derecognition. The 'total return swap' is not separately recognised, since it prevents transfer of the bond being accounted for as a sale.

## Answer to Interactive question 3

In substance, the effect of the two transactions is an interest rate swap with no initial investment. This therefore meets the definition of a derivative since there is no initial net investment, an underlying variable is present and future settlement will take place. This would be the same even if no netting agreement existed because the definition of a derivative does not include a requirement for net settlement.

## Answer to Interactive question 4

Find ( $d_1$ ) and ( $d_2$ )

$$d_1 = \frac{\ln(3.50/3.30) + (0.25 \times 0.08)}{\sqrt{0.12} \sqrt{0.25}} + \frac{\sqrt{0.12} \sqrt{0.25}}{2}$$

$$\begin{aligned}
&= 0.4552 + 0.0866 \\
&= 0.5418 \\
d_2 &= 0.5418 - (\sqrt{0.12} \sqrt{0.25}) \\
&= 0.5418 - 0.1732 \\
&= 0.3686 \\
\text{Find } N(d_1) \text{ and } N(d_2) \text{ using normal distribution tables } N(0.5418) &= 0.5 + 0.2060 = 0.7060 \\
N(0.3686) &= 0.5 + 0.1438 = 0.6438 \\
\text{Using the Black-Scholes formula} \\
C_0 &= (3.50 \times 0.7060) - ((3.30e^{-0.25 \times 0.08}) \times 0.6438) \\
&= 2.4710 - 2.0825 \\
&= 38.85p
\end{aligned}$$

### Answer to Interactive question 5

- AB Co should derecognise the asset. Its option is to repurchase the shares at their then fair value, so it has transferred substantially all the risks and rewards of ownership.
- CD Co should not derecognise the asset, as it has retained substantially all the risks and rewards of ownership.
- EF Co should not derecognise the asset, as it has retained substantially all the risks and rewards of ownership. The investment should be retained in its books even though legal title is temporarily transferred.

### Answer to Interactive question 6

The loans are now in Stage 3. Lifetime credit losses should continue to be recognised, and interest revenue should switch to a net interest basis, that is on the carrying amount net of allowance for credit losses.

### Answer to Interactive question 7

Calculations

Calculation of the right-of-use asset

	£
PVFLP	9,736
Deposit	500
	10,236

Depreciate the asset over seven years

$$10,236/7 = \text{£}1,462 \text{ per annum}$$

$$\text{Carrying amount at 31 December 20X1: } \text{£}10,236 - \text{£}1,462 = \text{£}8,774$$

$$\text{Carrying amount at 31 December 20X2: } \text{£}8,774 - \text{£}1,462 = \text{£}7,312$$

Calculation of the lease liability

$$\text{Balance of the lease liability at 31 December 20X1: } \text{£}9,260$$

$$\text{Balance of the lease liability at 31 December 20X2: } \text{£}8,186$$

CR		CR	DR	CR
Interest accrued			Payment 31	Bal c/f 31
Bal b/f 1 January		at 10%	December	December
£		£		
20X1	10,236	1,024	(2,000)	9,260
20X2	9,260	926	(2,000)	8,186

**Note:** (You can do these calculations in vertical format (as in the chapter body) or horizontal, whichever is easiest. The principles are the same.)

**Answer to Interactive question 8**

The lease is for eight months, which counts as a short-term lease, and so it does not need to be recognised in the statement of financial position. The amount charged to profit or loss for the year ended 30 June 20X6 is therefore  $£32,000 \times 2/8 = £8,000$ .

**Answer to Interactive question 9**

The answer is £12,973

Stage 1: Gain on sale:  $£740,000 - £500,000 = £240,000$

Stage 2: Gain relating to rights retained =  $£(240,000 \times 700,000/740,000) = £227,027$

Stage 3: Gain relating to rights transferred =  $£240,000 - £227,027 = £12,973$

**Answer to Interactive question 10**

1 January 20X7:

Without recourse, the accounts receivable from customers have been derecognised:

	Dr \$	Cr \$
Cash	165,000	
Expenses [8% × \$200,000]	16,000	
Remaining due from factor Accounts receivable	19,000	200,000

With recourse, the liability to the factoring company is recognised:

	Dr \$	Cr \$
Cash	165,000	
Expenses [8% × \$200,000]	16,000	
Remaining due from factor Financial liability	19,000	200,000

31 December 20X7: The journal entries will differ under the two types of factoring.

Under factoring with recourse, Kitchen plc must pay the factor an additional \$1,000, since the actual bad debts exceeded the amount initially retained by the factor.

Under factoring with recourse:

	Dr \$	Cr \$
Provision for bad debts	20,000	
Remaining due from factor		19,000
Cash		1,000

There is no such remedy for the factor if the factoring is without recourse. Under factoring without recourse:

	Dr \$	Cr \$
Provision for bad debts	19,000	
Remaining due from factor		19,000



# Answers to Self-test questions

## 1 Multimedia company

### 1.1 Procedure for obtaining a listing on an International Stock Exchange - Paper prepared for the Board of Multimedia Company

This paper describes the necessary procedures for obtaining a listing on an international stock exchange.

Obtaining a listing on an international stock exchange such as the London or New York Stock Exchange consists of satisfying requirements in **three broad areas**: namely **registration, listing and admission to trading**.

In the UK, a firm seeking a listing must first **register** as a public limited company to ensure that it is entitled to issue shares to the public. This will require a change to the company's memorandum and articles of association agreed by the existing shareholders at a special meeting convened for the express purpose of agreeing this change.

The company must meet the regulatory requirements of the **Listing Authority** which is part of the Financial Conduct Authority in the UK. These regulatory requirements impose minimum size restrictions on a company and other conditions concerning length of time trading (normally audited accounts must exist for a three-year period). An issue of particular concern here is that the CEO has a controlling interest in the business - this will have to be addressed. Once these requirements are satisfied the company is placed on an official list and is allowed to make an initial public offering of its shares.

Once the company is on the official list it must then seek approval from the stock exchange to allow its shares to be traded. Exchanges such as the London Stock Exchange impose strict requirements which invariably mean that the applicant company will need the services of a sponsoring firm specialising in this area. The regulatory requirements of the London Stock Exchange include:

- compliance with corporate governance regulations (for example, 50% of the board should be independent non-executive directors)
- quality and experience of the executive directors and the business plan, all of which must be carefully laid out in a prospectus

This tends to be costly and therefore prohibitive for all but the larger companies. The restrictions (and costs) of obtaining a listing on a junior market (eg, AIM in the UK) may be lower.

### 1.2 Briefing note prepared for Martin Pickle, CEO

#### **Subject - Advantages and disadvantages of a stock market listing for a medium-sized company**

Following on from our discussion regarding a stock market listing for the company, I have detailed below the main advantages and disadvantages of taking such a step for a company of our size.

For a **medium-sized** firm, the principal advantage of obtaining a public listing is the **additional sources of finance** available. A listed company would have access to **equity capital** from both institutional and private investors, and the sums that can be raised are usually much greater than through private equity sources. In addition, the presence of a firm as a limited company on a major exchange such as the London Stock Exchange enhances the **credibility** of the firm both to potential investors and to the general public as it has opened itself to a much greater degree of public scrutiny than a privately financed firm.

The **disadvantages** are significant; the distributed shareholding places the firm in the market for investors seeking corporate control and also increases the likelihood that the firm will be subject to a takeover bid. The higher degree of public scrutiny imposes a significant **regulatory burden** on the firm, as it must comply with a range of **disclosure requirements** and financial accounts must be prepared in accordance with relevant accounting standards. In the UK, this means in accordance with IFRS and the relevant GAAP as well as the Companies Acts. Under the rules of the London Stock Exchange, companies must also comply with the governance requirements of the **UK Corporate Governance Code** and have an effective and ongoing business planning process in place. The requirement to comply or explain can impose a significant regulatory burden and can expose the company to critical comment.

## 2 Conflicts of interest

### 2.1 Conflicts of interest:

#### (1) Different attitudes to risk and return

Shareholders may want the company to undertake **risky projects** with correspondingly **high expected levels of returns**. Bondholders will want the company to undertake projects that guarantee sufficient returns to pay their interest each year, and ultimately to repay their loans.

#### (2) Dividends

Large (albeit) legal dividends may be preferred by shareholders, but may concern bondholders, because the payments leave low cash balances in the company and hence **put at risk** the **company's ability** to meet its commitments to the bondholders.

#### (3) Priority in insolvency

Bondholders may wish to take the company into **liquidation** if there are problems paying their interest, to guarantee their investment. Shareholders, however, may wish the company to **continue trading** if they expect to receive nothing if the company does go into liquidation.

#### (4) Attitudes to further finance

Shareholders may prefer the company to **raise additional finance** by means of loans, in order to **avoid having to contribute themselves** in a rights issue, or the risk of dilution of their shareholding and hence power if an open stock market issue is made. Bondholders may **not wish the company** to take on the burden of additional debt finance, because it may increase the risk that the **interest** that they are **due** will not be paid, or the company will have problems repaying its loans, particularly if the new loans rank above theirs.

#### (5) Restrictions imposed by bondholders

**Restrictions** imposed by bondholders to protect their loans, such as charges preventing the company from selling assets or covenants, may limit the company's ability to maximise returns for shareholders.

#### (6) Bankruptcy costs

If the **costs of bankruptcy**, such as receivers and lawyers' fees, are likely to be **significant**, bondholders may be much less willing than shareholders for the company to bear any risk. Significant bankruptcy costs may mean that there is insufficient money left to repay their loans.

### 2.2 A covenant in a loan agreement is an obligation placed on the borrower over and above repaying the loan according to terms.

The various types of covenant are:

#### Positive covenants

These require a borrower to do something, for example to **provide the bank** with its regular management accounts. This would allow the bank to **check** on the financial performance of the company, and to ensure that it is likely to be able to repay the loan as planned.

#### Loan covenants

The borrower may pledge not to take out further loans until the current loan has been repaid, or not to take further loans ranking above existing loans. The purpose of this is to protect the position of the lender, and to ensure that the risk of default is not increased, or the level of security diluted.

#### Asset covenants

There may be restrictions on the company's ability to acquire or **dispose of assets**.

#### Accounting covenants

These set **limitations on the borrower's financial position**. For example, the company might agree that its total borrowings should not exceed 100% of shareholders' funds.

The purpose of this is to keep the gearing, and hence the level of risk to the lender, within certain limits.

#### Dividend covenants

Covenants may **restrict the levels of dividends** borrowers can pay, or restrict the company's ability to purchase its own shares.

#### Investment covenants

Covenants may **limit the investments** the borrower can undertake, or prevent the borrower merging or making an acquisition.

#### Repayment covenants

The lender may be required to **build up a fund over time** to be drawn on to redeem bonds at the end of their life.

#### Advantages of covenants

- (1) The main advantage of covenants is that lenders may be prepared to lend **more money** to the company if it provides the security of a covenant.
- (2) Covenants may mean that the costs at which the company can **borrow money** are **lower**.

#### Disadvantages of covenants

- (1) The main disadvantage of a covenant is that the company's actions may be **constrained**; it may not be able to raise further funds beyond the covenanted loans or undertake profitable investments.
- (2) Covenants may require the borrower to bear **monitoring costs** such as provision of information, auditors' fees and trustee expenses.

### 3 Mortgage

The revenue associated with mortgage loan assets is the interest receivable. Under IFRS 9, the variable element of the interest is accrued on a time basis and the fixed element is reduced to reflect any initial transaction costs and to reflect a constant return on the balance outstanding.

## 4 Wallace plc

### 4.1 Right-of-use asset

	£
Discounted future lease payments	193,050
Option to purchase (discounted)	12,280
Lease liability and right-of-use asset	205,330

### 4.2 Carrying amount at 31 December 20X1

Right-of-use asset	205,330
Less Depreciation (W1)	(13,689)
Carrying amount	191,641

Working:  $205,330 / 15 \text{ years} = \text{£}13,689$

The asset is depreciated over 15 years as there is an option to purchase the asset which Wallace plc is expected to exercise.

### 4.3 Lease liability brought forward at 1 January 20X2

Lease liability at 1.1.X1	205,330
Interest at 5%	10,267
Less payment	(25,000)
Liability	190,597

# Chapter 14

## Financial structure and financial reconstruction

### Introduction

Learning outcomes

Knowledge brought forward and syllabus links

Examination context

Chapter study guidance

### Learning topics

- 1 Capital structure
- 2 Dividend policy
- 3 Financial reconstruction
- 4 Demergers and disposals
- 5 Small and medium-sized company financing

Summary

Further question practice

Technical reference

Self-test questions

Answers to Interactive questions

Answers to Self-test questions



# Introduction

## Learning outcomes

- Appraise and evaluate the sources of finance and the process for raising finance
- Advise on and develop proposals for determining the appropriate financing mix for new businesses and projects
- Explain and advise on issues relating to the cost of capital
- Show and explain how dividend policy impacts upon equity value and upon financing and investment decisions
- Appraise and explain how the choice of financing impacts on reported corporate performance and on the recognition and measurement of financial assets and financial liabilities
- Show and explain how financial reconstruction takes place and explain the consequences of such reconstructions for corporate reporting
- Appraise and evaluate financial reconstruction proposals in a given scenario and determine the nature and role of assurance procedures in this context
- Explain the different reasons for refinancing, and demonstrate how companies in financial distress can be managed, having regard to insolvency law
- Explain and appraise the workings of, and reasons for, securitisation, showing the impact on financial statement information
- Explain and appraise the nature and consequences of leveraged buy outs
- Appraise and evaluate various forms of reconstruction (for example, spin-off, MBO, divestment, demergers, purchase of own shares, use of distributable profits), explaining the corporate reporting impact
- Explain and demonstrate appropriate valuation techniques in the context of demergers and for disposal of entities and business units, and show the impact on corporate reporting issues relating to discontinued operations
- Appraise and explain the small and medium-sized enterprise financing problem
- Appraise and evaluate the various methods of financing available to small and medium-sized enterprises, and explain the nature and role of assurance for small and medium-sized companies in raising such finance
- Assess and explain the characteristics of sources of equity for smaller companies and the financial institutions operating in such markets (for example, venture capital and private equity)
- Analyse and evaluate the cost of equity, portfolio theory and the use of appropriate asset pricing models, applying principles of financial economics

## Knowledge brought forward and syllabus links

This chapter looks at the factors that determine the choice of capital and influence the cost of capital. We include a revision of cost of capital and CAPM calculations from Financial Management. Dividend policy was also covered in Financial Management, but for this exam the focus is on the factors that determine overall dividend policy and the approaches firms can take.

Company restructuring was also introduced in Financial Management, but the focus here is on the consequences of different types of reconstruction, including their impacts on corporate reporting.

## Examination context

Company reconstruction is another area where questions ranging across the syllabus could easily be asked. As well as assessing the feasibility of proposals, you may have to assess their corporate reporting consequences and also the issues that will affect the assurance work that future providers of finance will require to give them comfort.

## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>Capital structure</b> Decisions on sources of finance should always be made in the context of an overall policy for obtaining finance. This links in with the decisions about dividend policy and how the business wishes to reward its shareholders.</p>	<p><b>Approach</b> The first section follows on from the previous chapter, discussing the factors determining overall capital structure. Note the Suitability, Acceptability, Feasibility framework is helpful here. The section also revises cost of capital, as you may well be asked to assess the impact of finance choice on WACC.</p> <p><b>Stop and think</b> What factors should a company consider when deciding on its optimal capital structure?</p>	<p>In the exam, you may be required to advise businesses on their optimal capital structure.</p>	<p><b>IQ6: WACC</b> This is a good question to practice calculating WACC which you would have covered in your FM studies.</p>

Topic	Practical significance	Study approach	Exam approach	Interactive questions
2	<p><b>Dividend policy</b></p> <p>The dividend policy of a company will reflect its investment and financing decisions. There are also a number of practical issues that need to be considered when paying out dividends.</p>	<p><b>Approach</b></p> <p>This section discusses dividend policy, particularly in the context of relations with investors. You covered the different views on the relevance of dividend policy in your earlier studies. Work carefully through this section to make sure you familiarise yourself with the different types of dividend policy that a company can choose.</p> <p><b>Stop and think</b></p> <p>If a changed dividend policy results in significant changes to the shareholder base, does this really matter to a company?</p>	<p>You may be asked to examine the consequences of the dividend policies that organisations adopt.</p>	<p><b>IQ8: Dividend policy.</b> This question asks you to analyse the financial data of a company over a number of years to identify what dividend policy it is using.</p>
3	<p><b>Financial reconstruction</b></p> <p>Businesses that are in difficulty or wish to make fundamental changes to their operations can use a variety of techniques to restructure themselves. They may require new sources of finance, or in extreme circumstances, a reorganisation of existing finance, if the alternative is liquidation.</p>	<p><b>Approach</b></p> <p>It is worth spending time in section 3 seeing how a scheme of reconstruction can be built up.</p> <p><b>Stop and think</b></p> <p>What are the three main types of reconstruction scheme?</p>	<p>In the exam you could be asked to assess the feasibility of proposals for corporate reconstruction, discuss the impact on business of different forms of restructuring and refinancing and explain the financial reporting consequences of reconstruction, restructuring and refinancing.</p>	<p><b>IQ10: Financial reconstruction</b></p> <p>Make a good attempt at this question, it covers a number of areas associated with reconstructions. You should read through the case study at section 3.6 carefully before attempting this question.</p>



Topic	Practical significance	Study approach	Exam approach	Interactive questions
4	<p><b>Demergers and disposals</b></p> <p>A company may voluntarily decide to divest part of its business for strategic, financial or organisational reasons.</p>	<p><b>Approach</b></p> <p>Focus on management buy-outs, as they are a common form of disposal, where the advice of accountants is particularly important.</p> <p><b>Stop and think</b></p>	<p>You could be asked to advise participants in a management buyout of the main issues they will face.</p>	
5	<p><b>Small and medium sized company financing</b></p> <p>Not everyone works in a large multinational corporation. Small- and medium-sized enterprises face their own challenges when</p>	<p>What conditions placed by investors on the directors of a management buy-out are likely to be the most onerous?</p> <p><b>Approach</b></p> <p>In section 5 concentrate on the problems associated with obtaining different sources of finance and the assurance work that may be required.</p>	<p>In the exam you may be asked to advise businesses on the assurance work that needs to be carried out to assess reconstruction proposals.</p>	<p><b>IQ11: SME finance</b></p> <p>In this question you are asked to write a report explaining the various methods of financing available to a small, family owned business.</p>
	<p>seeking finance. Accountants involved in such organisations require in-depth knowledge of the various methods of financing available.</p>	<p><b>Stop and think</b></p> <p>You may one day set up your own business. Are you aware of the best sources of finance that could help your enterprise develop?</p>		

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 Capital structure



## Section overview

- In this section we discuss the factors that determine the sources of finance that businesses choose.
- Later in this chapter, in section 5, we review in detail the issues affecting small businesses as they seek finance.

---

## 1.1 Introduction

Often the decision on the right capital structure will be a complex one. Remember, businesses do not just decide what the best mix of equity and debt should be. They also consider, among other factors, the mix of long-term and short-term debt, the attractiveness of different lenders and the security they wish to offer. The mix of finance for a business can be assessed using the **suitability, acceptability and feasibility framework** you studied in the Business Strategy and Technology syllabus.

## 1.2 Suitability of capital structure

### 1.2.1 Stability of company

One determinant of the suitability of the gearing mix is the stability of the company. It may seem obvious, but it is worth stressing that debt financing will be more appropriate when:

- the company is in a healthy competitive position
- cash flows and earnings are stable or rising
- profit margins are reasonable
- the bulk of the company's assets are tangible
- the liquidity and cash flow position are strong
- the debt:equity ratio is low
- share prices are low (unless share prices are low because the company already has high gearing)

### 1.2.2 Matching assets with funds

As a general rule, assets which yield profits over a long period of time should be financed by long-term funds.

In this way, the returns made by the asset should be sufficient to pay either the interest cost of the loans raised to buy it, or dividends on its equity funding.

If, however, a long-term asset is financed by short-term funds, the company cannot be certain that when the loan becomes repayable, it will have enough cash (from profits) to repay it.

A company would not normally finance all its short-term assets with short-term liabilities, but instead finance short-term assets partly with short-term funding and partly with long-term funding.

### 1.2.3 Long-term capital requirements for replacement and growth

A distinction can be made between long-term capital that is needed to finance the replacement of worn-out assets, and capital that is needed to finance growth.

Aims	Main funding sources
Maintenance of current level of operations	Internal sources
Growth	External finance

#### 1.2.4 Signalling

Some investors may see the issue of debt capital as a sign that the directors are confident enough of the future cash flows of the business to be prepared to commit the company to making regular interest payments to lenders. However, this depends on the view that market efficiency is not very high. The argument would be that an efficient market would have sufficient information to be able to make its own mind up about the debt issue, without needing to take the directors' views into account.

#### 1.2.5 Clientele effect

When considering whether to change gearing significantly, directors may take into account changes in the profile of shareholders. If gearing does change significantly, the company may adjust to a new risk-return trade-off that is unsuitable for many shareholders. These shareholders will look to sell their shares, while other investors, who are now attracted by the new gearing levels, will look to buy shares.

#### 1.2.6 Domestic and international borrowing

If the company is receiving income in a foreign currency or has a long-term investment overseas, it can try to limit the risk of adverse exchange rate movements by matching. It can take out a long-term loan and use the foreign currency receipts to repay the loan. Similarly, it can try to match its foreign assets (property, plant etc) by a long-term loan in the foreign currency. However, if the asset ultimately generates domestic currency receipts, there will be a long-term currency risk.

In addition, foreign loans may carry a lower interest rate, but the principle of interest rate parity suggests that the foreign currency will ultimately strengthen, and hence loan repayments will become more expensive. Euromarket loans also generally require no security and it may be easier to raise large sums quickly on overseas markets.

#### 1.2.7 Cost and flexibility

Interest rates on longer-term debt may be higher than interest rates on shorter-term debt. However, issue costs or arrangement fees will be higher for shorter-term debt, as it has to be renewed more frequently.

A business may also find itself locked into longer-term debt, with adverse interest rates and large penalties if it repays the debt early. Both inflation and uncertainty about future interest rate changes are reasons why companies are unwilling to borrow long term at high rates of interest and investors are unwilling to lend long term when they think that interest yields might go even higher.

#### 1.2.8 Optimal capital structure and the cost of capital

When we consider the capital structure decision, the question arises of whether there is an optimal mix of equity and debt that minimises the cost of capital, which a company should, therefore, try to achieve.

One view (the traditional view) is that there is an optimal capital mix at which the average cost of capital, weighted according to the different forms of capital employed, is minimised.

As gearing rises, so the return demanded by the ordinary shareholders also begins to rise in order to compensate them for the risk resulting from an ever-increasing share of profits going to the providers of debt. At very high levels of gearing the holders of debt will begin to require higher returns too as they become exposed to risk of inadequate profits.

As you may remember, the alternative view of Modigliani and Miller is that the firm's overall weighted average cost of capital is not influenced by changes in its capital structure. Their argument is that the issue of debt causes the cost of equity to rise in such a way that the benefits of debt on returns are exactly offset. Investors themselves adjust their level of personal gearing and thus the level of corporate gearing becomes irrelevant. If tax is included in the model, then it is in the company's interests to use debt finance, because of the tax relief that can be obtained on interest which causes the weighted average cost to fall as gearing increases.

A further issue is tax exhaustion, that at a certain level of gearing, companies will discover that they have no taxable income against which to offset interest charges, and they therefore lose the benefit of the tax relief on the interest.

## **1.3 Acceptability of capital structure**

### **1.3.1 Risk attitudes**

The choice of capital structure will not only depend on company circumstances, but also on the attitudes that directors and owners have towards the principal risks. This will include the risks that are specific to the business, more general economic risks, and also the risks of raising finance. It could, for example, adversely affect the company's reputation if it made a rights issue that was not fully subscribed.

Owner-director attitudes to risk may also differ. Owners will be concerned about the combination of risk and return. Directors may be concerned with the risk to their income and job security but, on the other hand, significant profit incentives in their remuneration packages may encourage them to take more risks than the owners deem desirable.

At very high levels of gearing, the firm may face costs arising from the possibility, or fear, of bankruptcy. As firms take on higher levels of gearing, the chances of default on debt repayments, and hence liquidation ('bankruptcy'), increase. Investors will be concerned over this and sell their holdings, which will cause the value of the company's securities to fall, with a corresponding increase in its cost of funds. To optimise capital structure, financial managers must therefore not increase gearing beyond the point where the cost of investor worries over bankruptcy outweighs the benefits gained from the increased tax shield on debt.

### **1.3.2 Loss of control**

The directors and shareholders may be unwilling to accept the conditions and the loss of control that obtaining extra finance will mean. Control may be diminished whether equity or loan funding is sought.

- (a) Issuing shares to outsiders may dilute the control of the existing shareholders and directors. The company will be subject to greater regulatory control if it obtains a stock market listing.
- (b) The price of additional debt finance may be security, restricting disposal of the assets secured and covenants that limit the company's rights to dispose of assets in general or to pay dividends.

### **1.3.3 Costs**

The directors may consider that the extra interest costs the company is committed to are too high. However, the effective cost of debt might be cheaper than the cost of equity, particularly if tax relief can be obtained.

The differing costs of raising finance may also be important.

### 1.3.4 Commitments

The interest and repayment schedules that the company is required to meet may be considered too severe. The collateral loan providers require may also be too much, particularly if the directors are themselves required to provide personal guarantees.

### 1.3.5 Present sources of finance

Perhaps it is easy to find reasons why new sources of finance may not be desirable. Equally, however, they may be considered more acceptable than drawing on current sources. For example, shareholders may be unwilling to contribute further funds in a rights issue. The business may wish to improve its relations with its suppliers, and one condition may be lessening its reliance on trade credit.

## 1.4 Feasibility of capital structure

Even if directors and shareholders are happy with the implications of obtaining significant extra finance, the company may not be able to obtain that finance.

### 1.4.1 Lenders' attitudes

Whether lenders are prepared to lend the company any money will depend on the company's circumstances, particularly as they affect the company's ability to generate **cash** and **security** for the loan. Companies with substantial non-current assets may be able to borrow more.

### 1.4.2 Shareholder willingness to invest

If the stock market is depressed, it may be difficult to raise cash through share issues, so major amounts will have to be borrowed.

### 1.4.3 Future trends

Likely future trends of fund availability will be significant if a business is likely to require a number of injections of funds over the next few years.

### 1.4.4 Restrictions in loan agreements

Restrictions written into agreements on current loans may prohibit a business from taking out further loans, or may require that its gearing does not exceed specified limits.

### 1.4.5 Maturity dates

If a business already has significant debt repayable in a few years' time, because of cash flow restrictions it may not be able to take out further debt which is repayable around the same time.

## 1.5 Pecking order theory

Pecking order describes the order in which businesses will use different sources of finance. It contrasts with the view that businesses will seek an optimal capital structure that minimises their weighted average cost of capital. The order of preference will be:

- (a) retained earnings\*
- (b) straight debt
- (c) convertible debt

- (d) preference shares
- (e) equity shares (rights then new issues)

**Note:** \*A common error in exams is to refer to retained earnings as a source of finance when there may be no liquid resources in the business. Where retained earnings are referred to as a source of finance it needs to be made clear that, in the context of using retained profits for new investment, this refers to operating cash flows retained in the business rather than paid out as dividends.

### 1.5.1 Reasons for following pecking order

- (a) It is easier to use retained earnings than go to the trouble of obtaining external finance and comply with the demands of external finance providers.
- (b) There are no issue costs if retained earnings are used, and the issue costs of debt are lower than those of equity.
- (c) Investors prefer safer securities, particularly debt with its guaranteed income and priority on liquidation.
- (d) Some managers believe that debt issues have a better signalling effect than equity issues because the market believes that managers are better informed about shares' true worth than the market itself is. Their view is the market will interpret debt issues as a sign of confidence, that businesses are confident of making sufficient profits to fulfil their obligations on debt and that they believe that the shares are undervalued.
- (e) By contrast, the market will interpret equity issues as a measure of last resort, that managers believe that equity is currently overvalued and hence are trying to achieve high proceeds while they can.
- (f) The main consequence in this situation will be reinforcing a preference for using retained earnings first. However, debt (particularly less risky, secured debt) will be the next source, as the market feels more confident about valuing it than more risky debt or equity.

### 1.5.2 Consequences of pecking order theory

- (a) Businesses will try to match investment opportunities with internal finance, provided this does not mean excessive changes in dividend payout ratios.
- (b) If it is not possible to match investment opportunities with internal finance, surplus internal funds will be invested. If there is a deficiency of internal funds, external finance will be issued in the pecking order, starting with straight debt.
- (c) Establishing an ideal debt-equity mix will be problematic, since internal equity funds will be the first source of finance that businesses choose, and external equity funds the last.

### 1.5.3 Limitations of pecking order theory

- (a) It fails to take into account taxation, financial distress, agency costs or how the investment opportunities that are available may influence the choice of finance.
- (b) Pecking order theory is an explanation of what businesses actually do, rather than what they should do.

Studies suggest that the businesses that are most likely to follow pecking order theory are those that are operating profitably in markets where growth prospects are poor. There will thus be limited opportunities to invest funds. These businesses will be content to rely on retained earnings for the limited resources that they need.

### 1.5.4 Behavioural theories

A number of studies have suggested that businesses pursue rules of thumb or behaviour patterns.

- (a) **The herd theory** states that businesses will stick closely to the industry average capital structure. Of course the average may hide wide variations that are acceptable to different companies. However, there is evidence to suggest that companies that are significantly more highly geared than the industry average will have difficulty obtaining further debt finance.
- (b) **Benchmarking** occurs where businesses identify a leader in their market and adopt a similar capital structure. However, the capital structure that is appropriate for the market leader with the investment opportunities that it faces may not be appropriate for the less successful businesses in that industry.
- (c) **Past experience** may be an important influence. The argument is that managers are aware of the advantages and disadvantages of both equity and debt, and choose the source of finance that experience suggests will cause them few or no problems.

## 1.6 Cost of capital

The importance of cost of capital cannot be emphasised enough in the formulation of financial strategy. It is used for discounting cash flows of potential projects, determining the type(s) of finance that companies should be using for investment purposes and so on. If the incorrect cost of capital is used, then sub-optimal decisions will be made regarding the projects that are undertaken and the way in which capital is structured.

### 1.6.1 Cost of equity

The cost of equity ( $k_e$ ) of a company is the same as the returns required by investors and can be calculated in several different ways: the dividend valuation model (covered in the chapter Business and securities valuation); the Gordon growth model; and the Capital Asset Pricing Model (CAPM).

The **Gordon growth model** (earnings retention model)

This model is based on the premise that retained earnings are the only source of funds. Growth will come about from the retention and reinvestment of earnings. The model is similar to the dividend growth valuation model:

$$k_e = \frac{d_0(1 + g)}{(k_e - g)}$$

However, the Gordon growth model measures the annual growth rate in dividends as follows:  $g = rb$

Where:  $g$  = annual growth in future dividends  
 $r$  = the current accounting rate of return  
 $\beta$  = the proportion of earnings retained

### CAPM

The CAPM is based on a comparison of the systematic risk of individual investments with the risks of all shares in the market and is calculated as follows:

$$k_e = r_f + \beta_e (r_m - r_f)$$

Where:  $k_e$  = cost of equity capital  
 $r_f$  = riskfree rate of return  
 $r_m$  = the return from the market as a whole  
 $\beta_e$  = the beta factor of the individual security



### Interactive question 1: CAPM

Investors have an expected rate of return of 8% from ordinary shares in Algol, which have a beta of 1.2. The expected returns to the market are 7%.

#### Requirement

What will be the expected rate of return from ordinary shares in Rigel, which have a beta of 1.8?

See **Answer** at the end of this chapter.

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### Interactive question 2: Cost of equity

The following data relates to the ordinary shares of Stilton.

Current market price, 31 December 20X1	250 pence
Dividend per share, 20X1	3 pence
Expected growth rate in dividends and earnings	10% p.a.
Average market return	8%
Risk-free rate of return	5%
Beta factor of Stilton equity shares	1.40

#### Requirements

- 1.1 What is the estimated cost of equity using the dividend growth model?
  - 1.2 What is the estimated cost of equity using the CAPM? See **Answer** at the end of this chapter.
- 



### Interactive question 3: CAPM and beta factors

- 1.1 What does beta measure, and what do betas of 0.5, 1 and 1.5 mean?
- 1.2 What factors determine the level of beta that a company may have?

See **Answer** at the end of this chapter.

---

#### 1.6.2 Cost of debt

The cost of debt is the return an enterprise must pay to its lenders.

For **irredeemable debt**, this is the (post-tax) interest as a percentage of the ex-interest market value of the loan stock (or preference shares).

For **redeemable debt**, the cost is given by the internal rate of return (IRR) of the cash flows involved.

#### Irredeemable debt capital

After-tax cost of irredeemable debt capital is:



$$k_d = \frac{i(1-T)}{P_0}$$

Where:  $k_d$  = cost of debt capital after tax  
 $T$  = the rate of corporation tax  
 $P_0$  = ex-interest market value

### Redeemable debt

The RATE spreadsheet function is used to calculate the pre-tax yield to maturity on a redeemable bond (ie, the pre-tax cost of redeemable debt). This is covered in more detail in the spreadsheet chapter, Spreadsheet formulae.

### Cost of preference shares

As preference shares usually have a constant dividend the perpetuity valuation formula is used:

$$k_p = \frac{D}{P_0}$$

Where:  $D$  = constant annual dividend  
 $P_0$  = ex-div market value

Remember that, when calculating the weighted average cost of capital, the cost of preference shares is a separate component and should not be combined with the cost of debt or the cost of equity.

### Cost of convertible debt

This calculation will depend on whether conversion is likely to happen or not. If conversion is not expected, then the conversion value is ignored and the bond is treated as redeemable debt. If conversion is expected, the same method for calculating the cost of redeemable debt is used, but the number of years to redemption is replaced by the number of years to conversion and the redemption value is replaced by the conversion value (that is, the market value of the shares into which the debt is to be converted).

Conversion value is calculated as follows.

$$\text{Conversion value} = P_0 (1 + g)^n R$$

Where:  $P_0$  = the current ex-dividend ordinary share price  
 $g$  = the expected annual growth of the ordinary share  
 $n$  = number of years to conversion  
 $R$  = number of shares received on conversion



### Interactive question 4: Cost of debt (no tax)

Allot has in issue 10% loan notes of a nominal value of £100. The market price is £90 ex interest.

#### Requirement

Calculate the cost of this capital if the debenture is:

- (1) irredeemable
- (2) redeemable at par after 10 years

Ignore taxation.

See **Answer** at the end of this chapter.



### Interactive question 5: Cost of debt (with tax)

- 5.1 A company has outstanding £660,000 of 8% loan notes on which the interest is payable annually on 31 December. The debt is due for redemption at par on 1 January 20X6. The market price of the loan notes at 28 December 20X2 was £103 cum interest. Ignoring taxation, what do you estimate to be the current cost of debt as at 28 December 20X2?
- 5.2 If the cost of debt rose to 12% at the beginning of 20X3, just after the notes had gone ex interest, what effect would this have on the market price?
- 5.3 If the effective rate of tax was 21% what would be the after-tax cost of debt of the loan notes in  
(a) above?

See **Answer** at the end of this chapter.

### 1.6.3 Weighted average cost of capital (WACC)

Weighted average cost of capital (WACC) is calculated by weighting the costs of the individual sources of finance according to their relative importance as sources of finance. Two methods of weighting could be used: market value or book value. The general rule is that market value should always be used if data is available, as the use of historical book values may result in WACC being understated.

WACC is calculated using the following formula:

$$\text{WACC} = \left[ \frac{E}{E + D} \right] k_e + \left[ \frac{D}{E + D} \right] k_d$$

Where:  $k_e$  = cost of equity  
 $k_d$  = cost of debt (net of tax)  
 $E$  = the market value of equity in the firm  
 $D$  = the market value of debt in the firm



### Interactive question 6: WACC

An entity has the following information in its statement of financial position.

	<b>\$'000</b>
Ordinary shares of 50c	2,500
Debt (12% irredeemable, nominal value)	1,000

The ordinary shares are currently quoted at 130 cents each and the loan notes are trading at \$72 per \$100 nominal. The ordinary dividend of 15c has just been paid with an expected annual growth rate of 10%. Corporate tax is currently 24%.

#### Requirement

Calculate the WACC for this entity.

See **Answer** at the end of this chapter.

## 1.6.4 Effective interest rates

The effective interest rate is the rate on a loan that has been restated from the nominal interest rate to one with annual compound interest. It is used to make loans more comparable by converting interest rates of individual loans into equivalent annual rates.

It is calculated using the following formula:

$$r = (1 + i/n)^n - 1$$

Where:  $r$  = the effective interest rate  
 $i$  = the nominal interest rate  
 $n$  = number of compounding periods per year (eg, 12 for monthly compounding)

## 1.6.5 Uses of different costs of capital

It is important to use the appropriate cost of capital in the right calculation.

Cost	When used
<b>Cost of equity</b>	<ul style="list-style-type: none"><li>Discounting earnings <b>after</b> finance costs, taxation and preference dividends</li><li>Calculating value of a share in a dividend valuation or earnings valuation model</li></ul>
<b>WACC</b>	<ul style="list-style-type: none"><li>Discounting earnings <b>before</b> finance costs, taxation and preference dividends</li><li>Calculating the value of an enterprise (ie, total of equity and debt) using an earnings valuation model</li><li>Appraising investments with similar business risks where gearing does not change</li></ul>
<b>Marginal cost of capital</b>	<ul style="list-style-type: none"><li>Appraising investments in circumstances where gearing levels or project risks fluctuate significantly</li><li>Appraising investments where the mix of additional finance carries a significantly different level of risks to the existing finance mix</li><li>Appraising investments where the source of finance is project specific</li></ul>

The relationship between equity beta and asset beta can be used to establish a cost of equity when an investment involves a significant change in the level of gearing or in the business risk for the investing company. You should be familiar with this technique from Financial Management, but a brief description is given later in this section.

## 1.7 Portfolio theory and CAPM

### 1.7.1 Portfolio theory

Modern portfolio theory is based around the premise that an investor will want to minimise risk and follows the 'do not put all your eggs in one basket' theory. Rather than holding shares in just one company - and thus being exposed to the risks associated with that company in particular and its industry in general - investors should prefer to hold shares in a combination of different companies in various industries. In this way, if the investor has invested in companies whose shares move in different ways in response to economic factors, risk will be reduced.

By holding a portfolio of shares, investors can reduce unsystematic risk (which applies to individual investments) through diversification. Investors cannot diversify away systematic risk, which is due to variations in market activity such as macroeconomic factors.

### 1.7.2 CAPM

We mentioned the CAPM above in relation to calculating the cost of equity. With regard to portfolio theory, the CAPM is used to calculate the required rate of return for any particular investment and is based on the assumption that investors require a return in excess of the risk-free rate to compensate them for systematic risk.

For a portfolio of shares, the beta value will be the weighted average of the beta factors of all the securities in the portfolio.

### 1.7.3 CAPM and cost of capital

The CAPM can be used to produce a cost of capital for an investment project, based on the systematic risk of that investment.



#### Interactive question 7: CAPM and cost of capital

Panda plc is all-equity financed. It wishes to invest in a project with an estimated beta of 1.5. The project has significantly different business risk characteristics from Panda's current operations. The project requires an outlay of £10,000 and will generate expected returns of £12,000.

The market rate of return is 12% and the risk-free rate of return is 6%.

#### Requirement

Estimate the minimum return that Panda will require from the project and assess whether the project is worthwhile, based on the figures you have been given.

See **Answer** at the end of this chapter.

---

### 1.7.4 CAPM and the cost of equity when financial risk or business risk changes

One approach to establishing the cost of equity for an investment, when there will be a significant change in gearing or business risk as a result of the investment, is to estimate a new equity beta for the investment and, from this, an appropriate cost of equity.

The formula relating a company's equity beta (reflecting its gearing level) and the all-equity beta (asset beta) is:

$$\beta_e = \beta_a \left[ \frac{E + D(1-T)}{E} \right]$$

Where:  $\beta_e$  = equity beta  
 $\beta_a$  = asset beta (all-equity beta)  
E = proportion of equity in capital structure  
D = proportion of debt in capital structure  
T = taxation rate

**Step 1** Given the company's current equity beta and debt: equity ratio (or given the equity beta and capital structure of a similar company in the new business area for the investment), calculate the asset beta value.

- Step 2** Apply asset beta and the proposed debt: equity ratio for the investment to establish an equity beta for the new investment. Use this equity beta to calculate a cost of equity for the investment.
- Step 3** Having established a cost of equity for the new investment, calculate a WACC from the cost of equity, the after-tax cost of debt and the proposed capital structure for the investment. Use this as the discount rate to calculate a net present value (NPV) for the investment.

### Example

A company is considering a new investment by diversifying into a new business area. It considers that a comparable company in this new business area has an equity beta of 1.25 and a debt: equity ratio of 1:2. The company has a debt: equity ratio of 2:3, which it intends to maintain. The taxation rate is 20%.

In order to establish a cost of capital for discounted cash flow appraisal of the project, the company needs to estimate an appropriate cost of equity.

The first step is to calculate an asset beta:

$$1.25 = \beta_a \left[ \frac{2 + 1(1-0.20)}{2} \right]$$

$$1.25 = 1.4 \beta_a$$

$$\beta_a = 0.893$$

The next step is to calculate an equity beta for the company and the new business area of investment.

$$\beta_e = 0.893 \left[ \frac{3 + 1(1-0.20)}{3} \right]$$

$$\beta_e = 1.37$$

This equity beta can be used with the CAPM to calculate a cost of equity for the investment, and a WACC can then be obtained, given the cost of debt and the company's debt: equity ratio of 2:3.

### 1.7.5 Limitations of CAPM

Problems that have been identified with the CAPM as a method of calculating a cost of equity (or a cost of non risk free debt) include the following.

- The need to determine the **excess return**. Forecast, rather than historical, returns should be used, although historical returns are normally used in practice.
- The need to determine the **risk free rate**. A risk free investment might be a government security. However, interest rates vary with the term of the lending.
- Errors** in the **statistical analysis** used to calculate SYMBOL 98 \f "Symbol" values.
- Beta factors based on **historical data may be a poor basis** for future decision-making. Evidence from a US study suggests that stocks with high or low betas tend to be fairly stable over time, but this may not always be so.
- Beta values may **change over time**; for example, if luxury items produced by a company become regarded as necessities, or if the cost structure (eg, the proportion of fixed costs) of a business changes.
- The CAPM is also unable to forecast accurately returns for **companies with low price/earnings ratios** and to take account of **seasonal** 'month of the year' or 'day of the

week' effects which appear to influence returns on shares. Beta factors measured over different timescales may differ.

- (g) Financial managers should preferably use betas for industrial sectors rather than individual company betas, as measurement errors will tend to cancel each other out.
- (h) The CAPM fails to take into account the ways in which returns are paid. Investors may have a preference for dividends or capital gains.

Some experts have argued that calculating betas by means of complicated statistical techniques often overestimates high betas, and underestimates low betas, particularly for small companies. Sometimes equations are used to adjust betas calculated statistically, such as:

$$\text{Adjusted } \beta = 0.5 (\text{statistically calculated } \beta) + 0.5$$

This sort of equation increases betas that are less than one and lowers betas higher than one.

### 1.7.6 Arbitrage pricing theory

The CAPM specifies that the only risk factor that should be taken into account is the market risk premium. Subsequent empirical research has shown that there may be other factors in addition to market risk premium that explain differences in asset returns, such as **interest rates** and **industrial production**.

Unlike the CAPM, which analyses the returns on a share as a function of a single factor - the return on the market portfolio - the **Arbitrage Pricing Theory** (APT) assumes that the return on each security is based on a number of **independent factors**. The actual return  $r$  on any security is shown as:

$$r = E(r_j) + \beta_1 F_1 + \beta_2 F_2 \dots + e$$

Where:  $E(r_j)$  = the expected return on the security  
 $\beta_1$  = the sensitivity to changes in factor 1  
 $F_1$  = the difference between actual and expected values of factor 1  
 $\beta_2$  = the sensitivity to changes in factor 2  
 $F_2$  = the difference between actual and expected values of factor 2  
 $e$  = a random term

**Factor analysis** is used to ascertain the factors to which security returns are sensitive. Four key factors identified by researchers have been:

- unanticipated inflation
- changes in the expected level of industrial production
- changes in the risk premium on bonds (debentures)
- unanticipated changes in the term structure of interest rates

It has been demonstrated that when no further arbitrage opportunities exist, the expected return  $E(r_j)$  can be shown as:

$$E(r_j) = r_f + \beta_1(r_1 - r_f) + \beta_2(r_2 - r_f) \dots$$

Where:  $r_f$  = risk-free rate of return

$r_1$  = the expected return on a portfolio with unit sensitivity to factor 1 and no sensitivity to any other factor

$r_2$  = the expected return on a portfolio with unit sensitivity to factor 2 and no sensitivity to any other factor

Such an approach generalises the CAPM and postulates the following model for the risk premium of a portfolio:

$$E(r_j) = r_f + (E(r_A) - r_f) \beta_A + (E(r_B) - r_f) \beta_B + \dots + (E(r_m) - r_f) \beta_m + \dots$$

Where:  $(E(r_A) - r_f) \beta_A$  = risk premium on factor A

$(E(r_B) - r_f) \beta_B$  = risk premium on factor B and so on

The APT model calculates the risk premium by constructing a portfolio with a **beta of 1** in relation to the factor under consideration (such as the interest rate) and a **beta of zero** in relation to all the other factors. The risk premium of that specific portfolio is then used as a proxy for the risk premium for the factor under consideration.

### 1.7.7 Three- and four-factor models

Fama and French identified **two factors** in addition to the **market portfolio** that explain company returns, namely **size** and **distress**.

The **size factor** is measured as the difference in return between a portfolio of the smallest stocks and a portfolio of the largest stocks, whereas the **distress factor** is proxied by the difference in return between a portfolio of the highest book to market value stocks and a portfolio of the lowest book to market value stocks.

The Fama and French three-factor model is as follows:

$$E(r_j) = r_f + \beta_{i,m} (E(r_m) - r_f) + \beta_{i,S} \text{SIZE} + \beta_{i,D} \text{DIST}$$

Where:  $\beta_{i,m}$  = the stock's beta

$\beta_{i,S}$  = beta with respect to size

$\beta_{i,D}$  = the stock's beta with respect to distress

Carhart, a student of Fama, added a fourth factor to the model, momentum:  $E(r_j) = r_f + \beta_{i,m} (E(r_m) - r_f) + \beta_{i,S} \text{SIZE} + \beta_{i,D} \text{DIST} + \beta_{i,M} \text{MOM}$

Where:  $\beta_{i,M}$  = the stock's beta with respect to momentum

**Momentum** is the concept that a stock that has recently performed well will continue to perform well. The theory of momentum appears to be inconsistent with the efficient market hypothesis, that an increase in share prices should not of itself warrant further increases. The existence of momentum has been explained by the irrationality of investors who underreact to new information.

## 2 Dividend policy



### Section overview

The dividend decision will reflect the investment and financing decisions.

### 2.1 Relevance of dividend policy

You covered the different views on the relevance of dividend policy in your earlier studies. The traditional view is that £1 of dividend income received now is more certain than £1 of capital gain in the future. Therefore, greater value would be put on a firm paying a dividend (and issuing shares to finance new investments) rather than one using retentions (ie, cutting dividends).

In contrast to the traditional view, Modigliani and Miller (MM) proposed that in a tax free world, shareholders are indifferent between dividends and capital gains, and the value of a company is determined solely by the 'earning power' of its assets and investments.

MM argued that if a company with investment opportunities decides to pay a dividend, so that retained earnings are insufficient to finance all its investments, the shortfall in funds will be made up by obtaining additional funds from outside sources. As a result of obtaining outside finance instead of using retained earnings:

Loss of value in existing shares = Amount of dividend paid

There are strong arguments against MM's view that dividend policy is irrelevant as a means of affecting shareholders' wealth.

### 2.1.1 Clientele

In theory, a company should choose between dividend payout and earnings retention so as to maximise the wealth of its shareholders. However, not all shareholders are likely to have the same tax situation and after-tax cost of capital. Hence there might not be an optimum policy which satisfies all shareholders.

The clientele effect suggests that investors have a so-called 'preferred habitat', ie, the company's shares may represent a home for investors with specific investment needs.

The management implications of the clientele effect are that it is important to understand the investment needs of the investors in the company. Failure to meet the needs of clientele groups may cause disappointment with the company and hence the company's share price might suffer.

### 2.1.2 Signalling

Dividends can be used to convey good (or bad) information. A firm that increases its dividend payout ratio may be signalling that it expects future cash flows to increase, as this ratio tends to remain steady over time. Bad firms can also increase dividends to try to convince the markets that they too are expecting increased future cash flows. However, this increase may be unsustainable if the promised increases do not occur and the inevitable reduction in dividend payout ratio will mean heavy penalties from the markets.

### 2.1.3 Agency

Dividend payments can be an instrument to monitor managers. When firms pay dividends they subsequently often need to go to the capital markets to fund new projects. When firms go to the financial markets they will be scrutinised by different market participants. For instance, investors will require an analysis of the creditworthiness of the firm. Therefore, if shareholders force managers to keep dividends high, as already stated, managers will have to go to the capital markets to obtain funding for new investments and have to justify the use they will make of the funds raised.

### 2.1.4 Life cycle

Under this theory, a company's dividend policy will vary depending on the stage of the company's life cycle.

A young, growing company with numerous profitable investment opportunities is unlikely to pay dividends as its earnings will be used for investment purposes. Shareholders should therefore have low or no expectations of receiving a dividend.





### Young company

Zero/Low dividend

High growth/investment needs Wants to minimise debt

### Mature company

High stable dividend

Lower growth Able and willing to take on debt Possibly share buybacks too

More mature companies may have built up a sufficient surplus of cash to allow them to pay dividends while still being able to fund investments.

## 2.1.5 Pecking order

Again, this is based on the impact that the amount of surplus cash paid out as **dividends** has on finance available for investment. Managers have a difficult decision here: how much do they pay out to shareholders each year to keep them happy, and what level of funds do they retain in the business to invest in projects that will yield long-term income? In addition, funds available from retained profits may be needed if debt finance is likely to be unavailable, or if taking on more debt would expose the company to undesirable risks.

Myers (2004) argued that dividend policy is linked to capital gearing and the costs of the various sources of finance. It suggests that dividend policy is really part of a bigger cost of capital issue. In effect, companies will try to ensure that investments are funded by the cheapest means possible. This leads to management setting up a 'pecking order' in which funding is implemented, as we have seen earlier.

Source of finance	Cost impact
Retained profits	No issue costs
Debt	Relatively cheap to raise, eg, term loan from bank
Equity	Relatively high issue costs and may involve heavy administrative effort

The implications of pecking order theory on dividend policy are that it will depress the level of dividend payments simply because retained earnings are the cheapest form of finance.

## 2.2 Other influences on dividend policy

### 2.2.1 Dividend capacity

In most circumstances, companies must not make a distribution except out of profits available for that purpose. The dividend capacity of a corporation determines how much of a company's income can be paid out as dividend. The dividend capacity of the company is also known as the free cash flow to equity (FCFE).

FCFE = Net income (EBIT - Net interest - Tax paid) Add Depreciation

Less Total net investment (Change in capital investment + Change in working capital) Add Net debt issued (new borrowings less any repayments)

Add Net equity issued (new issues less any equity repurchases)

The FCFE represents the cash available to the company which could be paid out to shareholders as dividends. There are also rules which restrict the payment of distributable profits only as dividends.

### 2.2.2 Other factors

Current and historical levels of dividend payments may be seen by investors as a guide to what future dividends are likely to be in the future. (For example, the dividend growth model may make use of the assumption that past trends in dividend growth are a guide to expected future dividend growth.) If a company enjoys a successful year of profits, it may want to increase the dividend, but for one year only and without giving shareholders an expectation that there will be another high dividend payment next year. In this situation, the company could:

- (a) declare a 'special' dividend for the year, indicating that this will not be repeated next year; or
- (b) instead of paying a dividend, buy back shares in the stock market. This will give a cash return to shareholders willing to sell shares in the market: it will also reduce the number of shares remaining in issue, which should increase the earnings per share (EPS) (and dividends per share) in the future.

The level of dividends paid by a company may also be influenced by various other factors.

Factor	Impact
Loan agreements	Clauses in loan agreements may restrict payments of dividends.
Tax rules	Tax rules may prevent small private companies from not distributing earnings, merely to avoid tax payable by the owners on dividends received.
Legal factors	Some investors have a legal requirement to invest in stocks that pay dividends. For example, under trust law, it has been held in courts that it would be imprudent for a trustee to invest in a stock unless it has a satisfactory dividend record. This would favour higher payouts. Some companies may have a legal restriction on the amount they can pay. This may be due to loan covenants or a statutory requirement to only pay out dividends that are covered by earnings. This would restrict payouts to a lower level.
Inflation	The effect and risks regarding current and potential inflation must be taken into consideration.
Maintaining control	If existing stockholders want to retain control they will not want to issue new equity. Hence, they will prefer to raise debt or retain profits giving a lower payout ratio.

### 2.2.3 Taxation

The payment of dividends may be complicated by the existence of different corporate and personal taxes and different rates for income and capital gains tax. If taxes on dividend income are higher than taxes on capital gains, companies should not pay dividends because investors require a higher return to companies that pay dividends. If payments are to be made to shareholders, the company should opt for other alternatives, such as share repurchases. This is true if taxes on dividend income are higher than taxes on capital gains.

However, different investors have different tax rates. High tax rate individuals will prefer that the firm invests more, whereas low tax individuals may prefer that the firm does not invest and instead pays dividends.

## 2.3 Approaches to dividend policy

The MM argument that dividend policy is irrelevant should have led to a random pattern of dividend payments. In practice, dividend payments tend to be smoothed over time. Various explanations have been offered for this.

### 2.3.1 Residual theory of dividends

According to this theory, firms will only pay dividends if all the profitable investment opportunities have been funded. This theory assumes that internal funds are the cheapest source of financing, and the company will resort to external financing only if the available internal funds and current and retained earnings have been exhausted.

The disadvantage of applying the residual theory each year is that it will give rise to unstable dividends each year, as the level of investment opportunities varies. As a result, it should be used to determine a long-run target payout ratio, rather than the payout in any one year. Investment opportunities are forecast through time, the target capital structure is established and an achievable target payout ratio is identified from this.

Large stable firms, eg, utilities, have few investment opportunities. Therefore, they should have higher payouts. New firms in high-growth industries will have more investment opportunities. Therefore, they should retain more of their earnings and have lower payout ratios.

If a residual dividend policy is applied rigorously, it might lead to fluctuating payouts from year to year. This might not be viewed favourably by shareholders if the implications of the clientele effect and signalling effect are borne in mind. Any uncertainty caused is likely to raise shareholders' required return.

### 2.3.2 Target payout ratio

- (a) According to the target payout theory, companies pay out as dividends a fixed proportion of their earnings. Firms have long-run target dividend payout ratios, which are designed to reduce uncertainty. The implications of a target payout are as follows.
- (b) Mature companies with stable earnings are likely to have a higher dividend payout ratio than growth companies.
- (c) Managers focus more on dividend changes than on absolute amounts.
- (d) Transitory changes in earnings usually do not affect dividend payouts. If extra payments are made because earnings in one year are particularly good, then the dividends will be designated as special dividends and there is no guarantee that they will be repeated.
- (e) Only long-term shifts in earnings can be followed by permanent changes in dividends.

Managers are reluctant to change dividend payout ratios due to the potential signals that such changes may send to the markets.

In practice many companies will adopt an approach that is designed to be a compromise between a number of conflicting objectives:

- Invest in projects with positive NPVs.
- Do not cut dividends.
- Avoid raising new equity.
- Maintain a target debt to equity ratio.
- Sustain a target dividend payout ratio.

For example, if earnings fluctuate, a constant dividend payout ratio will result in a changing debt to equity ratio, since the level of dividends will change each year and will not be linked to total investment levels including debt. As a result, the dividend payout ratio will not be constant, with dividend growth lagging behind earnings growth. Therefore the actual dividend policy followed by a company is less important than communicating that policy to investors and adhering to it.

## 2.4 Impact of changes in dividend policy

The impact of changes in dividend policy on the value of the firm can be assessed through a valuation model, such as the formula:

$$g = b \left( \text{ROA} + \frac{D}{E} (\text{ROA} - i(1-t)) \right)$$

Where: ROA = return on the net assets of the company  
b = retention rate  
D = book value of debt  
E = book value of equity  
i = cost of debt  
t = corporate tax rate

Changes in dividend policy will be reflected in the earnings growth rate. Changes in the dividend policy will change the value of b. Decreasing dividends (ie, higher b) will increase the growth rate, and increasing dividends will decrease the growth rate.



### Worked example: Dividend policy

A firm currently has a debt: equity ratio of 0.12 and a return on assets (ROA) equal to 15%. The current interest rate is 7%. The tax rate is 24%. The retention rate has been 50%. However, the firm plans to reduce its dividend payout to 30%. Find the impact of the change in dividend policy on the growth rate.

#### Solution

Before the change in dividend policy we have:

$$\begin{aligned} \text{ROA} &= 0.15 & D/E &= 0.12 & i &= 0.07 \\ b &= 0.50 & t &= 0.24 \end{aligned}$$

$$g = b \left( \text{ROA} + \frac{D}{E} (\text{ROA} - i(1-t)) \right)$$
$$g = 0.5(0.15 + 0.12(0.15 - 0.07(1 - 0.24))) = 0.0808$$

The growth rate after the decrease in the payout rate (ie, increase in b) is:

$$g = b \left( \text{ROA} + \frac{D}{E} (\text{ROA} - i(1 + t)) \right)$$
$$g = 0.7(0.15 + 0.12(0.15 - 0.07(1 - 0.24))) = 0.1131$$

The increase in the retention rate will raise the growth rate from 8.08% to 11.31%; that is, by more than three percentage points.



### Context example: Berkshire Hathaway

Berkshire Hathaway has not paid a dividend since 1967 because its chairman and CEO, Warren Buffett, prefers to reinvest profits in the business. Buffett feels the value of the corporation's shares would decline if it declared a dividend, and that investing back into the business provides more long-term value to shareholders, because the company's financial success rewards them with higher share prices. Additionally, Berkshire Hathaway maintains an aggressive stock buyback policy.

Berkshire Hathaway's stock price increased by almost 700,000% between 1964 and 2014. Someone who invested \$1,000 in the company's stock in 1980 is a millionaire in 2016. At the time of writing, the current share price is \$322,451.



### Interactive question 8: Dividend policy

Summarised financial data for TYR plc is shown below.

Year	Post-tax earnings £m	Dividends £m	Issued shares m	Share price pence
20X0	86.2	34.5	180	360
20X1	92.4	36.2	180	410
20X2	99.3	37.6	180	345
20X3	134.1	51.6	240	459
20X4	148.6	53.3	240	448

Year	All-share index	Inflation rate
20X0	2895	6%
20X1	3300	5%
20X2	2845	4%
20X3	2610	3%
20X4	2305	3%

#### Requirement

Explain, with supporting numerical evidence, the current dividend policy of TYR plc, and briefly discuss whether or not this appears to be successful.

See **Answer** at the end of this chapter.



### Professional skills focus: Concluding, recommending and communicating

You are expected to be able to make evidence based recommendations which can be justified by reference to supporting data and other information. A recommended dividend policy must therefore be based on the information provided in the question taking consideration of factors such as loan covenants, taxation, dividend capacity and shareholder preferences.

## 3 Financial reconstruction



### Section overview

Financial restructuring takes place when firms get into financial difficulty, or as part of an overall strategy to increase firm value.

- A financial reconstruction scheme is where a firm reorganises its capital structure.
  - The success or otherwise of a financial reconstruction scheme can be assessed by its impact on the growth rate of the firm, its risk and associated rate of return.
  - Methods of reconstruction include leveraged buyouts, debt for equity swaps and leveraged recapitalisations.
  - Markets tend to respond positively to financial reconstructions.
  - Refinancing is the replacement of an existing loan with a new loan: the new loan may be secured by the same assets.
  - Refinancing may take place to reduce interest costs, pay off other debts or reduce risk. There may be fees related to refinancing a loan that may outweigh any savings.
  - Securitisation involves the conversion of illiquid assets into marketable asset-backed securities.
- 

### 3.1 Reconstruction schemes

Reconstruction schemes are undertaken when companies have got into difficulties or as part of a strategy to enhance the value of the firm for its owners.

#### 3.1.1 Reconstruction schemes to prevent business failure

Not all businesses are profitable. Some incur losses in one or more years, but eventually achieve profitability. Others remain unprofitable, or earn only very small and unsatisfactory profits. Other companies are profitable, but run out of cash.

- (a) A poorly performing company which is unprofitable, but has enough cash to keep going, might eventually decide to go into liquidation, because it is not worth carrying on in business. Alternatively, it might become the target of a successful takeover bid.
- (b) A company which runs out of cash, even if it is profitable, might be forced into liquidation by unpaid creditors, who want payment and think that applying to the court to wind up the company is the best way of getting some or all of their money.

However, a company might be on the brink of going into liquidation, but hold out good promise of profits in the future. In such a situation, the company might be able to attract fresh capital and to persuade its creditors to accept some securities in the company as 'payment', and achieve a capital reconstruction which allows the company to carry on in business.

#### 3.1.2 Reconstruction schemes for value creation

Reconstruction schemes may also be undertaken by companies which are not in difficulties as part of a strategy to create value for the owners of the company. The management of a company can improve operations and increase the value of the company by:

- reducing costs through the sale of a poorly performing division or subsidiary
- increasing revenue or reducing costs through an acquisition to exploit revenue or cost economies
- improving the financial structure of the company

#### 3.1.3 Types of reconstruction

Depending on the actions that a company needs to take as part of its reconstruction plans, these schemes are usually classified in three categories:

- financial **reconstruction**, which involves changing the capital structure of the firm

- **portfolio reconstruction**, which involves making additions to, or disposals from, a company's businesses, eg, through acquisitions and spin-offs
- **organisational restructuring**, which involves changing the organisational structure of the firm

### 3.1.4 Designing reconstructions

You can use the following approach to designing reconstructions.

- Step 1** Estimate the position of each party if liquidation is to go ahead. This will represent the minimum acceptable payment for each group.
- Step 2** Assess additional sources of finance, for example selling assets, issuing shares, raising loans. The company will most likely need more finance to keep going.
- Step 3** Design the reconstruction. Often the question will give you details of how to do it.
- Step 4** Calculate and assess the new position, and also how each group has fared, and compare with Step 1 position.
- Step 5** Check that the company is financially viable after the reconstruction.

In addition, you should remember the following points when designing the reconstruction.

- Anyone providing extra finance for an ailing company must be persuaded that the expected return from the extra finance is attractive. A profit forecast and a cash forecast or a funds flow forecast will be needed to provide reassurance about the company's future, to creditors and to any financial institution that is asked to introduce new capital into the company. The reconstruction must indicate that the company has a good chance of being financially viable.
- The actual reconstruction might involve the creation of new share capital of a different nominal value to existing share capital, or the cancellation of existing share capital. It can also involve the conversion of equity to debt, debt to equity, and debt of one type to debt of another.
- For a scheme of reconstruction to be acceptable it needs to treat all parties fairly (for example, preference shareholders must not be treated with disproportionate favour in comparison with equity shareholders), and it needs to offer creditors a better deal than if the company went into liquidation. If it did not, the creditors would most likely press for a winding-up of the company. A reconstruction might therefore include an arrangement to pay off the company's existing debts in full.



#### Professional skills focus: Structuring problems and solutions

You are expected to be able to structure information from various sources into suitable formats for analysis. When considering a reconstruction scheme, working through the five recommended steps for designing reconstructions will help you to structure the information provided in the question into a suitable format before making a recommendation.

## 3.2 Financial reconstructions

A financial reconstruction scheme is a scheme whereby a company reorganises its capital structure, including leveraged buyouts, leveraged recapitalisations and debt for equity swaps.

There are many possible reasons why management would wish to restructure a company's finances, such as when a company is in danger of being put into liquidation, owing debts that it cannot repay, and so the creditors of the company agree to accept securities in the

company, perhaps including equity shares, in settlement of their debts. On the other hand, a company may be willing to undergo some financial restructuring to better position itself for long-term success.

### 3.2.1 Leveraged capitalisations

In leveraged recapitalisation a firm replaces the majority of its equity with a package of debt securities consisting of both senior and subordinated debt. Leveraged capitalisations are employed by firms as defence mechanisms to protect them from takeovers. A high level of debt in a company discourages corporate raiders who will not be able to borrow against the assets of the target firm in order to finance the acquisition.

In order to avoid the possible financial distress arising from a high level of debt, companies that engage in leveraged capitalisation should be relatively debt free, have stable cash flows and should not require substantial ongoing capital expenditure in order to retain their competitive position.

### 3.2.2 Debt for equity swaps

A second way in which a company may change its capital is to issue a debt/equity or an equity/debt swap. In the case of an equity/debt swap, all specified shareholders are given the right to exchange their stock for a predetermined amount of debt (ie, bonds) in the same company. A debt for equity swap works the opposite way: debt is exchanged for a predetermined amount of equity (or stock). The value of the swap is determined usually at current market rates, but management may offer higher exchange values to entice shareholders and debtholders to participate in the swap. After the swap takes place, the preceding asset class is cancelled for the newly acquired asset class.

One possible reason that a company may engage in debt for equity swaps is because the company must meet certain contractual obligations, such as maintaining a debt: equity ratio below a certain number. Also, a company in financial difficulty may persuade investors in its debt to accept equity in exchange for debt, as part of a financial reconstruction scheme: the company might otherwise default on interest payments due to lack of cash.



### Worked example: Financing policy

For illustration, assume there is an investor who owns a market value of £2,000 in ABC plc shares. ABC has offered all shareholders the option to swap their shares for debt at a rate of 1.5:1. What is the value of the debt that the investor will receive?

#### Solution

The investor would receive, if he elected to take the swap, £3,000 ( $1.5 \times £2,000$ ) worth of debt, gaining £1,000 for switching asset classes. However, the investor would lose all rights as a shareholder, such as voting rights, if he swapped his equity for debt.

### 3.2.3 Other methods of refinancing

Refinancing a loan or a series of loans might help companies to pay off high interest debt and replace it with lower interest debt. Alternatively, debt can be replaced with more flexible debt, having perhaps a longer term to maturity or fewer restrictive covenants.

As well as reducing interest payments, companies may refinance to reduce the risk associated with an existing loan. For example, rather than having a variable rate loan, companies may switch to a fixed rate loan, which will eliminate the uncertainty of how much interest will have to be paid in any particular month.



### 3.2.4 Dividend policy

A company may change its dividend policy as part of financial restructuring and increase retained earnings and therefore its equity base.

### 3.3 Financial reconstruction and firm value

The impact of a financial reconstruction scheme on the value of the firm can be assessed in terms of its effect on the growth rate of the company, its risk and its required rate of return.

### 3.4 Effect on growth rate

The impact of changes in financial policy on the value of a firm can be assessed through the formula we used when assessing dividend policy.



#### Worked example: Financing policy

A firm currently has a debt: equity ratio of 0.12 and an ROA equal to 15%. The firm could raise the debt: equity ratio up to 0.30 without increasing the risk of bankruptcy. The firm plans to borrow and repurchase equity shares to reach this optimal ratio. The interest rate is expected to increase from 7% to 9%. The tax rate is 21% and the retention rate is 50%. Find the impact of the increase in debt on the growth rate.

#### Solution

Before the increase in the debt ratio we have:

$$\text{ROA} = 0.15 \quad \text{D/E} = 0.12 \quad i = 0.07$$

$$b = 0.50 \quad t = 0.21$$

$$g = b \left( \text{ROA} - \frac{\text{D}}{\text{E}} (\text{ROA} - i(1-t)) \right)$$

$$g = 0.5(0.15 + 0.12(0.15 - 0.07(1 - 0.21))) = 0.0807$$

After the increase in the debt ratio we have:

$$\text{ROA} = 0.15 \quad \text{D/E} = 0.30 \quad i = 0.09$$

$$b = 0.50 \quad t = 0.21$$

$$g = b \left( \text{ROA} + \frac{\text{D}}{\text{E}} (\text{ROA} - i(1-t)) \right)$$

$$g = 0.5(0.15 + 0.30(0.15 - 0.09(1 - 0.21))) = 0.0868$$

The increase in the debt: equity ratio will raise the growth rate from 8.07% to 8.68%.

---

#### 3.4.1 Effect on systematic risk

The effect of a reconstruction on the systematic risk of a company can be considered by calculating the revised geared beta using the formula:

$$\beta_e = \beta_a \left( 1 + \left[ \frac{D(1-T)}{E} \right] \right)$$

Where:  $\beta_a$  = the asset beta

$\beta_e$  = the geared beta

A higher level of debt will increase the geared beta of a company, and a lower level of debt will reduce it.



### Worked example: Effect on risk

A firm currently has a debt: equity ratio of 0.12 and an asset beta of 0.9. The firm could raise the debt: equity ratio up to 0.30 without increasing the risk of bankruptcy. The firm plans to borrow and repurchase stock to reach this optimal ratio. The interest rate is expected to increase from 7% to 8%. The tax rate is 21%. Find the impact of the increase in debt on the geared beta.

#### Solution

Before the increase in the debt ratio we have:

$$D/E = 0.12$$

$$T = 0.21$$

$$\beta_a = 0.9$$

$$\beta_e = \beta_a \left( 1 + [D(1 - T)/E] \right) = 0.9(1 + 0.12[1 - 0.21]) = 0.985$$

After the increase in the debt ratio we have:

$$D/E = 0.30$$

$$T = 0.21$$

$$\beta_a = 0.9$$

The new beta following the change in the level of debt will be:

$$\beta_e = \beta_a \left( 1 + [D(1 - T)/E] \right) = 0.9(1 + 0.30[1 - 0.21]) = 1.113$$

## 3.5 Financial reconstruction and assurance

When a company proposes a scheme of reconstruction, some investors in the company will usually be offered less attractive terms. Investors in the company's debt may be asked to swap debt into equity, or to agree to deferral of the redemption date for the debt. Investors may be unwilling to agree to the reconstruction terms offered unless they have reasonable confidence in the ability of the company to survive and recover in its reconstructed form.

The company's management may therefore engage an accountancy firm to provide its investors with assurance about the financial forecasts that management have prepared.

Assurance engagements on financial forecasts are discussed in general terms in the chapter Data analysis and later in this chapter in relation to the going concern assumption and financial reporting.

## 3.6 Case study in financial reconstruction

Crosby and Dawson Ltd is a private company that has for many years been making mechanical timing mechanisms for washing machines. The management was slow to

appreciate the impact that new technology would have and the company is now faced with rapidly falling sales.

In July 20X1, the directors decided that the best way to exploit their company's expertise in the future was to diversify into the high precision field of control linkages for aircraft, rockets, satellites and space probes. By January 20X2, some sales had been made to European companies and sufficient progress achieved to arouse considerable interest from the major aircraft manufacturers and from NASA in the US. The cost, however, had been heavy. The company had borrowed

£2,500,000 from the Vencap Merchant Bank plc and a further £500,000 from other sources. Its bank overdraft was at its limit of £750,000 and the dividend on its cumulative preference shares, which was due in December, had been unpaid for the fourth year in succession. On 1 February 20X2, the company has just lost another two major customers for its washing machine timers. The financial director presents the following information.

If the company remains in operation, the expected cash flows for the next five periods are as follows.

	9 months to 31.12.X2	20X3	Years ending 20X4	31 De- cember 20X5	20X6
	£'000	£'000	£'000	£'000	£'000
Receipts from sales	8,000	12,000	15,000	20,000	30,000
Payments to suppliers	6,000	6,700	7,500	10,800	18,000
Purchase of equipment	1,000	800	1,600	2,700	2,500
Other expenses	1,800	4,100	4,200	4,600	6,400
Interest charges	800	900	700	400	100
	9,600	12,500	14,000	18,500	27,000
Net	(1,600)	(500)	1,000	1,500	3,000

The above figures are based on the assumption that the present capital structure is maintained by further borrowings as necessary.

### Statements of financial position

			Projected
<b>Assets employed</b>	<b>31.12.X0</b>	<b>31.12.X1</b>	<b>31.3.X2</b>
	£'000	£'000	£'000
<b>Non-current assets</b>			
Freehold property	2,780	2,770	2,760
Plant and machinery	3,070	1,810	1,920
Motor vehicles	250	205	200
Deferred development expenditure	-	700	790
<b>Current assets</b>	<b>31.12.X0</b>	<b>31.12.X1</b>	<b>31.3.X2</b>
Inventories	890	970	1,015
Receivables	780	795	725
	1,670	1,765	1,740

**Current liabilities**

Trade payables	1,220	1,100	1,960
Bank overdraft (unsecured)	650	750	750
	1,870	1,850	2,710
	(200)	(85)	(970)

**Long-term liabilities**

10% debentures 20X8 (secured on freehold property)	5,900	5,400	4,700
Other loans (floating charges)	(1,000)	(1,000)	(1,000)
	-	(3,000)	(3,000)
	4,900	1,400	700
Ordinary shares of £1	3,500	3,500	3,500
8% cumulative preference shares	1,000	1,000	1,000
Accumulated reserves/(accumulated deficit)	400	(3,100)	(3,800)
	4,900	1,400	700

**Other information**

- The freehold property was revalued on 31 December 20X0. It is believed that its net disposal value at 31 March 20X2 will be about £3,000,000.
- A substantial quantity of old plant was sold during the second six months of 20X1 to help pay for the new machinery needed. It is estimated that the breakup value of the plant at 31 March 20X2 will be about £1,400,000.
- The motor vehicles owned at 31 March 20X2 could be sold for £120,000.
- Much of the work done on the new control linkages has been patented. It is believed that these patents could be sold for about £800,000, which can be considered as the breakup value of development expenditure incurred to 31 March 20X2.
- On liquidation, it is expected that the current assets at 31 March 20X2 would realise £1,050,000. Liquidation costs would be approximately £300,000.

**Requirement**

Suggest a scheme of reconstruction that is likely to be acceptable to all the parties involved. The ordinary shareholders would be prepared to invest a further £1,200,000 if the scheme were considered by them to be reasonable.

Assume that if any new debt is issued in a reconstruction scheme, the appropriate rate of interest would be 15%. Ignore taxation.

(A full solution follows. Complete the first step yourself as a short question.)

**Interactive question 9: Proceeds from liquidation**

Ascertain the likely result of Crosby & Dawson Limited (see above) going into liquidation as at 31 March 20X2.

See **Answer** at the end of this chapter.

**Solution to remainder of the example**

If the company was forced into liquidation, the debentures and other loans would be met in full but after allowing for the expenses of liquidation (£300,000) the bank and

trade payables would receive a total of £2,070,000 or 76p per pound. The ordinary and preference shareholders would receive nothing.

If the company remains in operation, the cash position will, at first, deteriorate but then improve from 20X4 onwards. By the end of 20X6 net assets will have increased by £12,000,000 before depreciation (plant £8,600,000 and cash £3,400,000). If the figures can be relied on and the trend of results continues after 20X6 the company will become reasonably profitable.

In the immediate future, after taking into account the additional amounts raised from the existing ordinary shareholders, the company will require finance of £400,000 in 20X2 and £500,000 in 20X3.

Vencap might be persuaded to subscribe **cash for ordinary shares**. It is unlikely that the company's clearing bank would be prepared to accept any shares, but as it would only receive 76p per pound on a liquidation it may be prepared to transfer part of the overdraft into a (say) five-year loan while maintaining the current overdraft limit. It is unlikely that a suitable arrangement can be reached with the trade creditors, as many would be prepared to accept 76p per pound, rather than agree to a moratorium on the debts or take an equity interest in the company.

(a) A possible scheme might be as follows.

The **existing ordinary shares** to be **cancelled** and **ordinary shareholders** to be **issued** with

(b) £1,200,000 **new** £1 **ordinary shares** for cash.

The **existing preference shares** to be **cancelled** and the holders to be issued with £320,000 **new**

(c) £1 **ordinary shares** at par.

The **existing debentures** to be **cancelled** and replaced by £800,000 **15% secured debentures**

(d) with a 15-year term and the holders to be issued with £400,000 of new £1 ordinary shares at par.

(e) The **loan** 'from other sources' to be **repaid**.

(f) The **Vencap Bank to receive** £2,000,000 **15% secured debentures** with a **15-year term** in part settlement of the existing loan, to be issued £680,000 **new ordinary shares** in settlement of the balance and to **subscribe cash for** £800,000 of new ordinary shares.

The clearing bank to **transfer the existing overdraft** to a **loan account repayable over 5 years** and to keep the overdraft limit at £750,000. Both the loan and overdraft to be secured by a floating charge.

Comments **Debenture holders**

The debentures currently have **more than adequate asset backing**, and their current nominal yield is 10%. If the reconstruction is to be acceptable to them, they must have either **the same asset backing** or some compensation in terms of increased nominal value and higher nominal yield. Under the scheme they will receive securities with a total nominal value of £1,200,000 (an increase of £200,000) and an increase in total yield before any ordinary dividends of £20,000. The new debentures issued to Vencap can be secured on the freehold property (see below).

Loans from other **sources**

It has been suggested that the 'loans from other sources' should be **repaid** as, in general, it is easier to arrange a successful reconstruction that involves fewer parties.

## Vencap

Vencap's existing loan of £2,500,000 will, under the proposed scheme, be changed into £2,000,000 of 15% debentures secured on the property and £680,000 of ordinary shares. This gives total loans of £2,800,000 secured on property with a net disposal value of £3,000,000. This is **low asset cover** which might increase if property values were to rise. The scheme will increase **the nominal value of Vencap's interest** by £180,000 with an improvement in security on the first £2,000,000 to compensate for the risk involved in holding ordinary shares. It has also been suggested that Vencap should be asked to subscribe £800,000 for new ordinary shares. From the company's point of view, issuing new equity is to be preferred to loan stock, as it will improve the gearing position.

## The clearing bank

In a liquidation now, the clearing bank would **receive approximately** £573,000. In return for the possibility of receiving the full amount owed to it, it is being asked under the scheme to **advance a further** £750,000. By way of compensation, it is receiving the **security of a floating charge**.

## Preference shares

In a liquidation at the present time, the preference shareholders would receive nothing. The issue of 320,000 £1 ordinary shares should be acceptable, as it is **equivalent to their current arrears of dividend**.

## Ordinary shareholders

In a liquidation, the ordinary shareholders would also receive nothing. Under the scheme, they will **lose control of the company** but, in exchange for their additional investment, will still hold about 35.3% of the equity in a company which will have sufficient funds to finance the expected future capital requirements.

## Cash flow forecast, on reconstruction

	<b>£'000</b>
Cash for new shares from equity shareholders	1,200
Cash for new shares from Vencap	800
	2,000
Repayment of loan from other sources	(500)
Cash available	1,500

The overdraft of £750,000 is converted into a long-term loan, leaving the company with a further £750,000 of overdraft facility to use.

## Adequacy of funds

The statement of assets and liabilities below shows the company's position after the implementation of the scheme but before any repayments to trade payables.

<b>Non-current assets</b>	£'000	£'000
Freehold property		2,760
Plant and machinery		1,920
Motor vehicles		200
Deferred development expenditure		790

<b>Current assets</b>		5,670
Inventories	1,015	
Receivables	725	
Cash	1,500	
	3,240	
Less current liabilities: Trade payables	1,960	
		1,280
Less long-term liabilities		6,950
15% debentures		(2,800)
Loan from clearing bank		

#### Non-current assets

	<b>£'000</b>	<b>£'000</b>
		(750)
		<u>3,400</u>
Ordinary shares of £1		<u>3,400</u>

It would seem likely that the company will have to make a bigger investment in working capital (ignoring cash) for the following reasons.

- Presumably a substantial proportion of the sales will be exports which generally have a longer collection period than domestic sales.
- It is unlikely that the trade payables will accept the current payment position (average credit takes over two months) in the long term.

#### Will the reconstructed company be financially viable?

Assuming that net current assets excluding cash and any overdraft will, by the end of 20X2, rise from the projected figure of - £220,000 (1,015,000 + 725,000 - 1,960,000) to £500,000 and increase in proportion to sales receipts thereafter, that the equipment required in 20X2 and 20X3 will be leased on 5-year terms and that the interest charges will be approximately the same as those given in the question, then the expected cash flows on implementation could be as shown below.

	<b>9 months to</b>				
	<b>31.12.X2</b>	<b>20X3</b>	<b>20X4</b>	<b>20X5</b>	<b>20X6</b>
	£'000	£'000	£'000	£'000	£'000
Receipts from sales	8,000	12,000	15,000	20,000	30,000
Purchase of equipment	-	-	1,600	2,700	2,500
Payments to suppliers	6,000	6,700	7,500	10,800	18,000
Other expenses	1,800	4,100	4,200	4,600	6,400
Interest charges	800	900	700	400	100
Lease payments (say)	200	360	360	360	360
Bank loan repayment (say)	150	150	150	150	150
Invt. in working capital	720	250	190	310	630
	9,670	12,460	14,700	19,320	28,140
Net movement	(1,670)	(460)	300	680	1,860
Cash balance b/f	1,500	(170)	(630)	(330)	350
Cash balance c/f	(170)	(630)	(330)	350	2,210

These figures suggest that with an agreed overdraft limit of £750,000 the company will have **sufficient funds** to carry it through the next five years, assuming that the figures are reliable and that no dividends are paid until perhaps 20X4 at the earliest.

This scheme of reconstruction might not be acceptable to all parties, if the **future profits of the company** seem **unattractive**. In particular, Vencap and the clearing bank might be reluctant to agree to the scheme. In such an event, an alternative scheme of reconstruction must be designed, perhaps involving another provider of funds (such as another venture capitalist). Otherwise, the company will be forced into liquidation.



### Professional skills focus: Assimilating and using information

A question on reconstructions will present you with a lot of information in the scenario. One of the professional skills assessed in the CA exams considers your ability to evaluate the relevance of information provided. You could be asked to evaluate the effects of a reconstruction scheme and compare this option with the effects of liquidation. It is therefore important that you select the correct information from the scenario and present your analysis using a clear layout.

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## 3.7 Refinancing



### Definition

**Refinancing:** The replacement of existing finance with new finance. Typically when existing debt matures and reaches its redemption date, new debt is issued and the proceeds from the new issue are used to redeem the maturing debt.

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### 3.7.1 Refinancing to reduce interest payments

Refinancing can be undertaken at relatively small levels – such as individuals refinancing a mortgage – or at a high level involving companies refinancing multi-million pound debts. Whatever the level, the aim is often to reduce costs, normally interest payments, by switching to a loan with a lower interest rate or by extending the period of the loan. The money saved might be used to pay off some of the principal of the loan, which can reduce payments even further.

### 3.7.2 Refinancing to reduce risk

As well as reducing interest payments, companies may refinance to reduce the risk associated with an existing loan. For example, rather than having a variable rate loan, companies may switch to a fixed rate loan, which will eliminate the uncertainty of how much interest will have to be paid in any particular month. This might be particularly useful for small businesses that are just starting up, as they face a great deal of risk anyway and any opportunities to reduce risk should be welcomed.

### 3.7.3 Refinancing to pay off debts

Refinancing a loan or a series of loans might help companies to pay off high interest debt and replace it with lower interest debt. Alternatively, debt can be replaced with more flexible debt having perhaps a longer term to maturity or fewer restrictive covenants. Individuals are often urged to do this via advertisements urging them to consolidate their debts into one debt. Non-



tax deductible debt might be replaced by tax-deductible debt, thus allowing the borrower to take advantage of tax deductions as well as potential reductions in interest payments.

### 3.7.4 Issues to be aware of when thinking about refinancing

Although refinancing may appear to be an attractive option, there may be some problems. Some loans have penalty clauses that come into play if the loans are paid off early, whether partially or in full. In addition, there are usually closing and transaction fees associated with refinancing a loan. By the time penalty clauses and other fees are taken into consideration, they may actually outweigh the savings being made. Therefore, refinancing should only be considered as a source of finance if the short-term or long-term savings are likely to be substantial.

Depending on the type of loan used to refinance existing debt, lower initial payments may give way to larger total interest costs over the life of the loan. The borrower might also be exposed to greater risks than the existing loan. It is therefore vital that any upfront, variable and ongoing refinancing costs are researched thoroughly before deciding whether to refinance existing debt.

## 3.8 Securitisation

Securitisation is the process of converting illiquid assets or a future revenue stream into marketable securities.

When a portfolio of assets is securitised, the newly issued debt securities are called asset-backed securities (ABS). When a bank securitises a portfolio of mortgage loans, the new securities are called mortgage-backed securities.

Securitisation started with banks converting their long-term loans (such as mortgages) into securities and selling them to institutional investors. One of the problems of banks as financial intermediaries is the fundamental mismatch between the maturities of assets and liabilities. Securitisation of loans and sale to investors reduces the mismatch problem and a bank's overall risk profile.

Banks have also been subject to rules for maintaining a minimum amount of capital in relation to their risky assets: these are known as capital adequacy rules. By selling mortgages and other loans through securitisation, banks were able to reduce the amount of capital they were required to hold.

Securitisation of bank loans was also attractive to investors who might prefer to invest in the loans themselves rather than in the shares of a bank.

It is also possible to securitise a future income stream, such as the future revenues from an oil field (oil companies) and the future income from the sale of football season tickets (football clubs). In a typical ABS transaction, the first step is to identify the underlying asset pool or revenue stream that will serve as collateral for the new securities. The assets in this pool should be relatively homogeneous with respect to credit, maturity and interest rate risks. Common examples of ABS, as well as mortgage loans and corporate loans, include credit card receivables, trade receivables and car loans.

Once a suitably large and homogenous asset pool is identified, the pooled assets are sold to a trust or other bankruptcy-remote, special purpose financing vehicle (SPV).

- (a) The owner of the assets (or future revenue stream) sells the assets or future revenues to the SPV.
- (b) The SPV pays for the assets or revenue with money raised from issuing debt securities. (The SPV has minimal equity.) The debt securities are issued in different classes or 'tranches', each with a different maturity, interest rate and credit rating. The securities are purchased by investors, typically institutional investors.

- (c) The income from the assets or the revenue stream is then used to pay interest to the holders of the SPV securities, and to redeem these securities at maturity.
- (d) When a bank securitises a portfolio of assets, it may continue to collect the payments on the loans, as administrator for the SPV, and will remit the money to the SPV after deducting a fee for its services.

The development of securitisation has led to disintermediation and a reduction in the role of financial intermediaries as borrowers can reach lenders directly.



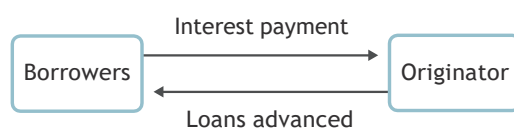
## Definition

**Disintermediation:** describes a decline in the traditional deposit and lending relationship between banks and their customers and an increase in direct relationships between the **ultimate suppliers** and **users** of financing.

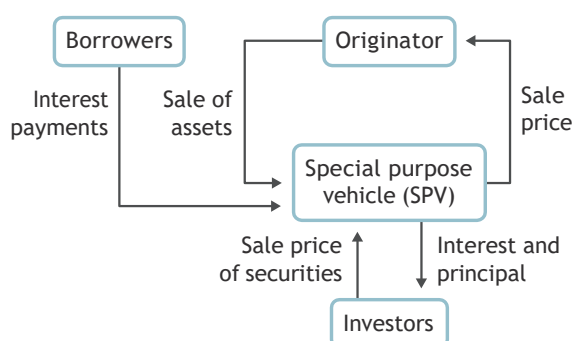
Figure 14.1 below illustrates the cash flows associated with securitisation

Figure 14.1: Cash flows associated with securitisation

### Cash flows before securitisation



### Cash flows after securitisation



## 3.9 Legal consequences of financial distress

You will recall from your law studies that directors have to be very careful if their company gets into financial difficulties. Carrying on trading for too long before taking action may mean that they are guilty of fraudulent or wrongful trading.

### 3.9.1 Fraudulent and wrongful trading

The criminal offence of fraudulent trading occurs under the Companies Act 2006 where a company has traded with **intent** to defraud creditors or for any fraudulent purpose. Offenders are liable to imprisonment for up to 10 years or a fine (s 993).

There is also a civil offence of the same name under s 213 of the Insolvency Act 1986 but it only applies to companies which are in liquidation. Under this offence courts may declare that **any persons** who were knowingly parties to carrying on the business in this fashion shall be liable for the debts of the company.

Various rules have been established to determine **what is fraudulent trading**.

- (a) Only persons who **take the decision** to carry on the company's business in this way or play some active part are liable.
- (b) **'Carrying on business'** can include a single transaction and also the mere payment of debts as distinct from making trading contracts.
- (c) It relates not only to **defrauding creditors**, but also to carrying on a business for the purpose of any kind of fraud.

Directors will be liable for wrongful trading if the liquidator proves the following.

- (a) The director(s) of the insolvent company knew, or should have known, that there was no reasonable prospect that the company could have avoided going into insolvent liquidation.
- (b) The director(s) did not take sufficient steps to minimise the potential loss to the creditors. Directors have an obligation in these circumstances to maximise creditors' interests.

## 3.10 Management of companies in financial distress

### 3.10.1 Summary of formal insolvency procedures

Some formal insolvency procedures are designed to try to help rescue a company whereas procedures such as liquidation recognise that the business has failed and cannot be saved.

Procedure	Key features
<b>Administration</b>	Moratorium on debts available Proposals put to creditors Approval by >50% in value
<b>Company voluntary arrangement</b>	Moratorium only available for small companies Proposals put to creditors Approval requires at least 75% (in value) of the creditors to support
<b>Administrative receivership</b>	Less common than administration No moratorium Administrative receiver acts for the appointing bank Unsecured creditors are not involved
<b>Scheme of arrangement under Part 26 of Companies Act 2006</b>	No moratorium Of use generally in complex cases only Complicated voting structure but can bind unhappy creditors

We now look further at the arrangements for managing companies that apply under the most common procedures, administration and a company voluntary arrangement.

### 3.10.2 Administration

In an administration the powers of management are subjugated to the authority of the administrator and managers can only act with their consent. The administrator will set out proposals for achieving the aim of administration or set out why it is not reasonable or practicable for the company to be rescued. If the company is to continue, the administrator may do **anything necessarily expedient** for the management of the affairs, business and property of the company.

Administrators have the same powers as those granted to directors and the following specific powers to:

- remove or appoint a director
- call a meeting of members or creditors
- apply to court for directions regarding the carrying out of his functions
- make payments to secured or preferential creditors
- with the permission of the court, make payments to unsecured creditors

### 3.10.3 Company voluntary arrangement (CVA)

Under a company voluntary arrangement (CVA) directors retain control of the company (albeit under supervision). A CVA allows the directors to continue to manage the company – they set out their terms in the proposal for the CVA that is put to creditors. An insolvency practitioner acting as nominee will decide whether the proposal is:

- fit to be put to the creditors
  - fair
  - feasible, ie, has a real prospect of implementation
  - an acceptable alternative to liquidation or other formal insolvency processes
- (a) The directors must establish that trading on will be viable and should be warned of the risks of wrongful trading. Consequently, they should take the following steps.
  - (b) Ensure adequate funding available.
  - (c) Prepare cash flow forecasts, a business plan and projections. They must show that both ongoing trading is viable and that dividends to creditors shown in the proposal are likely to be paid.
  - (d) Obtain independent confirmation from the bank that it will support the proposal and continue to provide funding.
  - (e) Consider other sources of funds.
  - (f) Investigate whether the directors have the support of management, staff, key suppliers and customers.

Consider whether any major contracts with customers give the right to terminate if the company is in an insolvency procedure.

## 3.11 Corporate reporting consequences

Going concern means that an entity is normally viewed as continuing in operation for the **foreseeable future**. Financial statements are prepared on the going concern basis unless management either intends to liquidate the entity or to cease trading or has no realistic alternative but to do so.

IAS 1, *Presentation of Financial Statements* makes the following points:

- In assessing whether the entity is a going concern management must look at least **12 months** into the future measured from the **end of the reporting period** (not from the date the financial statements are approved).
- **Uncertainties** that may cast significant doubt on the entity's ability to continue should be disclosed.
- If the going concern assumption is not followed that fact must be disclosed together with:
  - the **basis** on which financial statements have been prepared
  - the **reasons** why the entity is not considered to be a going concern

- IFRSs do not prescribe the basis to be used if the going concern assumption is no longer considered appropriate. A **liquidation or breakup basis** may be appropriate, but the terms of the insolvency arrangement may also dictate the form of preparation.

When making the judgement of whether the going concern basis is not appropriate, the following indications taken from ISA 570, *Going Concern* may be significant:

- (a) **Financial indicators**, eg, recurring operating losses, net liability or net current liability position, negative cash flow from operating activities, adverse key financial ratios, inability to obtain financing for essential new product development or other essential investments, default on loan or similar agreements, arrears in dividends, denial of usual trade credit from suppliers, restructuring of debt, non-compliance with statutory capital requirements, need to seek new sources or methods of financing or to dispose of substantial assets
- (b) **Operating matters**, eg, loss of key management without replacement, loss of a major market, key customers, licence, or principal suppliers, labour difficulties, shortages of important supplies or the emergence of a highly successful competitor
- (c) **Other matters**, eg, pending legal or regulatory proceedings against the entity, changes in law or regulations that may adversely affect the entity; or uninsured or underinsured catastrophe such as a drought, earthquake or flood

In relation to **going concern**, IAS 10, *Events After the Reporting Period* states that, where operating results and the financial position have deteriorated after the reporting period, it may be necessary to reconsider whether the going concern assumption is appropriate in the preparation of the financial statements.

### 3.12 Assurance work and the going concern assumption

You should be familiar with the requirements of ISA570 (Revised June 2016) that auditors need to consider whether there are events or conditions that may cast significant doubt on the going concern basis of accounting. The auditor should evaluate any management assessment of the company's ability to continue as a going concern. If there are doubts the auditor should evaluate plans for future actions and any cash flow forecasts. Additional procedures such as review of cash flow and profitability, loan and financial support terms, operating capability and possible legal action may be required.

In addition, auditors may have to carry out assurance work to reassure interested parties that proposed financial reconstructions are likely to work. This is likely to include:

- consideration of the commercial viability and financial assumptions made in any forecasts
- consideration of whether the financial forecasts produced are consistent with the assumptions in amount and timing
- assessment of whether the company is likely to meet any fresh commitments that it has assumed
- risks that are likely to significantly affect whether the company achieves its objectives consideration of whether the proposed reconstruction is in accordance with the wishes of all the parties involved

Areas that may particularly concern the reporting accountant during the review will include the following:

- (a) **The reliability of forecasts.** The fact that the company has been in trouble may have been linked to overoptimistic forecasts in the past or systems and information that provided an inadequate basis for previous projections.
- (b) **Consistency of forecast accounting statements with** historical financial statements,

particularly consistency and appropriateness of accounting policies.

- (c) **Projected evidence of income.** The reporting accountant may need external evidence to support income projections, for example future orders, customer interest, market surveys. If income is expected to grow, certain costs (selling, distribution) would also be expected to increase (though perhaps not in direct correlation).
- (d) **Changes in cost base.** The forecasts may well include assertions that costs can be lowered, and the accountant will need to assess how successful cost control has been in the past, whether there is a programme for cost reduction, and whether this programme appears realistic and can be done without jeopardising attempts to increase income.
- (e) **Sufficiency of finance.** The accountant will need to assess whether the finance that is assumed to be available will be enough to sustain the changes in activities and operations required to make the reconstruction a success.
- (f) **The form of report.** In particular the caveats that need to be included about the achievability of the forecasts.



### Professional skills focus: Applying judgement

When deciding whether a company is a going concern or not, you will have to apply judgement. You will need to consider many factors such as financial indicators, reliability of forecast, specific operating matters any pending legal matters.



### Interactive question 10: Financial reconstruction

Adrian Walsh produces hand-made furniture. The company has been reorganised twice over the last 10 years, but is currently facing financial difficulties which have been made worse by the recent cancellation of three major orders by important customers.

The company's overdraft limit of £3 million has been reached and the bank has refused to grant any further credit. No dividends have been paid on the cumulative preference shares for five years, and the shareholders are becoming impatient.

The company has just completed a statement of assets and liabilities.

#### Statement of assets and liabilities at 31 December 20X9

	£'000	£'000
<b>Non-current assets</b>		
Buildings (freehold)		11,000
Plant and equipment		7,750
Delivery vehicles		800
Deferred development expenditure		3,150
<b>Non-current assets</b>	£'000	£'000
<b>Current assets</b>		
Inventory	4,000	
Trade receivables	2,900	
	6,900	

**Current liabilities**

Trade payables	7,750	
Bank overdraft	3,000	
	10,750	

Current assets less current liabilities (3,850)

**Non-current liabilities**

8% loan (20Y5) secured on buildings	4,000	
Other loans (floating charges)	12,000	
		(16,000)

2,850

Ordinary shares of £1 each 14,000

7% cumulative preference shares 4,000

Retained earnings/(deficit) (15,150)

2,850

Other information is available as follows:

- The market value of the freehold buildings is estimated at £11,250,000.
- Delivery vehicles have a current resale value of £500,000.
- Plant and equipment could be sold for approximately £5,000,000
- Approximate liquidation costs are £1,250,000. The patents to the furniture designs could be sold to a rival company for an estimated
- £3,125,000. This is considered to be the breakup value of the development expenditure.
- Current assets could be sold for approximately £4,000,000.

The company wants to avoid liquidation as it is due to launch a design and manufacturing service for wooden gifts, from jewellery boxes to rocking horses, which is expected to be very successful.

A scheme of reconstruction has been suggested as follows:

- Cancel existing ordinary shares and issue existing ordinary shareholders with £5,000,000 new £1 ordinary shares for £1 cash each.
- Cancel existing preference shares and issue existing holders with £1,250,000 new £1 ordinary shares.
- Repay the bank overdraft. Maintain existing overdraft limit but secure it with a floating charge.
- Cancel the existing secured loan. Replace it with a £3,125,000 8% secured debenture loan (5-year maturity) and £1,500,000 ordinary shares.
- The floating charges loans would be replaced with an £8,000,000 12% loan (secured on the freehold buildings) and £2,750,000 in £1 new ordinary shares.

The company estimates that, with this restructuring in place, earnings before interest and tax will increase to £3,600,000.

The current P/E ratio for the industry is 10.8. Tax is charged at 21%.

The company will be preparing full forecasts for profit and financial position over the next few years on the assumption that the reconstruction goes ahead in its proposed form.

### Requirement

Calculate whether the reconstruction scheme is likely to succeed and describe the assurance procedures that an accountant should undertake in order to provide a report on the forecasts for profit and financial position for Adrian Walsh when they have been prepared.

See **Answer** at the end of this chapter.

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## 4 Demergers and disposals



### Section overview

Unbundling is a portfolio restructuring strategy that involves the disposal and sales of assets, facilities, production lines, subsidiaries, divisions or product units.

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Unbundling can be either voluntary or it can be forced on a company. A company may voluntarily decide to divest part of its business for strategic, financial or organisational reasons. An involuntary unbundling, on the other hand, may take place for regulatory or financial reasons. The main forms of unbundling are:

- (a) divestments
- (b) demergers
- (c) sell-offs
- (d) spin-offs
- (e) carve-outs
- (f) going private/Leveraged buyouts
- (g) management buyouts

### 4.1 Divestments



#### Definition

**Divestment:** The partial or complete sale or disposal of physical and organisational assets, the shutdown of facilities and reduction in workforce in order to free funds for investment in other areas of strategic interest.

In a divestment the company ceases the operation of a particular activity in order to concentrate on other processes. The rationale for divestment is normally to reduce costs or to increase ROA. Divestments differ from the other forms of unbundling because they do not require the formation of a new company.

#### 4.1.1 Reasons for divestment

- (a) Divestments may take place as a **corrective action** in order to reverse unsuccessful previous acquisitions, especially when the acquisition has taken place for diversification purposes. A subsidiary that is unprofitable or incompatible with existing operations may be sold to allow the firm to concentrate on areas where it is more successful.



- (b) Divestments may also take place as a **response to a cyclical downturn** in the activities of a particular unit or line of business.
- (c) Divestments may be proactive in the sense that a company may want to **exit lines of business** which have become obsolete or are too small, and redeploy resources to activities with a higher return on invested capital.

## 4.2 Demergers



### Definition

**Demerger:** The opposite of a merger. It is the splitting up of a corporate body into two or more separate independent bodies.

For example, the ABC Group plc might demerge by splitting into two independently operating companies, AB plc and C plc. Existing shareholders are given a stake in each of the new separate companies.

Demerging, in its strictest sense, stops short of selling out.

#### 4.2.1 Advantages of demergers

- (a) A demerger should ensure **greater operational efficiency and greater opportunity to realise value**. A two-division company with one loss-making division and one profit-making, fast-growing division may be better off splitting the two divisions. The profitable division may acquire a valuation well in excess of its contribution to the merged company.
- (b) A demerger should ensure that **share prices reflect the true value of the underlying operations**. In large diversified conglomerates, so many different businesses are combined into one organisation that it becomes difficult for analysts to understand them fully.
- (c) A demerger can **correct a lack of focus**, where senior management have to oversee and monitor a large number of businesses.

#### 4.2.2 Disadvantages of demergers

- (a) **Economies of scale** may be **lost**, where the demerged parts of the business had operations in common to which economies of scale applied.
- (b) The **smaller companies** which result from the demerger will have **lower turnover**, profits and status than the group before the demerger.
- (c) There may be **higher overhead costs** as a percentage of turnover, resulting from (b).
- (d) The **ability** to raise **extra** finance, especially debt finance, to support new investments and expansion may be reduced.
- (e) **Vulnerability to takeover** may be **increased**. The impact on a firm's risk may be significant when a substantial part of the company is spun off. The result may be a loss in shareholder value if a relatively low risk element is unbundled.

## 4.3 Sell-offs



### Definition

**Sell-off:** A form of divestment, involving the sale of part of a company to a third party, usually another company. Generally cash will be received in exchange.

The extreme form of a sell-off is where the entire business is sold off in a liquidation. In a voluntary dissolution, the shareholders might decide to close the whole business, sell off all the assets and distribute net funds raised to shareholders.

#### 4.3.1 Reasons for sell-off

- (a) As **part of its strategic planning**, a company has decided to restructure, concentrating management effort on particular parts of the business. Control problems may be reduced if peripheral activities are sold off.
- (b) A company **wishes to sell off a part of its business** which makes losses, to improve the company's future reported consolidated profit performance. This may be in the form of a management buyout (MBO) – see below.
- (c) In order to **protect the rest of the business from takeover**, a company may choose to sell a part of the business which is particularly attractive to a buyer.
- (d) The company may be **short of cash**.
- (e) A subsidiary with **high risk** in its operating cash flows could be **sold**, so as to reduce the business risk of the group as a whole.
- (f) A **subsidiary** could be **sold at a profit**. Some companies have specialised in taking over large groups of companies, and then selling off parts of the newly acquired groups, so that the proceeds of sales more than pay for the original takeovers.

However, a sell-off may **disrupt** the rest of the organisation, especially if key players within the organisation disappear as a result.

## 4.4 Spin-offs



### Definition

**Spin-off:** The creation of a new company, where the shareholders of the original company own the shares.

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In a spin-off:

- (a) There is **no change** in the **ownership of assets**, as the shareholders own the same proportion of shares in the new company as they did in the old company.
- (b) Assets of the part of the business to be separated off are **transferred into the new company**, which will usually have different management from the old company.
- (c) In more complex cases, a spin-off may involve the original company **being split into a number of separate companies**.

#### 4.4.1 Advantages of spin-offs

- (a) The change may make a **merger** or takeover of some part of the business **easier** in the future, or may protect parts of the business from predators.
- (b) There may be **improved efficiency** and more streamlined management within the new structure.
- (c) It may be easier to see the value of the **separated parts** of the business now that they are no longer hidden within a conglomerate. Directors may believe that the individual parts of the business may be worth more than the whole.
- (d) The **requirements of regulatory agencies** might be met more easily within the new structure. For example, if the agency is able to exercise price control over a particular part of the business which was previously hidden within the conglomerate structure.
- (e) After the spin-off, shareholders have the opportunity to **adjust the proportions** of their **holdings** between the different companies created.

## 4.5 Carve-outs



### Definition

**Carve-out:** The creation of a new company, by detaching parts of the original company and selling the shares of the new company to the public.

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Parent companies undertake carve-outs in order to raise funds in the capital markets. These funds can be used for the repayment of debt or creditors or the new cash can be retained within the firm to fund expansion. Carved-out units tend to be highly valued.

## 4.6 Going private



### Definition

**Going private:** for a public company When a small group of individuals, possibly including existing shareholders and/or managers and with or without support from a financial institution, buys all a company's shares.

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This form of restructuring is relatively common in the US and may involve the shares in the company ceasing to be listed on a stock exchange.

### 4.6.1 Advantages of going private

- (a) The **costs** of meeting listing requirements can be **saved**.
- (b) The company is **protected from volatility in share prices** which financial problems may create.
- (c) The company will be **less vulnerable to hostile takeover bids**.
- (d) Management can **concentrate on the long-term needs** of the business rather than the short-term expectations of shareholders.
- (e) Shareholders are **likely to be closer to management in a private company**, reducing costs arising from the separation of ownership and control (the 'agency problem').

### 4.6.2 Disadvantages of going private

The main disadvantage of going private is that the company loses its ability to have its shares publicly traded. If a share cannot be **traded** it may **lose some of its value**. However, one reason for seeking private company status is that the company has had difficulties as a quoted company, and the prices of its shares may be low anyway.

### 4.6.3 Going private temporarily

Sometimes a company goes private with the intention that it will go public once again. During this period, there may be a substantial reorganisation, in order to make significant profits.



## Context example: Saga

Saga, the UK insurance company and tour operator, changed its status from public company to private company in 1990. While public, 63% of the company was owned by one family. The family raised finance to buy all the shares, to avoid the possibility of hostile takeover bids and to avoid conflicts between the long-term needs of the business and the short-term expectations which institutional shareholders, in particular, are often claimed to have.

The private company was purchased in 2004 by staff of the company, supported by private equity firm Charterhouse. With the involvement of a private equity firm, the probability increased that the company might eventually return to the stock market, to provide an exit route for the private equity investors.

Saga then merged with the AA, owned by private equity firms CVC and Permira, to form Acromas Holdings. Acromas launched both the AA and Saga (now Saga plc) onto the London stock market in IPOs during 2014.

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## 4.7 Management buyouts (MBOs)



### Definition

**Management buyout:** The purchase of a business from its existing owners by members of the management team, generally in association with a financing institution.

An **MBO** is the purchase of all or part of a business from its owners by its managers. For example, the directors of a subsidiary company in a group might buy the company from the holding company, with the intention of running it as proprietors of a separate business entity.

- (a) **To the managers**, the buyout would be a method of setting up in business for themselves.
- (b) **To the group**, the buyout would be a method of **divestment**, selling off the subsidiary as a going concern.

Management-owned companies seem to achieve better performance probably because of:

- a **favourable buyout price** having been **achieved**
- **personal motivation and determination**
- **quicker decision-making** and so **more** flexibility
- **keener decisions** and action on pricing and debt collection
- **savings in overheads**, eg, in contributions to a large head office

However, many MBOs, once they occur, begin with some redundancies to cut running costs.

### 4.7.1 Reasons for an MBO

**The board of directors of a large organisation** may agree to an MBO of a subsidiary for any number of different reasons.

- (a) The **subsidiary** may be **peripheral** to the group's mainstream activities, and no longer fit in with the group's overall strategy.

- (b) The group may wish to **sell off a loss-making subsidiary**. A management team may think that it can restore the subsidiary's fortunes.
- (c) The parent company may need to **raise cash quickly**.
- (d) The subsidiary may be part of a **group that has just been taken over** and the new parent company may wish to sell off parts of the group it has just acquired.
- (e) The **best offer price** might come from a **small management group** wanting to arrange a buyout.
- (f) When a group has taken the decision to sell a subsidiary, it will probably **get better cooperation**

from the management and employees of the subsidiary if the sale is an MBO.

**A private company's shareholders** might agree to sell out to a management team because they need cash, they want to retire, or the business is not profitable enough for them.

#### 4.7.2 Parties to an MBO

There are usually three parties to an MBO.

- (a) A **management team** wanting to make a buyout. This team ought to have the skills and ability to convince financial backers that it is worth supporting.
- (b) **Directors** of a group of companies.
- (c) **Financial backers** of the buyout team, who will usually want an equity stake in the bought-out business, because of the **venture capital risk** they are taking. Often, several financial backers provide the venture capital for a single buyout.

#### 4.7.3 Exit strategies

Venture capitalists generally like to have a predetermined **target exit date**, the point at which they can recoup some or all of their investment in an MBO. At the outset, they will wish to establish various **exit routes**, the possibilities including:

- the sale of shares following a flotation on a recognised stock exchange
- the **sale** of the company to another firm
- the **repurchase** of the venture capitalist's shares by the company or its owners
- the sales of the venture capitalist's shares to an **institution** such as an investment trust

#### 4.7.4 Appraisal of MBOs

An institutional investor (such as a venture capitalist) should evaluate a buyout before deciding whether or not to finance. Aspects of any buyout that ought to be checked are as follows.

- (a) Does the management team have the **full range of management skills** that are needed (for example, a technical expert and a finance director)? Does it have the right blend of experience? Does it have the commitment?
- (b) Why is the **company for sale**? The possible reasons for buyouts have already been listed. If the reason is that the parent company wants to get rid of a loss-making subsidiary, what evidence is there to suggest that the company can be made profitable after a buyout?
- (c) What are the **projected profits and cash flows of the business**? The prospective returns must justify the risks involved.

- (d) What is **being bought**? The buyout team might be buying the shares of the company, or only selected assets of the company. Are the assets that are being acquired sufficient for the task? Will more assets have to be bought? When will the existing assets need replacing? How much extra finance would be needed for these asset purchases? Can the company be operated profitably?
- (e) What is **the price**? Is the price right or is it too high?
- (f) What financial **contribution** can be made by members of the management team themselves?
- (g) What are the **exit routes** and when might they be taken?

#### 4.7.5 Problems with MBOs

A common problem with MBOs is that the managers may have little or no experience in financial **management** or financial **accounting**. Managers will also be required to take tough decisions. A good way of approaching the problem is **scenario analysis**, addressing the effect of taking a major decision in isolation. However, the results may be painful, including the ditching of long-established products.

Other problems are:

- (a) Tax and legal complications
- (b) Difficulties in deciding on a fair price to be paid
- (c) Convincing employees of the need to change working practices or to accept redundancy
- (d) Inadequate resources to finance the maintenance and replacement of tangible non-current assets
- (e) The maintenance of employees' employment or pension rights
- (f) Accepting the board representation requirement that many providers of funds will insist on
- (g) The loss of key employees if the company moves geographically, or wage rates are decreased too far, or employment conditions are unacceptable in other ways
- (h) Maintaining continuity of relationships with suppliers and customers
- (i) Lack of time to make decisions

## 4.8 Leveraged buyouts



### Definition

**Leveraged buyout:** is the purchase of another company using a very significant amount of debt (bonds or loans). Often the cash flows and assets of the company being purchased are used as collateral as well as the assets of the company making the acquisition.

Typically, the company acquiring the equity in a leveraged buyout (LBO) is a hedge fund.

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For example, a hedge fund may want to acquire a target company, which could be either a private or a public company. It will negotiate with the board of the target company and agree acquisition terms that are then put to the shareholders and debt security holders in the target company for acceptance.

The money to pay for the acquisition will come partly from the hedge fund (which will acquire the equity in the target company) and partly by issuing a large amount of new debt that will be put into the company.

As a result of the LBO, the company will have a new capital structure, with equity owned by the hedge fund and large amounts of debt that will be paid off over time.

## 4.9 Purchase of own shares

For a smaller company with few shareholders, the reason for buying back the company's own shares may be that there is no immediate willing purchaser at a time when a shareholder wishes to sell shares.

For a public company, share repurchase could provide a way of withdrawing from the share market and going private.

There has also been extensive use of share buybacks in recent years by stock market companies with surplus cash. The companies buy their shares in the stock market, and the shares are either cancelled or become treasury shares. Treasury shares may be reissued subsequently, for example to reward senior executives in an incentive scheme involving the granting of shares.

When repurchased shares are cancelled, the expectation should be that by reducing the number of shares in issue, it should be possible to increase EPS and dividends per share.

### 4.9.1 Benefits of a share repurchase scheme

- (a) **Finding a use for surplus cash**, which may be a 'dead asset'.
- (b) **Increase in EPS through a reduction in the number of shares** in issue. This should lead to a higher share price than would otherwise be the case, and the company should be able to increase dividend payments on the remaining shares in issue.
- (c) **Increase in gearing**. Repurchase of a company's own shares changes the relative proportion of debt to equity, so raising gearing. This will be of interest to a company wanting to increase its gearing without increasing its total long-term funding.
- (d) **Readjustment of the company's equity base** to more appropriate levels, for a company whose business is in decline.
- (e) **Possibly preventing a takeover** or enabling a quoted company to withdraw from the stock market.
- (f) **Rewarding shareholders** without having to increase dividends, which can give out unwanted signals to the market.

### 4.9.2 Issues with a share repurchase scheme

- (a) It can be **hard to arrive at a price that will be fair** both to the vendors and to any shareholders who are not selling shares to the company.
- (b) A repurchase of shares could be seen as an **admission that the company cannot make better** use of the funds than the shareholders.
- (c) Some shareholders may **suffer from being taxed on a capital gain** following the purchase of their shares rather than receiving dividend income.
- (d) An increase in EPS might benefit directors if their bonus is aligned to this ratio.

## 4.10 Use of distributable profits

### 4.10.1 Bonus issue

A **bonus/script/capitalisation issue** is the capitalisation of the reserves of a company by the issue of additional shares to existing shareholders, in proportion to their holdings. Such shares are normally fully paid up with no cash called for from the shareholders.

By creating more shares in this way, a scrip issue does not raise new funds. It does though have the advantage of making shares **cheaper** and therefore (perhaps) **more easily marketable** on the stock exchange. For example, if a company's shares are priced at \$6 on the stock exchange, and the company makes a one for two scrip issue, the share price should fall after the issue to \$4 each.

Shares at \$4 each might be more easily marketable than shares at \$6 each.

## 4.11 Valuation issues

Unbundling will impact on the value of a firm through its impact on different factors in the valuation models.

### 4.11.1 Impact on growth rate

When firms divest themselves of existing investments, they affect their expected ROA, as good projects increase the ROA, and bad projects reduce the return.



#### Worked example: Divestment policy

A firm is expected to divest itself of unrelated divisions, which have historically had lower ROAs. As a result of the divestment the return on equity is expected to increase from 10% to 15%.

##### Requirement

Calculate the effect on the earnings growth rate if the debt to equity ratio is 0.30, the tax rate is 25%, the retention rate is 50% and the interest rate on debt is 8%.

##### Solution

Before the restructuring the growth rate is equal to:

$$g = b \left( \text{ROA} + \frac{V_D}{V} (\text{ROA} - r(1-T)) \right) = 0.5(0.10 + 0.3(0.10 - 0.08(1 - 0.25))) = 0.056$$

After the restructuring the growth rate is equal to:

$$g = b \left( \text{ROA} + \frac{V_D}{V} (\text{ROA} - r(1-T)) \right) = 0.5(0.15 + 0.3(0.15 - 0.08(1 - 0.25))) = 0.0885$$

The restructuring has increased the growth rate from 5.6% to 8.85%.



#### Worked example: Divestment policy and business risk

The business risk (asset beta) of an oil company which has diversified into a number of other activities such as leisure and tourism is 1.3. If the oil company divested itself of all other activities and concentrated on its core business, its equity beta, based on the observed beta of oil companies with similar financial structure, is expected to be 1.4. The tax rate is 21% and the debt to equity ratio is 0.30.

##### Requirement

Calculate the business risk following the divestment of the other businesses.

##### Solution

$$\beta_e = \beta_a \left( 1 + \left[ \frac{D(1+T)}{E} \right] \right)$$



and therefore

$$1.4 = \beta_a \left( 1 + \left[ \frac{0.3(1-0.21)}{1} \right] \right)$$

$$\begin{aligned} \beta_a &= 1.4/1.237 \\ &= 1.132 \end{aligned}$$

After the restructuring the business risk of the company (the asset beta) is reduced from 1.3 to 1.132 implying a lower cost of equity and, consequently, a higher value of equity.

This can also be proved by calculating the old equity beta, using the asset beta figure of 1.3.

$$\beta_{eq} = 1.3 \left( 1 + \left[ \frac{0.3(1-0.21)}{1} \right] \right)$$

The equity beta has fallen from 1.61 to 1.4.

In this example, divestment reduces the cost of equity for the company.

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## 4.12 Valuation of divestments

The techniques for business valuations that are described in the chapter Business and securities valuation need to be applied carefully when considering an entity that has been divested. It may be difficult to forecast future cash flows or profits with any certainty and there will be uncertainties over business risk levels. Whether prices paid for individual assets fairly reflect their value to the new owners going forward may also be questionable.

### 4.12.1 Financial reporting issues in relation to demergers and disposals

The main financial reporting standards that apply to demergers and disposals are IFRS 5, *Non-current Assets Held for Sale and Discontinued Operations* and IFRS 8, *Operating Segments*.

## 4.13 Application of IFRS 5

Demergers and disposals can have significant impacts on cash flows and profits in group financial statements, so the purpose of IFRS 5 is to help accounts' users make more accurate assessments about businesses' prospects in the future, by being able to exclude these items.

### 4.13.1 Recognition of disposals



#### Definitions

**Discontinued operation:** A component of an entity that has either been disposed of, or is classified as held for sale, and

- represents a separate major line of business or geographical area of operations;
- is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations; or
- is a subsidiary acquired exclusively with a view to resale.

**Component of an entity:** Operations and cash flows that can be clearly distinguished, operationally and for financial reporting purposes, from the rest of the entity.

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IFRS 5 also applies to **groups of assets and associated liabilities** which will be disposed of in a single transaction, described as a **disposal group**.



### Definition

**Disposal group:** A group of assets to be disposed of, by sale or otherwise, together as a group in a single transaction, and liabilities directly associated with those assets that will be transferred in the transaction. The group includes goodwill acquired in a business combination if the group is a cash-generating unit to which goodwill has been allocated in accordance with the requirements of IAS 36, *Impairment of Assets* or if it is an operation within such a cash-generating unit.

The definition includes, but is not limited to:

- a subsidiary which the parent is committed to selling
  - a cash-generating unit of the entity, that is a group of assets which generates economic benefits that are largely independent of other activities of the entity
- 

The results of a disposal group should be presented as those of a discontinued operation if the group meets the definition of a component and is a separate major line of business.

After a demerger is completed, the results may be shown as discontinued operations. However, assets and liabilities to be demerged would not meet the definition of assets and liabilities held for resale, since the demerger should be treated as an abandonment.

Not all the disposals and divestments that a business makes will fulfil the recognition criteria of IFRS 5. They may not be sufficiently important to be regarded as a separate major line of business or geographical operation.

If the disposal is a piecemeal disposal, where assets are sold separately or in small groups, and liabilities are settled individually, relevant standards apply.

Where a spin-off takes place, the transactions are with the shareholders of a group and no gains or losses are recognised on disposals.

#### 4.13.2 Held for sale assets



### Definition

**Held for sale:** Anon-current asset (or disposal group) should be classified as **held for sale** if its carrying amount will be recovered **principally through a sale transaction** rather than **through continuing use**. A number of detailed criteria must be met.

- (a) The asset must be **available for immediate sale** in its present condition.
- (b) Its sale must be **highly probable** (ie, significantly more likely than not).

For the sale to be highly probable, the following must apply.

- (a) Management must be **committed** to a plan to sell the asset.
- (b) There must be an active programme to **locate a buyer**.
- (c) The asset must be marketed for sale at a **price that is reasonable** in relation to its current fair value.

- (d) The sale should be expected to take place **within one year** from the date of classification.
  - (e) It is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.
- 

#### 4.13.3 Measurement issues

A non-current asset (or disposal group) that is held for sale should be measured at the **lower of its carrying amount and fair value less costs to sell** (net realisable value). Non-current assets held for sale **should not be depreciated**, even if they are still being used by the entity.

Fair value for cash-generating units should be determined in accordance with the requirements of IFRS 13, *Fair Value Measurement*, using the fair value hierarchy:

- **Level 1:** Quoted prices for identical assets or liabilities in active markets
- **Level 2:** Valuation multiple (for example, a multiple of earnings or revenue or a similar performance measure) derived from observable market data, eg, from prices in observed transactions involving comparable businesses
- **Level 3:** Financial forecast developed using the entity's own data

#### 4.13.4 Presentation and disclosure

An entity should disclose a **single amount in the statement of profit or loss and other comprehensive income** comprising the total of:

- the post-tax profit or loss of discontinued operations; and
- the post-tax gain or loss recognised on the measurement to fair value less costs to sell or on the disposal of the assets constituting the discontinued operation.

An entity should also **disclose an analysis of this single amount** into:

- the revenue, expenses and pre-tax profit or loss of discontinued operations
- the related income tax expense
- the post-tax gain or loss recognised on measurement to fair value less costs to sell or on disposal of the assets constituting the discontinued operation
- the related income tax expense

An asset classified as held for sale should be **presented in the statement of financial position separately from other assets**. Typically, a separate heading '**non-current assets held for sale**' would be appropriate.

#### 4.13.5 Impact on business

Measurement and presentation of discontinued operations may have a significant impact on the business, depending on how accounts users view disclosures. Held for sale assets might be stripped out when assessing compliance with covenants. Separation of discontinued operations could also have quite a negative impact on the headline figures in the accounts.

### 4.14 Application of IFRS 8

IFRS 8 only applies to entities whose equity or debt is traded in public markets.

#### 4.14.1 Recognition of segments

Even if the operations to be sold qualify as discontinued operations under IFRS 5, they may also qualify as an operating segment under IFRS 8 if they fulfil the IFRS 8 definition of an operating segment.

The most important issues here will be that the component's results are still maintained and are still reviewed by the chief operating decision maker.

The segment may not meet any of the 10% disclosure thresholds of IFRS 8, but the entity should still apply the disclosure requirements if management believes that information about the segment would be useful to users of the financial statements.

#### 4.14.2 Presentation and disclosure

The entity will need to disclose:

- the factors used to identify reportable segments and the types of products and services from which each derives its revenues
- a measure of profit or loss for each segment, that is reported to the chief operating decision maker
- measures of total assets and liabilities if they are regularly provided to the chief operating decision maker

IFRS 8 is covered in more detail in the chapter Finance awareness.

## 5 Small and medium-sized company financing



### Section overview

A major feature of many small to medium-sized enterprises is the problems they have in raising finance.

- Equity financing is more common than debt financing for such organisations, given the lack of assets required to secure against debt.
- There are several sources of finance specifically aimed at smaller enterprises, including venture capital and business angels.
- The UK Government has also put support mechanisms in place to make more finance available to smaller enterprises and to encourage their growth.

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Many small to medium-sized enterprises (SMEs) have excellent business plans that require funding. The problem these enterprises have is lack of assets to provide as security for conventional loans. Without special sources of finance, many small businesses would not get off the ground, or their projects would have to be abandoned.

There are numerous sources of finance available for SMEs. Due to the lack of available assets to offer as security, most funding will be equity funding rather than debt funding.

### 5.1 Characteristics of SMEs

SMEs can be defined as having three characteristics:

- likely to be unquoted
- ownership of the business is restricted to a few individuals, typically a family group
- they are not micro businesses (very small businesses that act as a medium for self-employment of the owners)

The characteristics may alter over time, with the enterprise perhaps looking for a listing on a stock exchange geared to the needs of the smaller company, such as the UK Alternative Investment Market, as it expands.

The SME sector accounts for between a third and a half of sales and employment in the UK. The sector is particularly associated with the service sector and serving niche markets. If market conditions change, small businesses may be more adaptable. There is, however, a significant failure rate among small firms.

### 5.1.1 Assurance work on SMEs

One characteristic of SMEs in the UK is exemption from audit. SMEs qualify for an audit exemption if they meet at least two of the following criteria.

- annual turnover of no more than £10.2 million
- assets with a carrying amount of no more than £5.1 million
- 50 or fewer employees on average

Nevertheless, SMEs may benefit from an audit or other assurance work being carried out on aspects of their business.

- Confidence to finance providers.** This is probably the most important benefit as banks and other finance providers may be more inclined to support a business where assurance has been built in from the start. It may be easier to obtain finance more quickly if the business appears to be reliable. An assurance report may be required for the specific purpose of obtaining loan finance, particularly bank loan finance, and we look at this in more detail below.
- Confidence in accounting.** Assurance work can give the owners of SMEs confidence in the figures that their accounting records are producing. This means not only that the financial statements that the owners are legally responsible for are reasonable, but also that they can rely on their figures as the basis for making operational and finance decisions.
- Review of systems.** Having external assurance providers involved from the start can help an SME in that they can provide advice on how systems should develop to cope with expanding operations.
- Pre-empting audit requirements.** If an SME expands sufficiently, it will need to have an audit. Having independent accountants involved from the start should avoid systems being disrupted when auditors do have to become involved.
- Acceptability for tax.** Tax authorities may be more inclined to rely on accounts that have been audited or had an assurance review carried out.

## 5.2 Sources of finance for SMEs

Potential sources of funding for SMEs include:

- owner financing
- equity finance
- business angel financing
- venture capital
- leasing
- factoring
- bank loans

### 5.2.1 Owner financing

Finance from the owner(s)' personal resources or those of family connections is generally the initial source of finance. At this stage, because many assets are intangible, external funding may be difficult to obtain.

### 5.2.2 Equity finance

Other than investment by owners or business angels (see below), businesses with few tangible assets will probably have difficulty obtaining equity finance when they are formed (a problem known as the 'equity gap').

However, once small firms have become established, they do not necessarily need to seek a market listing to obtain equity financing. Shares can be placed privately. Letting external shareholders invest does not necessarily mean that the original owners have to cede control, particularly if the shares are held by a number of small investors. However, small companies may find it difficult to obtain large sums by this means.

As noted above, owners will need to invest a certain amount of capital when the business starts up. However, owners can subsequently choose whether they withdraw profits from the business or reinvest them.

A major problem with obtaining equity finance can be the inability of the small firm to offer an easy exit route for any investors who wish to sell their stake.

- (a) The firm can purchase its own shares back from the shareholders, but this involves the use of cash that could be better employed elsewhere.
- (b) The firm can obtain a market listing but not all small firms do.

### 5.2.3 Business angels

Business angel financing can be an important initial source of business finance. Business angels are wealthy individuals or groups of individuals who invest directly in small businesses using their own money. They bring invaluable direct relevant experience, expertise and contacts in an advisory capacity.

The main problem with business angel financing is that it is informal in terms of a market and can be difficult to set up. However, informality can be a strength. There may be less need to provide business angels with detailed information about the business due to the prior knowledge that they tend to have.

### 5.2.4 Venture capital

Venture capital is risk capital, normally provided in return for an equity stake. Venture capital organisations, such as 3i, have been operating for many years.

The types of venture that the 3i group might invest in include the following.

- (a) **Business start-ups.** When a business has been set up by someone who has already put time and money into getting it started, the group may be willing to provide finance to enable it to get off the ground.
- (b) **Business development.** The group may be willing to provide development capital for a company that wants to invest in new products or new markets or to make a business acquisition.
- (c) **MBOs.** An MBO is the purchase of all or parts of a business from its owners by its managers.
- (d) **Helping a company where one of its owners wants to realise all or part of their investment.** The venture capital organisation may be prepared to buy some of the company's equity.

Venture capital organisations will take account of various factors in deciding whether or not to invest.

- (a) the nature of the product (viability of production and selling potential)
- (b) expertise in production (technical ability to produce efficiently)
- (c) the market and competition (threat from rival producers or future new entrants)
- (d) future profits (detailed business plan showing profit prospects that compensate for risks)
- (e) board membership (to take account of the interests of the venture capital organisation and to ensure it has a say in future strategies)
- (f) risk borne by existing owners

### 5.2.5 Leasing

Leasing is a popular source of finance for both large and smaller enterprises. A lease is a contract between a lessor and lessee for hire of a specific asset selected from a manufacturer or vendor of such assets by the lessee. The lessor retains ownership of the asset. The lessee has possession and use of the asset on payment of specified rentals over a period of time.

Many lessors are financial intermediaries such as banks and insurance companies. The range of assets leased is wide, including office equipment and computers, cars and commercial vehicles, aircraft, ships and buildings.

When deciding whether to lease or buy an asset, the SME must make two decisions.

- (a) The **acquisition decision**: is the asset worth having? Test by discounting project cash flows at a suitable cost of capital.
- (b) The financing **decision**: if the asset should be acquired, compare the cash flows of purchasing with those of leasing. The cash flows can be discounted at an after-tax cost of borrowing.

SMEs can also consider a sale and leaseback arrangement. If it owns its own premises, for example, the SME could sell the property to an insurance company or pension fund for immediate cash and rent it back, usually for at least 50 years with rent reviews every few years. While such an arrangement usually realises more cash than a mortgage would, the firm loses ownership of the asset which can reduce its overall borrowing capacity, as the asset can no longer be used as security for a loan.

### 5.2.6 Debt factoring

SMEs can make use of debt factoring to release funds quickly.

Factoring can release funds by 'selling' debts to a factoring organisation that will then chase the debts on the company's behalf for a fee. At the time of 'sale' the factor will advance a percentage of the debt in cash to the company, thus helping short-term liquidity. The main problem with this method of financing is that it could give out adverse signals about the firm's liquidity position.

### 5.2.7 Bank loans

Bank loans are often used to finance short-term investment or as a 'bridge' to finance the purchase of, for example, new equipment. Short-term loans might be used to finance a temporary increase in inventory levels, for example to fulfil a special order. The sale of the goods then provides the finance to repay the loan.

Longer-term loans are also available, say, for five years. These are normally repaid in equal amounts over the period of the loan, although payments can be delayed until the reason for the loan is up and running – for example, until new machinery is operational and able to generate money-making stock. However, this is not often the case for small firms.

Short-term loans are usually made at a fixed interest rate, while the rates quoted for longer-term loans tend to be linked to the general rate of interest. Variable rate loans based on LIBOR need to be reconsidered and other benchmark rates (eg SONIA, gilts etc) are being used. This was discussed in more detail in the chapter Financial instruments and financial markets.

### 5.2.8 Criteria for credit analysis

The process for managing credit risk and making decisions in relation to credit applications is specific to each lender. To ensure that consistent and rigorous decisions are made, the process will consider both quantitative and qualitative factors.

Criteria to consider typically cover the following areas.

**Loan suitability** – as well as determining whether the loan amount is appropriate, there should be a consideration of whether the structure of the loan is appropriate for the purpose. For example, if a business is seeking finance to fund a long term project which only generates positive cash flow in later years, a loan with the principal repayable at the end of the term would be more suitable than an amortising loan. In some situations, financing other than loans may be appropriate, such as invoice discounting or overdrafts to cover short-term working capital requirements. Asset purchases may be financed through leases or hire purchase agreements.

**Affordability** – this part of the analysis should focus on the business's ability to generate profits and cash to cover interest and capital repayments. It should also encompass a consideration of the reasonableness of the company's business plan and financial forecasts.

**Viability** – the focus here is to establish the ability of the business to repay principal. The analysis should consider measures such as gearing levels.

**Security** – the most common form of loan security is the legal charge, whether fixed or floating. An evaluation should be made of the availability of assets upon which charges may be taken, taking into account the extent to which assets are already secured against other borrowings.

**Financial stability** – this section of the analysis should focus on the financial performance of the business, including profitability and efficiency. Assessment of future stability is based on forecasts from the borrower, and some consideration must be given to their credibility. For a high growth business, the credibility of growth forecasts, profitability and the ability to fund working capital increases will be key. For a more mature business there will be a focus on the forecast return on assets and profit margins. A further issue is the predicted level of dividends. Lenders are unlikely to be prepared to lend in order to fund increased dividend payments.

**Capital structure** – this should involve an examination of the way in which the business is funded by equity and debt.

**Management** – it is necessary to make an assessment of the skills and track record of management. A young entrepreneurial company may have successfully reached its current stage of development under its founder directors, but will need additional financial expertise as it expands further.

Any final recommendation may stipulate conditions such as covenants that should be included in the terms of the lending, in order to mitigate credit risk. Covenants may be financial, such as meeting a specified ratio, or non-financial, such as requiring disclosure of significant events.



Some banks will be prepared to accept greater levels of risk than others, but all will consider:

- the rate of interest on the loan, and the term over which interest will be earned
- other remuneration from the loan such as arrangement, underwriting or facility fees
- the value of other relationships within the bank. The potential borrower may have lucrative relationships with other banking operations.

### 5.2.9 Microfinance

Microfinance involves the provision of financial services to very small businesses and entrepreneurs who lack access to banking services. Microfinance is provided by:

- **relationship-based banking** for individual businesses
- **group-based models**, where lots of entrepreneurs apply for finance and other services, such as insurance and money transfer, as a group

As well as supporting economic growth, microfinance in certain countries is also seen as a means of poverty alleviation.

One challenge in several countries has been providing smaller loans at an affordable cost, while allowing lenders sufficient margin to cover their expenses.

Countries where microfinance has developed significantly include the US, where microfinance institutions have served low income and marginalised communities. Credit unions have been important in Canada. In Bangladesh the focus has been on making unsecured loans to people living below the poverty line.

## 5.3 The problems of financing SMEs

The money for investment that SMEs can obtain comes from the savings individuals make in the economy. Government policy will have a major influence on the level of funds available.

- (a) **Tax policy** including concessions given to businesses to invest (capital allowances) and taxes on distributions (higher taxes on dividends mean less income for investors)
- (b) **Interest rate policy** with low interest rates working in different ways – borrowing for SMEs becomes cheaper, but the supply of funds is less as lower rates give less incentive to investors to save



### Definition

**Funding gap:** The amount of money needed to fund the ongoing operations or future development of a business or project that is not currently provided by cash, equity or debt.

The term 'funding gap' is most often used in the context of SMEs that are in the early stages of development, and need funds for research, product development and marketing.

SMEs face competition for funds. Investors have opportunities to invest in all sizes of organisation, also overseas and in government debt.

The main handicap that SMEs face in accessing funds is the problem of uncertainty.

- (a) Whatever the details provided to potential investors, SMEs have neither the business history nor longer track record that larger organisations possess.
- (b) Larger enterprises are subject by law to more public scrutiny; their accounts have to contain more detail and be audited, they receive more press coverage and so on.

(c) Because of the uncertainties involved, banks often use credit scoring systems to control exposure.

Because the information is not available in other ways, SMEs will have to provide it when they seek finance. They will need to supply a business plan, list of the firm's assets, details of the experience of directors and managers and show how they intend to provide security for sums advanced.

Prospective lenders, often banks, will then make a decision based on the information provided. The terms of the loan (interest rate, term, security, repayment details) will depend on the risk involved, and the lender will also want to monitor its investment.

A common problem is that banks are often unwilling to increase loan funding without an increase in security given (which the owners may be unwilling or unable to give), or an increase in equity funding (which may be difficult to obtain).

A further problem for SMEs is the **maturity gap**. It is particularly difficult for SMEs to obtain medium-term loans due to a mismatching of the maturity of assets and liabilities. Longer-term loans are easier to obtain than medium-term loans, as longer loans can be secured with mortgages against property.

## 5.4 Government aid for SMEs

The UK Government has used a number of other assistance schemes to help businesses. Several of these are designed to encourage lenders and investors to make finance available to small and unquoted businesses.

### 5.4.1 Grants

Grants to help with business development are available from a variety of sources, such as Regional Development Agencies, local authorities and some charitable organisations.

These grants may be linked to business activity or a specific industry sector. Some grants are also linked to specific geographical areas, such as those in need of economic regeneration.

### 5.4.2 Enterprise capital funds

Enterprise capital funds (ECFs) are designed to be commercial funds, established to invest a combination of private and public money in small high-growth businesses.

Each ECF is able to make equity investments of up to £2 million into eligible SMEs that have genuine growth potential but whose funding needs are currently not met, based on the evidence that such businesses struggle to obtain finance of up to £2 million.

ECFs are administered by the Department for Business, Energy and Industrial Strategy through the British Business Bank.



### Interactive question 11: SME finance

DF is a manufacturer of sports equipment. All the shares of DF are held by the Wong family.

The company has recently won a major three-year contract to supply FF with a range of sports equipment. FF is a large company with over 100 sports shops. The contract may be renewed after three years.

The new contract is expected to double DF's existing total annual sales, but demand from FF will vary considerably from month to month.

The contract will, however, mean a significant additional investment in both non-current and current assets. A loan from the bank is to be used to finance the additional non-current assets, as the Wong family is currently unable to supply any further share capital. Also, the Wong family does not wish to raise new capital by issuing shares to non-family members.

The financing of the additional current assets is yet to be decided. In particular, the contract with FF will require orders to be delivered within two days. This delivery period gives DF insufficient time to manufacture items, thus significant inventories need to be held at all times. Also, FF requires 90 days' credit from its suppliers. This will result in a significant additional investment in accounts receivable by DF.

If the company borrows from the bank to finance current assets, either using a loan or an overdraft, it expects to be charged annual interest at 12%. Consequently, DF is considering alternative methods of financing current assets. These include debt factoring, invoice discounting and offering a 3% cash discount to FF for settlement within 10 days rather than the normal 90 days.

### Requirements

1.1 Write a report to the Wong family shareholders explaining the various methods of financing available to DF to finance the additional current assets arising from the new FF contract. The report should include the following headings:

- Bank loan
- Overdraft
- Debt factoring
- Invoice discounting

1.2 Discuss the factors that a venture capital organisation will take into account when deciding whether to invest in DF.

See **Answer** at the end of this chapter.

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## 5.5 Assurance work on loan finance

We briefly revised the elements of an assurance engagement in the chapter Data analysis, including the work done on a financial forecast. In order to obtain loan finance, an SME may need to prepare and have assurance work done on prospective financial information.

However, unless the amount of the loan is quite large, it may be questioned whether the SME can afford to pay the cost of an assurance engagement sufficient to satisfy a lending bank. It is more likely that the bank's own credit analysts will assess the financial forecasts of an SME asking for a loan.

The checks that a bank will carry out on an applicant for a substantial loan will be similar to those carried out in an assurance engagement on a financial forecast.

# Summary

Tick off

Capital structure decisions can be analysed using the suitability, acceptability, feasibility framework, with firms possibly following the pecking order of using retained funds first and new equity issues last.

Firms may adopt varying approaches to dividend policy depending on the funds available for investment, the views of investors and the messages that directors wish to send to markets.

Financial reconstruction can take place either when firms are in difficulty or to enhance the value of the firm, and its success can be assessed by its impact on a firm's growth, risk and rate of return.

Refinancing is the application for a secured loan to replace an existing loan secured by the same assets. It may take place to reduce interest payments, pay off other debts or reduce risks.

There are a number of ways in which firms can reorganise or divest themselves of assets and operations that they no longer require, including a buyout of some of its operations by its managers.

SMEs often have difficulty raising finance, but there are now numerous sources of finance available specifically aimed at such enterprises, both commercial and government-funded.

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	Can you calculate the cost of equity using CAPM when financial risk or business risk changes? (Topic 1)
2.	Can you explain the factors that influence a company's dividend policy? (Topic 2)
3.	Do you know the five step approach for designing a reconstruction? (Topic 3)
4.	Can you explain some of the problems encountered with MBOs? (Topic 4)
5.	Can you suggest appropriate sources of finance for SMEs? (Topic 5)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed to the next chapter.

Question	Learning benefit from attempting this question
1 Cry	This is a good introductory question covering WACC and is a revision of what you would have covered in your Financial Management studies. In the SBM&L exam you will often be provided with the cost of capital however it is important that you understand how this figure is derived.
3 JMR	A good question covering divestment, you are asked to consider the disposal of one of JMR's divisions and suggest alternative methods of disposal that are available to the company before making a recommendation. Make sure that you have covered section 4 of the chapter in detail before attempting this question.
4 Kicer Co	This question covers the assurance work required when raising new finance where there are doubts over going concern. You also need to consider the corporate reporting issues connected with the new loan finance.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development before you start the next chapter.

Question	Learning benefit from attempting this question
<a href="#">Latchkey Ltd</a>	This question can be attempted in full. The question focuses on reconstructions. It is a good summary of all the topics covered in this chapter. Take your time working through task 1 which asks you to consider how a reconstruction deal might be arranged.

<a href="#">Firebrand Forklift Trucks Ltd</a>	<p>Again, this question can be completed in full. It covers a number of different topics ranging from reconstructions, leasing, corporate reporting issues and ethics. Request 1 from the FFT board asks you to analyse the performance of FFT and to recommend actions for improving profitability. Request 2 focuses on reconstructions and the associated financial reporting implications. Request 3 considers the lease or buy decision and the corporate reporting treatment of leasing. The final request in exhibit 7 asks you to advise the board on a corporate social responsibility issue. This is therefore a really good, detailed question addressing many of the issues covered in this chapter and previous chapters.</p>
<a href="#">Gemstone Jewellery Ltd (Request 2 only)</a>	<p>Request 2 asks you to identify and explain the key potential benefits and risks of an MBO for three different stakeholder groups. This is a good introductory question covering many of the issues discussed in section 4.7 of this chapter.</p>

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.

# Technical reference

## 1 IAS 1, *Presentation of Financial Statements*

- Prescribes the overall requirements for financial statements, including how they should be structured, and the minimum requirements for their content. The standard requires a complete set of financial statements to comprise a statement of financial position, a statement of profit or loss and other comprehensive income, a statement of changes in equity, and a statement of cash flows. The standard also sets out the overriding concepts underlying the financial statements such as going concern, the accruals basis of accounting, and the current/non-current distinction.

## 2 IAS 10, *Events after the Reporting Period*

- IAS 10 prescribes when events after the end of the reporting period should be adjusted in the financial statements for that period. Adjusting events are ones which provide evidence of conditions existing at the end of the reporting period, whereas non-adjusting events are ones which are indicative of conditions arising after the reporting period.

## 3 IFRS 5, *Non-current Assets Held for Sale and Discontinued Operations*

- Outlines the accounting required for non-current assets held for sale (or for distribution to owners). In general terms, assets (or disposal groups) held for sale are not depreciated, are measured at the lower of carrying amount and fair value less costs to sell, and are presented separately in the statement of financial position.

## 4 IFRS 8, *Operating Segments*

- IFRS 8 requires entities with publicly traded securities to disclose information about their operating segments, products and services; the geographical areas in which they operate; and their major customers. Segment information is based on internal management reports, both in the identification of operating segments and the measurement of disclosed segment information.

## 5 IAS 36, *Impairment of Assets*

- Seeks to ensure that an entity's assets are not carried at more than their recoverable amount (being the higher of fair value less costs of disposal and value in use). An annual impairment test is required for goodwill and certain intangible assets, but for the majority of assets an impairment test is only required where there is an indication of impairment of an asset.

## 6 IFRS 9, *Financial Instruments*

- Outlines the requirements for the recognition and measurement of financial assets, financial liabilities, and some contracts to buy or sell non-financial items.

## 7 IFRS 13, *Fair Value Measurement*

- Defines fair value as the price that would be received to sell an asset or would be paid to transfer a liability in an orderly transaction between market participants at the measurement date. IFRS 13 defines fair value on the basis of an 'exit price' notion and uses a 'fair value hierarchy' which results in a market-based measurement rather than an entity-specific one.

# Self-test questions

Answer the following questions.

## 1 CRY plc

The following figures have been extracted from the most recent accounts of CRY plc.

### Statement of financial position as at 30 June 20X9

	£'000	£'000
Non-current assets		10,115
Investments		821
Current assets	3,658	
Less current liabilities	1,735	
		1,923
		12,859
Ordinary share capital		
Authorised: 4,000,000 shares of £1		
Issued: 3,000,000 shares of £1		3,000
Reserves		7,257
Shareholders' funds		10,257
7% debentures		1,300
Deferred taxation		583
Corporation tax		719
		12,859

### Summary of profits and dividends

Year ended 30 June	20X5 £'000	20X6 £'000	20X7 £'000	20X8 £'000	20X9 £'000
Profit after interest and before tax	1,473	1,772	1,646	1,582	1,848
Less tax	309	372	346	332	388
Profit after interest and tax	1,164	1,400	1,300	1,250	1,460
Less dividends	620	680	740	740	810
Added to reserves	544	720	560	510	650

The current (1 July 20X9) market value of CRY plc's ordinary shares is £3.27 per share cum div. An annual dividend of £810,000 is due for payment shortly. The debentures are redeemable at par in 10 years' time. Their current market value is £77.10. Annual interest has just been paid on the debentures. There have been no issues or redemptions of ordinary shares or debentures during the past 5 years.

The current rate of corporation tax is 21%. Assume that there have been no changes in the system or rates of taxation during the last five years.

### Requirements

- 1.1 Calculate the cost of capital that CRY plc might use as a discount rate when appraising new investment opportunities.
- 1.2 Discuss any difficulties and uncertainties in your estimates.



## 2 Ella

Ella, a private company, is currently considering a major capital investment project involving the construction of a new factory to manufacture a new product. Additional finance will be required for this project. It is not currently feasible to raise sufficient equity finance to fund the new project; consequently, debt finance is being considered. The decision has not yet been finalised whether this debt finance will be short or long term and if it is to be at fixed or variable rates.

The £3 million finance required will be used as follows:

	£'000
Construction of new factory	1,250
Purchase of new machinery	1,000
Initial supply of raw material	250
Advertising and marketing of new product	500

The financial controller has asked your firm for assistance in the preparation of a report for a forthcoming meeting of the board of directors.

Prepare a draft report to the board of directors which identifies and briefly explains:

### Requirements

- 2.1 The main factors to be considered when deciding on the appropriate mix of short-, medium- or long-term debt finance for Ella
- 2.2 The practical considerations which could be factors in restricting the amount of debt which Ella could raise
- 2.3 After the directors have decided how the project should be financed, they will attend a meeting with the audit partner for Ella at your firm.

### Requirement

State the enquiries your firm would make of the directors of Ella to ascertain the adequacy of the £3 million finance requested for the new production facility.

## 3 JMR

JMR is an established company in public ownership comprising the following divisions: construction and building; engineering and machinery; real estate. Although the company has traded profitably, its earnings have been subject to wide variations and some of the shareholders are concerned about the board's policy of 'conglomerate diversification'.

In the last year the company had the following earning figures:

Division	Earnings £m
Construction and building	50
Engineering and machinery	20
Real estate	30
Group	100

**Note:** It should be assumed that the above divisional earnings are stated after tax.

## Industry

	Current average market sector P/E
Construction and building	8
Engineering and machinery	13
Real estate	23

JMR is currently valued on the stock market at £1,000 million, and proposed/current dividends are approximately half those of analysts' expectations.

### Construction and building

This activity represents the original business before JMR started to make acquisitions. The divisional management has described the business as 'mature, stable, and offering the prospect of modest but sustained growth'.

### Engineering and machinery

This activity represents the first acquisitions made by JMR whereby a number of small companies were bought and consolidated into one division. The divisional management has described the business as "mature but offering the prospect of profit growth of 10% per annum". Additionally, the division has a broad customer base servicing a number of government agencies - minimising the risk of cash flow problems.

### Real estate

This division represents the most recent acquisition made by JMR and has provided profit growth of over 20% per annum in the three years since it was formed. The divisional management, which is recognised as the most dynamic management team within JMR, feels that this rate of growth can be continued or surpassed.

### HQ organisation

Each division has its own headquarters office in a different town and the group headquarters, which has the responsibility for raising capital and operating a group treasury function, is also separately located. The group headquarters is located in the capital, is quite luxurious and has a staff of 50 including the main board directors. Group headquarters, and the staff, is funded by a management charge on the divisions.

### Investors

An informal group of institutional shareholders, which holds approximately 20% of JMR's equity, has requested a review of the board's strategy and a rationalisation of the company's portfolio. These shareholders feel that the company should take the opportunity to dispose of the real estate division, reduce costs by closing the group headquarters and relocate the board and treasury functions to one of the divisional headquarters. This, they have said, would allow the company to pay a large, one-off dividend to reward shareholders for their tolerance of poor past performance.

### Requirements

- 3.1 Evaluate the suggestions made by the institutional investors that the company should take the opportunity to dispose of the real estate division, reduce costs by closing the group headquarters and relocate the board and treasury functions to one of the divisional headquarters.
- 3.2 Identify and evaluate alternative methods available to the board for the disposal of the real estate division, should it decide to do so, and recommend the method of disposal most appropriate to JMR.

## 4 Kicer Co.

You are the manager responsible for the audit of Kicer Co. Kicer is a supplier of components used in the manufacture of vehicle engines. Due to a downturn in the economy, and in the automotive industry particularly, the company has suffered a decline in sales and profitability over the last two years, mainly due to the loss of several key customer contracts. Many of Kicer's non-current assets are impaired in value, and a significant number of receivables balances have been written off in the last six months.

In response to the deteriorating market conditions, the management of Kicer decided to restructure the business. The main manufacturing facility will be reduced in size by two-thirds, and investment will be made in new technology to make the remaining operations more efficient, and to enable the manufacture of a wider variety of components for use in different types of engines and machinery. In order to fund this restructuring, the management of Kicer approached the company's bank with a request for a significant loan. You are aware that without the loan, Kicer is unlikely to be able to restructure successfully, which will raise significant doubt over its ability to continue as a going concern. Your firm has been asked to advise on the necessary forecasts and projections that the bank will need to see in order to make a decision regarding the finance requested.

### Requirement

Identify and explain the matters that should be considered, and the principal assurance procedures to be performed, in respect of the additional funding being sought, highlighting any corporate reporting issues connected with whether Kicer obtains the loan.

## 5 BioRes plc

'This client is an interesting company. It currently generates no revenue, has significant operating costs and has made losses every year since its formation. Despite this, the share price has doubled in the past three years.'

Dawn Davidson, the audit engagement manager, was discussing BioRes plc (BR) at a meeting of the audit team for its year ended 30 September 20X6. You are the audit senior for this client.

Dawn continued: 'In the next few years BR could become one of the major listed companies in the biopharmaceutical sector. At the other extreme, it could fail completely. The BR finance director has provided draft extracts and notes from the financial statements for the year ended 30 September 20X6, including the following going concern disclosure note:

### Going concern note to the financial statements

The financial statements of BR have been prepared on a going concern basis.

The group is developing therapies for the market, but it is not yet in a position to generate revenue. As a consequence, it is absorbing cash through its operations and investments. The cash and cash equivalents held by the company at 30 September 20X6 are, in the opinion of the directors, sufficient to support operations until 30 September 20X7. The directors expect to secure further equity finance, possibly by September 20X7, in order to support operating activities in 20X8 and beyond.

Such finance has not yet been agreed, but the directors are confident that it will be available by December 20X7 at the latest and therefore believe that the company will be able to continue as a going concern beyond 20X7. If the company does cease to be a going concern, then assets would need to be recognised at their recoverable amounts and further provisions may be needed. It would also be necessary to reclassify some non-current assets as current assets.

Here are some extracts from the draft financial statements:

**Draft consolidated statement of financial position at 30 September 20X6**

	<i>Notes</i>	20X6 £'000	20X5 £'000
<b>Non-current assets</b>			
Intangibles	(1)	19,600	20,600
Property, plant and equipment	(2)	2,400	2,200
<b>Current assets</b>			
Cash and cash equivalents		9,800	3,400
<b>Total assets</b>		<b>31,800</b>	<b>26,200</b>
<b>Equity and liabilities</b>			
Issued capital - £1 shares	(3)	84,000	80,000
Share premium		70,400	56,400
Retained deficit		(123,000)	(110,600)
<b>Equity</b>		<b>31,400</b>	<b>25,800</b>
<b>Current liabilities</b>		<b>400</b>	<b>400</b>
<b>Total equity and liabilities</b>		<b>31,800</b>	<b>26,200</b>

**Draft consolidated statement of profit or loss and other comprehensive income for the year ended 30 September 20X6**

	20X6 £'000	20X5 £'000
Revenue	-	-
Research and development costs	(7,200)	(8,000)
General and administrative costs	(1,600)	(1,840)
Exceptional item	(3,600)	
Loss before tax	(12,400)	(9,840)
Tax		
Loss for the year	(12,400)	(9,840)

**Note:** Intangibles

Intangibles consist of intellectual property rights and development costs. The intangible asset note shows:

	£'000
At 1 October 20X5	20,600
Additions	3,400
Impairments - exceptional item	(3,600)
Amortisation	(800)
At 30 September 20X6	19,600

The additions to intangibles comprise:

	<b>£'000</b>
Purchase of licences	1,600
Capitalised development expenditure	800
Capitalisation of Project X	1,000
Total	3,400

**Note:** Property, plant and equipment

Additions to property, plant and equipment in the period were £400,000.

**Note:** Share issue

An issue of 4 million £1 ordinary shares was made in April 20X6 at a price of £4.50 per share by means of a private placing.'

Dawn continued 'The financial statements need to be signed off in January 20X7. To help me understand the critical issues for this company please explain the key issues to be considered in assessing going concern at BioRes, with supporting calculations.'

### **Requirement**

Respond to the instructions from Dawn Davidson.

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

## Answer to Interactive question 1

$$\begin{aligned}\text{Algol: } k_e &= r_f + \beta_e (r_m - r_f) \\ 8 &= r_f + 1.2 (7 - r_f) \\ 8 &= r_f + 8.4 - 1.2 r_f \\ 0.2 r_f &= 0.4 \\ r_f &= 2 \\ \text{Rigel: } k_e &= 2 + (7 - 2) 1.8 \\ &= 11\%\end{aligned}$$

## Answer to Interactive question 2

$$\begin{aligned}k_e &= \frac{d_0(1+g)}{P_0} + g \\ &= \frac{3(1.10)}{250} + 0.10 \\ &= 0.1132 \text{ or } 11.32\%\end{aligned}$$

$$2.2 \quad k_e = 5 + 1.40(8 - 5) = 9.2\%$$

## Answer to Interactive question 3

3.1 **Beta measures** the systematic risk of a risky investment, such as a share in a company, and financial risk. The total risk of the share can be subdivided into two parts, known as **systematic (or market) risk** and **unsystematic (or unique) risk**. The systematic risk depends on the sensitivity of the return of the share to general economic and market factors such as periods of boom and recession. The capital asset pricing model shows how the return which investors expect from shares should depend only on systematic risk, not on unsystematic risk, which can be eliminated by holding a well-diversified portfolio.

Beta is calibrated such that the average risk of stock market investments has a **beta of 1**. Thus shares with betas of 0.5 or 1.5 would have ½ or 1½ times the average sensitivity to market variations respectively.

This is reflected by higher volatility of share prices for shares with a beta of 1.5 than for those with a beta of 0.5. For example, a 10% increase in general stock market prices would be expected to be reflected as a 5% increase for a share with a beta of 0.5 and a 15% increase for a share with a beta of 1.5, with a similar effect for price reductions.

3.2 The beta of a company will be the **weighted average** of the beta of its shares and the beta of its debt. The beta of debt is very low, but not zero, because corporate debt bears default risk, which in turn is dependent on the volatility of the company's cash flows.

Factors determining the beta of a company's equity shares include:

- (1) **Sensitivity** of the company's **cash** flows to economic factors, as stated above. For example, sales of new cars are more sensitive than sales of basic foods and necessities.
- (2) The company's **operating gearing**. A high level of fixed costs in the company's cost structure will cause high variations in operating profit compared with variations in sales.
- (3) The company's financial gearing. High borrowing and interest costs will cause high variations in equity earnings compared with variations in operating profit, increasing the equity beta as equity returns become more variable in relation to the market as a whole. This effect will be countered by the low beta of debt when computing the weighted average beta of the whole company.

### Answer to Interactive question 4

Calculations:

- (1) The cost of irredeemable debt capital is  $i/P_0 = £10/£90 \times 100\% = 11.1\%$
- (2) **The cost of redeemable debt capital.** The capital profit that will be made from now to the date of redemption is £10 (£100 × £90). This profit will be made over a period of 10 years which gives an annualised profit of £1 which is about 1% of current market value. The RATE spreadsheet function is used to calculate the pre-tax yield to maturity on a redeemable bond or debenture (i.e the pre-tax cost of redeemable debt).

B5 =RATE(B1,B2,B3,B4)		
	A	B
1	Nper = the number of periods	10
2	Pmt = the amount (of interest) paid in any single period	10
3	Pval = the present value of the asset (its market price)	-90
4	Fval = the future value (the amount paid at maturity).	100
5	Annual yield to maturity	0.1175

The approximate cost of redeemable debt capital (pre-tax) is therefore 11.75%

### Answer to Interactive question 5

5.1

B5 =RATE(B1,B2,B3,B4)		
	A	B
1	Nper = the number of periods	3
2	Pmt = the amount (of interest) paid in any single period	8
3	Pval = the present value of the asset (its market price) (103 - 8) <sup>1</sup>	-95
4	Fval = the future value (the amount paid at maturity).	100
5	Annual yield to maturity	0.10

<sup>1</sup>We must subtract the current interest of £8 from the current market price of £103. Then, we must use the 'ex-interest' market value.

Yield to maturity is 10%.

1.2 If the cost of the debt security rises to 12%, the market price will fall to reflect the new rates required by investors. As the debt is now ex-interest, the price will also have fallen by the £8 payment at the end of 20X2. The PV spreadsheet function is used to calculate the market price of a bond, this is covered in more detail in the chapter Spreadsheet formulae.

B5 =PV(B1,B2,B3,B4)		
	A	B
1	Rate of return required over the period	0.12
2	Nper = the number of periods	3
3	Pmt = the amount (of interest) paid in any single period	8
4	Fval = the future value (the amount paid at maturity).	100
5	Present value (market price)	-90.39

The estimated market price would be £90.39, ex interest.

5.3

B5 =RATE(B1,B2,B3,B4)		
	A	B
1	Nper = the number of periods	3
2	Pmt = the amount (of interest) paid in any single period	8
3	Pval = the present value of the asset (its market price) (103 - 8) <sup>1</sup>	-95
4	Fval = the future value (the amount paid at maturity).	100
5	Annual yield to maturity	0.10

<sup>1</sup>We must subtract the current interest of £8 from the current market price of £103. Then, we must use the 'ex-interest' market value.

The annual yield to maturity is the pre-tax cost of debt.

The estimated after-tax cost of debt is: 10% (1 - 0.21) = 7.9%

#### Answer to Interactive question 6

##### Market values

Equity (E):	2,500 / 0.5 × 1.30	<b>\$'000</b> 6,500
Loan notes (D):	1,000 × 0.72	720
E+D		7,220

##### Cost of equity:

$$k_e = \frac{d_0 (1 + g)}{P_0} + g = \frac{0.15(1 + 0.1)}{1.3} + 0.1 = 0.2269 + 0.1 = 0.3269 = 32.69\%$$



**Cost of loan stock:**

$$k_d = \frac{i(1 - T)}{P_0} = \frac{0.12(1 - 0.24)}{0.72} = 0.1267 = 12.67\%$$

**Weighted average cost of capital:**

$$WACC = \left[ \frac{E}{E + D} \right] k_e + \left[ \frac{D}{E + D} \right] k_d$$

**Answer to Interactive question 7**

We do not need to know Panda's weighted average cost of capital, as the new project has different business characteristics from its current operations. Instead we use the capital asset pricing model so that:

$$\text{Required return} = 6 + 1.5(12 - 6) = 15\%$$

$$\text{Expected return} = \frac{12,000 - 10,000}{10,000} = 20\%$$

Thus the project is worthwhile, as expected return exceeds required return.

**Answer to Interactive question 8**

	<i>Post-tax EPS</i>	<i>Growth</i>	<i>Dividend per share</i>	<i>Growth</i>	<i>Inflation</i>	<i>Payout ratio</i>
	<b>Pence</b>	<b>%</b>	<b>Pence</b>	<b>%</b>	<b>%</b>	<b>%</b>
20X0	47.9	-	19.2	-	-	40.1
20X1	51.3	7.1	20.1	4.7	5	39.2
20X2	55.2	7.6	20.9	4.0	4	37.9
20X3	55.9	1.3	21.5	2.9	3	38.5
20X4	61.9	10.7	22.2	3.3	3	35.9

The data indicates that TYR is paying a **constant real dividend per share**, the nominal dividend per share being adjusted by the rate of inflation. As a result, its **payout ratio** has declined.

**Assessment of dividend policy**

One way in which we can measure the success of the dividend policy is to compare the changes in the share price of TYR with the changes in the market index.

	<i>FT all share index</i>	<i>Growth</i>	<i>Share price</i>	<i>Growth</i>
		<b>%</b>	<b>Pence</b>	<b>%</b>
20X0	2,895	-	360	-
20X1	3,300	14.0	410	13.9
20X2	2,845	(13.8)	345	(15.9)
20X3	2,610	(8.3)	459	33.0
20X4	2,305	(11.7)	448	(2.4)

TYR's shares have outperformed the market over the last two years, so by this measure its dividend policy has been a success, despite the decline in payout ratio.

### Limitations of analysis

However, TYR's share price may be affected by **factors other than its dividend policy**. Modigliani and Miller suggested that shareholders will be indifferent between dividends and capital gains. Even if this view is not accepted, in a **reasonably efficient market** shareholders may be influenced by the present value of expected **future cash** flows rather than **present dividend policy**. The fact that TYR is retaining a higher proportion of its earnings may signal to shareholders that it has plans for significant investment in profitable opportunities. Other influences on share prices can include rumours of a takeover bid.

### Answer to Interactive question 9

<b>Breakup values of assets at 31 March 20X2</b>	£'000
Freehold	3,000
Plant and machinery	1,400
Motor vehicles	120
Patents	800
Current assets	1,050
	6,370
<b>Total liabilities at 31 March 20X2</b>	£'000
Debentures	1,000
Other loans	3,000
Bank overdraft	750
Trade payables	1,960
	6,710

Thus liabilities exceed assets, and on a liquidation the shareholders would receive nothing.

### Answer to Interactive question 10

#### Breakup values of assets at 31 December 20X9

	£'000
Freehold buildings	11,250
Liquidation costs	(1,250)
Secured loan	(4,000)
	6,000
Plant and equipment	5,000
Delivery vehicles	500
Sale of patents	3,125
Current assets	4,000
	18,625
Other loans	(12,000)
	6,625
Trade payables and bank overdraft	10,750

### Comment

The secured loan, other loans and liquidation costs would be paid in full in the event of liquidation. However, there would only be £6,625,000 left to pay trade payables and the bank overdraft.

Approximately 61.6% of these obligations would be met. There would be nothing left for the preference and ordinary shareholders.

### Reconstruction scheme

	£'000
Earnings before interest and tax	3,600
Interest (8% × £3,125,000 + 12% × £8,000,000)	1,210
Earnings before tax	2,390
Tax at 21%	502
Earnings after interest and tax	1,888
P/E ratio (average)	10.8

Share price = (£1,888,000 × 10.8)/Number of shares (10,500,000) = £1.94

### Comments Secured loan

Under the proposed scheme, the loan provider will receive securities of £5,375,000 (£3,125,000 + 1,500,000 shares at, say, £1.50 each). This is more than it had previously and the yield on the loan remains the same (8%). If the company went into liquidation it would receive the full amount of the money owing to it.

### Other loans

The loan provider will receive £8,000,000 secured loan plus £4,125,000 worth of shares (£1.50 × 2,750,000). This is more than it had previously. This means that a total of £11,125,000 (including the secured loan above) is secured on freehold buildings with a disposal value of £11,250,000. This does not give good asset coverage, although this could change if the value of the buildings was to increase. The loan provider's risk has increased as a result of being granted ordinary shares (last in the pecking order if the company went into liquidation).

### Ordinary shareholders

Under the scheme, the current ordinary shareholders would lose control of the company due to the shares granted to loan providers and preference shareholders. In the event of liquidation they would receive nothing.

### Preference shareholders

The preference shareholders have received no dividends for five years. However, the granting of 1,250,000 ordinary shares more than covers the arrears.

### Cash flow if reconstruction took place

	£'000
Cash from new share issue to equity holders	5,000
Repayment of overdraft	3,000
Available cash	2,000

The reconstruction scheme may not be acceptable to all interested parties. In particular, the providers of the 'other loans' may be reluctant, given their increased risk. This will be a concern for the company as the funds from the 'other loans' are necessary to finance the business. If the reconstruction scheme is not acceptable, the company may have to seek funds elsewhere, otherwise liquidation may be unavoidable.

## **Assurance procedure**

### **Applicable to all Prospective Financial Information (PFI)**

- Discuss with management the way in which the PFI is prepared.
- Compare the actual results of previous restructurings with forecasts to determine overall level of accuracy of PFI.
- Determine who specifically is responsible for the preparation of the PFI and assess their experience and expertise.
- Assess the role of internal audit and other control procedures over the preparation of PFI.
- Review the accounting policies normally adopted by the company. These should have been consistently applied in the preparation of the PFI.
- Check the arithmetical accuracy of the PFI by making clerical checks such as re-computation. Internal consistency should also be assessed through the use of analytical procedures.
- Obtain written representations from management regarding the intended use of the PFI, the completeness of significant management assumptions and management's acceptance of its responsibility for the PFI.

### **Profit forecasts**

- Discuss with management the means by which they have predicted expected revenues/profits. For example, extrapolation of historical data may be inappropriate due to the restructuring.
- Check that any assumptions made are consistent with one another. For example, if revenue is expected to grow certain costs would also be expected to increase (although not necessarily in direct correlation). Assess the assertion by the business that the restructuring will result in a lower cost base.
- Compare assumptions made for forecast purposes with other internal information produced by the business. For example, expected sales growth can be compared to sales and marketing plans.
- Compare assumptions made with general industry data and trends particularly in respect of the building systems market.
- Compare predicted costs against actual costs incurred. Clarify the rationale behind any significant cost savings.

### **Forecast statements of financial position**

- Perform analytical review comparing key ratios including ROCE, current ratio and gearing, based on the forecast information with the most recent results.
- Agree proposed additions to tangible assets to capital expenditure budgets. Ensure assumptions regarding depreciation are consistent with the profit forecast. (This would also apply to intangibles.)
- Agree cash balance to other forecast information, eg, cash flow.
- Determine the level of provisions made in respect of discontinued activities and assess whether they seem reasonable.
- Compare predicted movements in loans to cash flow.
- Analyse movement on reserves (ie, is movement on revenue reserve equal to forecast profit? If not, what do the other movements represent?).

### **Answer to Interactive question 11**

## Tutorial Note

Part (a) covers alternative sources of finance. Various criteria can be used to consider them:

- Costs (including costs saved)
- Flexibility (a company knows when and how much interest and principal it has to pay on a loan but still has to pay it; by contrast, an overdraft facility only has interest charged on it if it is used, but it is repayable on demand)
- Commitment (security that has to be given, how much the company is tied into the arrangement)
- Appearances (effect on gearing, effect on accounts receivable if factor organisation is employed)

Although the question directs you towards discussing certain sources of finance, it does not confine you to those sources. Therefore, although the bulk of your answer to (a) should discuss the sources listed, a section briefly mentioning other sources should also be included.

Don't forget also in (a) to bear in mind the likely level of financial knowledge of the recipients of your report. Don't assume a high level of understanding.

## REPORT

**To:** Shareholders in DF

**From:** Accountant

**Date:** 11 December 20X1

**Subject:** Alternative methods of financing current assets

### Introduction

The contract to supply FF means that DF will need to make a **significant additional permanent investment in current assets** (in the form of additional inventories and higher accounts receivable). There will also be an additional temporary element which fluctuates with the level of sales. This will increase the amount of money needed by the company to finance these assets. There are a number of different sources of finance that could be considered.

## Bank loan

A bank loan would normally be for a fixed **amount of money** for a fixed term and at a fixed rate of interest. It is not clear whether or not the company has any existing debt finance. However, it has already been decided to use a bank loan to fund the purchase of the additional non-current assets. The **size of this loan** and the **quality of security** available will be key factors in determining whether the bank is willing to make a further advance to cover the investment in current assets. Assuming that a further loan is forthcoming, the company will need to evaluate the effect of this in terms of **cost** and the **effect on the capital structure**.

### Advantages of bank loan

- (1) **Bank** finance is **cheaper** than the cost of allowing a 3% **settlement discount**, and is also likely to be cheaper than using debt factoring or invoice discounting.
- (2) The **loan** can be **negotiated** for a fixed term and a fixed amount, and this is less risky than, for example, using an overdraft, which is repayable on demand.

### Disadvantages of bank loan

- (1) The company will have to **pay interest** on the **full amount of the loan** for the entire period. This could make it more expensive in absolute terms than using an alternative source of finance where interest is only payable on the amount outstanding.
- (2) The loan will **increase the level** of the company's financial gearing. This means that there could be greater volatility in the returns attributable to the ordinary shareholders.
- (3) The bank is likely to **require security**. If there are questions as to the quality of the asset base, the bank may also require personal guarantees or additional security from the directors or shareholders.

## Overdraft

An overdraft is a form of lending that is **repayable on demand**. The bank grants the customer a **facility** up to a certain limit, and the customer can take advantage of this as necessary. Overdrafts are essentially short-term finance, but are renewable and may become a near-permanent source.

### Advantages of overdraft

The attraction of using an overdraft to finance current assets is that **interest** is only **payable** on the **amount of the facility actually in use** at any one time. This means that the **effective cost of the overdraft** will be **lower** than that of the **bank loan**. This is particularly attractive for a company such as DF, where demand is expected to fluctuate significantly from month to month, and consequently there are likely to be large variations in the level of working capital. It is also likely to be cheaper than the other alternatives being considered.

### Disadvantages of overdraft

As already stated, the main drawback to using an overdraft is that it is **repayable on demand**. Therefore, the company is in a more vulnerable position than it would be if a bank loan were used instead. A long-term overdraft may be included in the **gearing** calculations, and the bank may require **security**.

## Debt factoring

Factoring is an arrangement to have **debts collected** by a **factor company**, which advances a proportion of the money it is due to collect. Services offered by the factor would normally include:

- (1) **Administration** of the client's invoicing, sales accounting and debt collection service
- (2) **Credit protection** for the client's debts, whereby the factor takes over the risk of loss from bad debts and so 'insures' the client against such losses
- (3) **Making advance payments** to the client before the debts are collected

### Benefits of factoring

- (1) **Growth** is **effectively** financed through **sales**, which provide the security to the factor. DF would not have to provide the additional security that might be required by the bank.
- (2) The **managers** of the business will **not** have to **spend time** on the problem of **slow-paying accounts receivable**.
- (3) **Administration costs** will be **reduced** since the company will not have to run its own sales ledger department.

### Disadvantages of factoring

- (1) The **level of finance** is **geared** to the **level of sales**. In other words, finance lags sales. In practice, DF will need finance ahead of sales in order to build up sufficient inventories to meet demand.
- (2) Factoring may be **more expensive** than bank finance. Service charges are generally around 2% of total invoice value, in addition to finance charges at levels comparable to bank overdraft rates.
- (3) The fact that accounts receivable will be making payments direct to the factor may present a **negative picture** of the firm.

### Invoice discounting

Invoice discounting is related to factoring and many factors will provide an invoice discounting service. Invoice discounting is the **purchase of a selection of invoices**, at a discount. The discounter does **not take over** the **administration** of the client's sales ledger. The arrangement is purely for the advance of cash.

### Advantages of discounting

The arrangement is thus a **purely** financial **transaction** that can be used to release working capital. It therefore shares some of the benefits of factoring in that **further security** is **not required**. The discounter will make an assessment of the risk involved, and only good-quality invoices will be purchased, but this should not be a problem to DF since FF is a large well-established company.

### Disadvantage of discounting

The main disadvantage is that **invoice discounting** is likely to be **more expensive** than any of the other alternatives. It is normally only used to cover a temporary cash shortage, and not for the routine provision of working capital.

### Other options

- (1) Finance can be obtained by **delaying payment to accounts payable**. In theory this is potentially a **cheap source of finance**. The main disadvantage may be a **loss of supplier goodwill**, at a time when the company needs supplier cooperation to fulfil the new order.
- (2) Other methods of loan finance, notably debenture issue, are not appropriate as they are essentially **long term**. The **debenture holders** may require **security** that the company is unable to provide.
- (3) Although we are told that **increased inventory levels** will be needed to **fulfil FF's requirements**, there may be scope for **reducing the inventory levels** necessary to fulfil other customers' requirements.

### Conclusions

Of the options considered, factoring or some form of bank finance is likely to be the most appropriate. The final decision must take into account the full cost implications, not just the relative rates of interest on the finance. DF must also consider the effect of the type of finance selected on the statement of financial position and the type of security that will be required. This could also impact on the ability of the company to raise further finance in the future.

### **Tutorial Note**

(b) is a summary list of the key factors venture capitalists will take into account. As well as the market prospects of a company, venture capitalists are interested in the involvement of management (level of commitment and expertise).

A **venture capital organisation** (below, 'VC') is likely to take the following factors into account when deciding whether or not to invest in DF.

#### **The nature of the company's product**

The VC will consider whether the good or service can be produced viably and has potential to sell, in the light of any market research which the company has carried out.

#### **Expertise in production**

The VC will want to be sure that the company has the necessary technical ability to implement production plans with efficiency.

#### **Expertise in management**

Venture capitalists pay much attention to the quality of management, since they believe that this is crucial to the success of the enterprise. Not only should the management team be committed to the enterprise; they should also have appropriate skills and experience.

#### **The market and competition**

The nature of the market for the product will be considered, including the threat which rival producers or future new entrants to the market may present.

#### **Future prospects**

The VC will want to be sure that the possible prospects of profits in the future compensate for the risks involved in the enterprise. The VC will expect the company to have prepared a detailed business plan setting out its future strategy.

#### **Board membership**

The VC is likely to require a place on the board of directors. Board representation will ensure that the VC's interests will be taken account of, and that the VC has a say in matters relating to the future strategy of the business.

#### **Risk borne by the existing owners**

The VC is likely to wish to ensure that the existing owners of the business bear a significant part of the investment risk relating to the expansion, as bearing part of the risk will provide an incentive to ensure the success of the venture. Although the VC may be providing most of the investment, the amounts provided by the owners should be significant in relation to their overall personal wealth.

#### **Exit routes**

The means by which the VC can eventually realise its investment are called 'exit routes'. Ideally, the VC will try to ensure that there are a number of exit routes.



# Answers to Self-test questions

## 1 CRY plc

### Tutorial Note

Demonstrates the complications that may occur in weighted average cost of capital calculations. When you calculate the cost of equity, you will need to do more than just plug the figures into the formula. Do not forget to check whether shares are quoted **cum or ex div**.

With debentures, the most serious mistake you can make is to treat redeemable debentures as irredeemable. Because the debentures are redeemable, you need to carry out an IRR analysis. Remember, this calculation is done from the viewpoint of the investor. The investor pays the market price for the debentures at time 0, and then receives the interest and the redemption value in subsequent years. You must bring tax into your calculation.

Lastly, do not forget that the weightings in the WACC calculation are based on market values, not book values.

The post-tax weighted average cost of capital could be used as a first step in the analysis.

### Ordinary shares

	£
Market value of shares cum div	3.27
Less dividend per share (810 ÷ 3,000)	0.27
Market value of shares ex div	3.00

The formula for calculating the cost of equity when there is dividend growth is:

$$k_e = \frac{D_0(1+g)}{P_0} + g$$

Where: $k_e$	= cost of equity
$D_0$	= current dividend
$g$	= rate of growth
$P_0$	= current ex-div market value

In this case we shall estimate the future rate of growth ( $g$ ) from the average growth in dividends over the past four years.

$$810 = 620(1+g)^4$$

$$(1+g)^4 = 810 / 620$$

$$= 1.3065$$

$$(1+g) = 1.0691$$

$$g = 0.0691 = 6.91\%$$

$$k_e = \frac{0.27 \times 1.0691}{3} + 0.0691 = 16.53\%$$

## 7% debentures

The RATE spreadsheet function is used to calculate the pre-tax yield to maturity on a redeemable bond or debenture (ie, the pre-tax cost of redeemable debt).

B5 =RATE(B1,B2,B3,B4)		
	A	B
1	Nper = the number of periods	10
2	Pmt= the amount (of interest) paid in any single period	7
3	Pval= the present value of the asset (its market price) (103-8) <sup>1</sup>	-77.10
4	Fval = the future value (the amount paid at maturity).	100
5	Annual yield to maturity	0.1087

<sup>1</sup> We must subtract the current interest of £8 from the current market price of £103. Then, we use the 'ex-interest' market value.

Post-tax cost of debt = 10.87% × (1 - 0.21) = 8.59%

## The weighted average cost of capital

	Market value	Cost	Product
	£'000	%	£'000
Equity	9,000	16.53	1,488
7% debentures	1,002	8.59	86
	10,002		1,574

WACC = (1,574/10,002) × 100% = 15.74%

These calculations suggest that a discount rate of 16% might be appropriate for the appraisal of new investment opportunities, but only if the new investment will not significantly change the financial structure (gearing) of the company and does not have a significantly different business risk profile.

### Tutorial Note

Demonstrates that the calculation of the weighted average cost of capital is not a purely mechanical process. It makes assumptions about the shareholders, the proposed investment and the company's capital structure and future dividend prospects. Given all the assumptions involved, the result of the calculations may need to be taken with a large pinch of salt!

Difficulties and uncertainties in the above estimates arise in a number of areas.

- (1) **The cost of equity.** The above calculation assumes that all shareholders have the same marginal cost of capital and the same dividend expectations, which is unrealistic. In addition, it is assumed that dividend growth has been and will be at a constant rate of 6.9%. In fact, actual growth in the years 20X5/6 and 20X8/9 was in excess of 9%, while in the year 20X7/8 there was no dividend growth. 6.9% is merely the average rate of growth for the past four years. The rate of future growth will depend more on the return from future projects undertaken than on the past dividend record.

- (2) **The use of the weighted average cost of capital.** Use of the weighted average cost of capital as a discount rate is only justified where the company in question has achieved what it believes to be the **optimal capital structure** (the mix of debt and equity) and where it intends to maintain this structure in the long term.
- (3) **The projects themselves.** The weighted average cost of capital makes **no allowance** for the **business risk** of **individual projects**. Adjustments to the cost of equity and the cost of capital to allow for a different level of business risk in a new investment may be appropriate.

## 2 Ella

### 2.1 The term of the assets being acquired

**To:** Board  
**From:** Accountant  
**Date:** 8 January 20X7  
 Re: Debt finance  
 Factors to be considered when deciding on the appropriate term of the finance to be issued are discussed below.

The term should be appropriate to the **asset** being acquired. As a general rule, **long-term assets** should be financed from **long-term** finance sources. Cheaper short-term funds should finance short-term requirements, such as fluctuations in the level of working capital.

#### Flexibility

Short-term debt is a **more** flexible source of finance. There may be penalties for repaying long-term debt early. If the company takes out long-term debt and interest rates fall, it will find itself locked into unfavourable terms.

#### Repayment terms

The company must have **sufficient funds** to be able to **meet repayment schedules** laid down in loan agreements and to cover interest costs. Although there may be no specific terms of repayment laid down for short-term debt, it may possibly be **repayable on demand**, so it may be risky to finance long-term capital investments in this way.

#### Costs

**The interest rate on short-term debt** is usually **less** than on long-term debt. However, if short-term debt has to be renewed frequently, issue expenses may raise its cost significantly.

#### Availability

It may be **difficult to renew short-term** finance in the future if the company's position or economic conditions change adversely.

#### Effect on gearing

Certain types of short-term debt (such as bank overdrafts and increased credit from suppliers) will not be included in gearing calculations. If a company is seen as **too highly geared**, lenders may be **unwilling to lend money**, or judge that the high risk of default must be compensated by higher interest rates or restrictive covenants.

1.2 The following factors might restrict the amount of debt that the company could raise.

### Previous record of company

If the company (or possibly its directors or even shareholders) has a **low credit rating** with credit reference agencies, investors may be unwilling to subscribe for debentures. Banks may be influenced by this, and also by their own experiences of the company as a customer (especially if the company exceeded overdraft limits in the past on a regular basis).

### Restrictions in Articles of Associations

The company should examine the legal documents carefully to see if they place any restrictions on what the company can borrow, and for what purposes.

### Restrictions of current borrowing

The **terms** of any **loans** to the company that are **currently outstanding** may contain restrictions about further borrowing that can be taken out.

### Uncertainty over project

The project is a significant one. Presumably the **interest and ultimately repayment** that lenders obtain may be dependent on the success of the project. If the results are uncertain, lenders may not be willing to take the risk.

### Security

The company may be **unwilling to provide the security** that lenders require, particularly if it is faced **with restrictions** on what it can do with the **assets secured**.

Alternatively, it may have **insufficient assets** to provide the necessary security.

1.3 There should be sufficient finance to cover the costs of the new factory, starting the new business unit and working capital requirements to begin production.

### Questions

- (1) Will the new venture be financed entirely by new debt or is Ella also advancing any capital? This is to establish whether the business plan is complete.
- (2) Who prepared the forecasts? This is to establish whether they have been prepared by someone with experience of preparing such budgets, as this will give assurance as to whether the budgets are reasonable.
- (3) Are figures in the forecasts supported by evidence such as quotations for machinery or building work? This is to see the degree of estimation included in the plans.
- (4) Has the cost of finance been included in the forecasts?
- (5) How long before the products can be sold and begin to fund themselves? The budget does not contain any contingency and it is important to discover how tight the production schedule is and whether it is realistic.
- (6) Have all construction costs been included in the cost projection - for example, the costs of electricity and the cost of employees not being used in their usual roles.
- (7) What is the timescale for the construction? Does the projection take account of inflation, if necessary?
- (8) Does the projection contain budgets for all raw materials required?
- (9) What are the advertising costs based on? These must be appropriate to the specific product, so if they are based on the costs associated with other products of the company, they may not be sufficient.
- (10) What is the commercial viability of the new product? The accountant should look at market research because ability to pay the loan back will be an important factor for the bank.

## 3 JMR

3.1 While a review of the Group's strategy is necessary, such a review should consider all the operating divisions as well as the Group and head office functions, rather than being limited in scope to the areas the institutional investors suggest.

### Disposal of real estate division

The real estate division currently contributes 30% of the Group's earnings, and is the **fastest growing** of the divisions (over 20% per year in the last three years). The divisional management team expects this rate of growth to be sustained.

The real estate market sector also has the **highest P/E ratio**, suggesting the sector affords good growth prospects, and supporting the divisional management team's optimistic forecasts.

In terms of JMR's overall portfolio, the real estate division appears to offer **better growth prospects** than either the construction or engineering divisions, although the engineering division is likely to have relatively secure earnings by virtue of its contracts with government departments. Nonetheless, disposing of the real estate department does not appear to be a good strategic move.

The **engineering and machinery division** looks a more suitable candidate for disposal, despite its government contracts. It makes the **lowest contribution to Group earnings**, and has a lower growth rate than the real estate division.

Although the **construction and building division** has the lowest growth rate, it **generates 50% of the Group's earnings** and JMR would be unlikely to want to dispose of a division which contributes such a large proportion of earnings.

Moreover, we should also consider the **institutional investor's potential motives** in recommending the sale of the real estate division. It is looking for a **large one-off dividend**, which suggests a short-term strategy. In this respect, it is likely that JMR could sell the real estate division for a much **higher price** than the engineering division, thereby generating more cash to pay a dividend. However, that is unlikely to be in the Group's longer-term strategic interests.

### Relocating Group headquarters

The Group headquarters are 'quite luxurious' and located in the capital which suggests that they are quite expensive. Therefore, it is likely that **cost savings** could be made, by relocating to one of the divisional headquarters. There may be reasons why the offices need to be located in the capital (for example, being close to the stock market) in which case the board need to explain this to the investors.

Equally, there may not be space in any of the divisional headquarters to relocate all the Group staff (50) there, in which case the Group could still look at finding **new offices where overhead costs will be lower**. This could also be a good opportunity to review whether the Group really needs 50 staff or whether the team can be streamlined.

3.2 If the Board does decide to sell the real estate division there is a range of alternative methods it could use for the disposal.

### Sale as a going concern to another business

This would represent, in effect, the reverse of the transaction by which JMR acquired the real estate division. The division would be **sold to another company**, in exchange for either **cash or shares** in the acquiring company. All the responsibilities and costs of running the division would pass to the acquiring company, as would all future profits.

If the sale were made for cash, it could provide JMR with an **inflow of cash** to meet the shareholders' demands for a large, **one-off dividend payment**.

However, it would mean that **JMR loses 30% of its earnings**, and any future earnings growth which the real estate division would have generated. This could mean that the Group's subsequent **ability to pay dividends in future years is reduced**. Moreover, stripping out the division with the highest P/E ratio would cause JMR's share price to fall; in turn reducing the value of the remaining Group, and possibly again laying the board open to a charge of 'destroying value'.

Finally, the sale of a division would mean that the Group **overhead costs** have to be apportioned over only two divisions rather than three, again reducing the Group profitability unless significant overhead savings were made.

### **Demerger**

A demerger would mean that instead of simply being a division of JMR Group, the real estate operation becomes a **separate company in its own right**. The existing shareholders of JMR Group are likely to **receive shares in the new company** in proportion to their existing holding in JMR.

The logic behind a demerger is usually that the existing formation is creating **negative synergies**, and the new company will generate greater earnings operating independently rather than being part of the Group. Given the suggestion that JMR is currently 'destroying value', this could well be the case.

However, from JMR's perspective a demerger is less attractive. As with a cash sale, JMR Group would lose 30% of its earnings. But unlike the cash sale, the **demerger would not generate a cash inflow** into the business.

Therefore this option **would not provide for a one-off dividend to the shareholders**, because it is a non-cash option. If shareholders want a one-off cash boost they will have to generate it themselves by selling their shares in the newly demerged company.

However, one advantage of this approach from the shareholders' perspective is that they have **shares in both companies**. If they remain dissatisfied with the performance of JMR Group, they could elect to sell their shares in it, and just retain their shares in the new real estate company.

### **Liquidation of assets**

The real estate **division could be closed**, its staff made redundant (or redeployed elsewhere in the Group) and its **assets sold off** at market price.

However, given that the real estate is a profitable and growing business, this is unlikely to be a desirable option; not least because a sale of assets is **likely to command lower prices than the sale of the business as a going concern**.

A liquidation of assets would be a cash sale, and so would provide a cash inflow to underwrite a one-off dividend payment. However, given that both options would lead to JMR losing 30% of its Group earnings, it is likely that it would **prefer the option which generates more cash** in return.

Moreover, there is likely to be **negative publicity** surrounding the closure of the division, and any associated redundancies, which may have a further negative impact on the Group's performance.

### **MBO**

In an MBO, the **management of the real estate division would buy the division** from JMR, with the intention of driving forward its growth and increasing its profitability.

However, an important issue here is the **price which the managers would agree to pay** for the division. On the one hand, it is likely they will have to obtain **funding from venture capitalists** to support their own capital in the purchase, so they will want to keep the purchase price as low as possible to minimise their debt and future interest charges.

On the other hand, the divisional **managers are likely to know more about the business** and its prospects than the Group managers, and also any external purchasers.

These two factors together are likely to mean that the price an MBO team offer for the sale is **likely to be lower than the price which could be earned from an open market sale** of the business as a going concern.

Again, the Group needs to remember that after the buyout the real estate will be a separate entity so Group **earnings will be reduced by 30%**. Therefore it should not accept a sale price which is too low, particularly if it intends to make a one-off dividend payment to the institutional investors.

However, an MBO may be considered the most attractive option from a **public relations perspective**. The Group could present the sale of a successful division to its management positively – emphasising the way they are being given the opportunity to control the division's strategy and its future.

### Management buy in

This approach, in effect, combines aspects of an MBO and a sale of the business as a going concern. Like an MBO, a **group of people collectively buy the division**. However, unlike an MBO, the **purchasers come from outside the company**. So after a management buy-in the real estate division would become a privately owned real estate company.

From JMR's perspective, the management buy-in is another option which could **generate a cash inflow**, and so would provide the funds to satisfy the investors' demands for a one-off dividend. Depending on the extent of the purchasers' knowledge of the business, JMR may be able to earn a higher selling price from a management buy-in than from an MBO.

However, a management buy-in does not afford the same positive aspects in terms of public relations.

### Recommendation

JMR could either look at the disposal as a means of **maximising value** from the Group, or **raising cash** to pay a one-off dividend. A demerger is probably the option which would maximise value, but it will not generate cash. However, an MBO will generate cash proceeds and, by allowing the divisional management full control of the real estate division should allow its capabilities to be exploited fully. Although the new entity will be outside the Group, the public relations aspect of a sale to management will be more positive than an open market sale.

Therefore, JMR would be advised to sell the real estate division through an MBO.

## 4 Kicer Co.

### Assurance procedures

Procedures in respect of the loan include the following:

- Obtain and review the forecasts and projections prepared by management and consider if the assumptions used are in line with business understanding.
- Obtain a written representation from management confirming that the assumptions used in the forecasts and projections are considered achievable in light of the economic recession and state of the automotive industry.

- Obtain and review the terms of the loan that has been requested to see if Kicer can make the repayments required.
- Consider the sufficiency of the loan requested to cover the costs of the intended restructuring.
- Review the repayment history of any current loans and overdrafts with the bank, to form an opinion as to whether Kicer has any history of defaulting on payments. (Any previous defaults or breach of loan conditions makes it less likely that the new loan would be advanced.)
- Discuss the loan request with the company's bankers and attempt to receive confirmation of their intention to provide the finance, and the terms of the finance.
- Discuss the situation with management and those charged with governance, to ascertain if any alternative providers of finance have been considered, and if not, if any alternative strategies for the company have been discussed.
- Obtain a written representation from management stating management's opinion as to whether the necessary finance is likely to be obtained.

### **Corporate reporting issues**

The central issue here is going concern; there are a number of indications that Kicer may not be a going concern. For instance: declining sales and profitability over two years; the loss of key customers; the impairment of assets; debts going bad. Most significant of all is the question of whether the loan will be obtained.

If Kicer does not obtain the loan, then the financial statements must contain disclosures regarding the material uncertainty over going concern and the external auditors will refer to these in the auditor's report.

## **5 BioRes plc**

In 2014 the FRC published new *Guidance on Risk Management, Internal Control, and Related Financial and Business Reporting* (the Risk Guidance) which replaced the existing guidance on going concern. Going concern is relevant for an assessment of the sustainability of the BioRes business, and not just as an audit and disclosure issue. It is the responsibility of the BioRes directors to make an assessment of the company's ability to continue as a going concern as part of its overall responsibilities towards risk management, and the period under assessment should now be significantly longer than 12 months (that is, well beyond 30 September 20X7).

The reporting accountants will need to obtain sufficient evidence about the appropriateness of BR management's use of the going concern assumption.

Where there is a material uncertainty, there will be a need to determine whether the financial statements describe the events or conditions that cast doubt on going concern and disclose clearly that there is a material uncertainty.

The draft financial statements of BR make a disclosure with respect to going concern, but there is no mention of a material uncertainty. Rather, the statement suggests a low level of uncertainty, even though it notes the consequences of failing to be a going concern.

Any procedures should address whether a material uncertainty exists.

### **Liquidity**

A new share issue during the year has raised £18 million cash (per Note (3)). Despite this, cash and cash equivalents have only increased by £6.4 million. This can be demonstrated in a summary cash flow statement as follows:



	£'000
Loss	(12,400)
Add back:	
Impairment	3,600
Depreciation PPE	200
Amortisation	800
<b>Operating cash flows</b>	<b>(7,800)</b>
<b>Investing cash flows</b>	
Additions to intangibles	(3,400)
PPE	(400)
<b>Financing cash flows</b>	
New finance	18,000
Increase in cash	6,400

If the existing level of costs continues, operating cash outflows will be £7.8 million pa. Over the 12- month period to 30 September 20X7, there will be an operating cash requirement of £7.8 million. There is currently a cash balance of £9.8 million available, but this leaves only £2 million to finance additions to PPE and intangibles.

This leaves two significant questions as to going concern over the next 12 months and beyond:

- (1) **Whether** new equity finance will be available to finance the net operating cash outflows until therapies become marketable
- (2) **When** new finance will become available

With respect to (1), evidence will be needed (eg, correspondence, documentation, share price movements) as to whether existing shareholders (or indeed new shareholders) are likely to continue to support BR with new equity finance. This may well be possible if new therapies are coming to fruition in the near future. If the company fails there are few assets for existing equity shareholders to recover past investments, hence this may be an incentive for them to invest further. New debt finance seems unlikely as there is no security.

With respect to (2), the directors believe that equity finance can be raised by the end of December 20X7, but this may be too late given the timing of cash flows as outlined above. Overdraft finance may not be available, and there appears a significant concern that BR may run out of cash, or need to scale down operations towards the end of December 20X7 unless new finance can be found.

There therefore appears to be a material uncertainty over the availability of future finance and therefore over the company's ability to continue as a going concern over the next 12 months and beyond. There are no debt holders to force administration but the company would fail if it could not finance its day to day operations.

With respect to the directors' disclosure in the financial statements there is no mention of 'material uncertainty' and this is a significant omission. Indeed the directors express confidence in the ability of the company to raise new equity finance, even though they do not expect this to occur for almost one year and there is no agreement currently in place.



# Chapter 15

## Financial risk management

### Introduction

Learning outcomes

Knowledge brought forward

Syllabus links

Examination context

Chapter study guidance

### Learning topics

1. Financial risks
2. Interest rate risk
3. Foreign exchange risk
4. Hedge accounting

Summary

Further question practice

Technical reference

Self-test questions

Answers to Interactive questions

Answers to Self-test questions



# Introduction

## Learning outcomes

- Analyse and evaluate financial risks and their implications (for example financing, currency and interest rate risks) and show the application of qualitative and quantitative risk disclosures for financial instruments and other corporate reporting disclosures relevant to risk assessment
- Appraise and advise on appropriate methods to assess, manage and quantify financial risks in specific business scenarios
- Explain and appraise financial instruments available for hedging against interest rate and foreign exchange rate risk, for example, swaps, collars and floors
- Demonstrate and explain the nature and operation of financial instruments underlying the disclosure, recognition and measurement requirements in financial statements
- Demonstrate and explain how interest rate hedging strategies and foreign currency risk management strategies can be formulated, both at the level of the individual transaction and for macro hedging arrangements
- Explain and demonstrate the causes and effects of different types of data bias and data distributions in evaluating financial risks, using appropriate statistical and data analysis tools
- Evaluate and explain interest rate risk

## Knowledge brought forward

Calculations involving futures, options and swaps were covered in Financial Management. The focus in this chapter is on step-by-step approaches to the more complex calculations that you may see in this exam and the advantages and disadvantages of different methods.

## Syllabus links

This chapter focuses on demonstrating how the derivatives discussed in the chapter Financial instruments and financial markets can be used to limit foreign exchange and interest rate risks.

## Examination context

Questions about the financial risks an entity faces may also ask how those risks are to be disclosed in the accounts. Calculations involving different hedging methods may well be combined with how hedging is dealt with in corporate reports.

## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>Financial risks</b></p> <p>Financial instruments are not used in isolation. It would be very rare for a company to make use of one type of financial instrument without considering the wider effects of its use on the overall financial strategy of the organisation. In reality, companies use a number of instruments for different purposes, including risk management and speculation. What is important is being able to evaluate the effects that the financial instruments are likely to have on financial strategy.</p>	<p><b>Approach</b></p> <p>The chapter Financial risk management covers financial engineering – the use of different financial products to protect against such risks as interest rate and foreign currency movements. Section 1 discusses the framework within which decisions are made and should be read carefully.</p> <p><b>Stop and think</b></p> <p>What different types of financial risks are entities exposed to?</p>	<p>In the exam, you may be required to evaluate the major financial risks faced by organisations and evaluate alternative approaches to hedging financial risks.</p>	
2	<p><b>Interest rate risk</b></p> <p>When deciding which techniques or derivatives to use to hedge against interest rate risk, issues such as cost, flexibility, expectations and ability to benefit from favourable interest rate movements should be considered.</p>	<p><b>Approach</b></p> <p>The techniques covered in this section should be familiar to you as they have already been covered in Professional Level Financial Management.</p> <p><b>Stop and think</b></p> <p>When are businesses better off not hedging?</p>	<p>In the exam, you may be required to recommend strategies for hedging interest rate risks.</p>	<p><b>IQ2: Interest rate futures</b></p> <p><b>IQ3: Exchange traded options</b></p> <p><b>IQ4: FRA settlement value</b></p> <p><b>IQ5: Interest rate swap</b></p> <p>Work through each question individually considering the different techniques that can be used to manage interest rate risk. Make sure you read carefully through the worked examples before attempting the questions.</p>

Topic	Practical significance	Study approach	Exam approach	Interactive questions
3	<p><b>Foreign exchange risk</b></p> <p>Similar issues to those taken into consideration for interest rate hedging strategies apply to foreign exchange risk management strategies.</p>	<p><b>Approach</b></p> <p>When reading through this section, pay particular attention to the situations where different instruments might be used, and how they might be used collectively as part of overall financial strategy.</p> <p>Stop and think</p> <p>Can a company effectively manage currency risk without using derivatives?</p>	<p>In the exam, you may be required to recommend strategies for hedging currency risks.</p>	<p><b>IQ6: Northland and Southland</b></p> <p><b>IQ13: Currency futures</b></p> <p><b>IQ14: Over the counter options</b></p> <p><b>IQ15: Traded options</b></p> <p><b>IQ 16 and 17: El Dorado</b></p> <p>Each question considers a separate hedging technique. Exam questions will include a combination of hedging techniques, however it is good to initially practise each separately.</p>
4	<p><b>Hedge accounting</b></p> <p>Hedge accounting is the accounting process by which the commercial substance of hedging activities are reflected in the financial statements. It reduces or eliminates the volatility in profit or loss which would arise if changes in the value of derivatives had to be accounted for separately.</p>	<p><b>Approach</b></p> <p>How much time you spend on this section may be determined by whether you have already studied Corporate Reporting – you can go through this section much quicker if you have covered these topics already. Make sure that you understand the core principles of hedge accounting.</p> <p>Stop and think</p> <p>How much of an influence do the accounting requirements relating to financial instruments and hedging have on financial risk management decisions?</p>	<p>In the examination, students may be required to explain the financial reporting consequences of the financial risk management policies that businesses adopt and advise on whether hedge accounting can be used for particular transactions.</p>	<p><b>IQ18: Fair value hedge</b></p> <p><b>IQ19, 20 and 21: Cash flow hedge</b></p> <p><b>IQ22: Credit derivative and credit exposure</b></p> <p>Again, work through each question separately making sure that you fully understand how each instrument should be accounted for using the hedging provisions of IFRS9.</p>

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 Financial risks



## Section overview

Businesses face risks associated with sources of finance, overseas investment and trading. Businesses also face risks when accounting for financial risks and the financial instruments designed to manage financial risks.

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## 1.1 Financing and liquidity risks

### 1.1.1 Financing risks

There are various risks associated with sources of finance.

- a) Long-term sources of finance being unavailable or ceasing to be available
- b) Taking on commitments without proper authorisation
- c) Taking on excessive commitments to paying interest that the company is unable to fulfil
- d) Pledging assets to meet the demands of one finance provider, so that there will be insufficient collateral available to secure further funding
- e) Having to repay multiple sources of debt finance around the same time
- f) Being unable to fulfil other commitments associated with a loan
- g) Being stuck with the wrong sort of debt (floating rate debt in a period when interest rates are rising, fixed rate debt in a period when interest rates are falling)
- h) Excessive use of short-term finance to support investments that will not yield returns until the long term
- i) Ceding of control to providers of finance (for example, banks demanding charges over assets or specifying gearing levels that the company must fulfil)

The attitudes to risk of the board and major finance providers will impact significantly on how risky the company's financial structure is.

### 1.1.2 Liquidity risks

You have covered liquidity risks in your earlier studies and, hopefully, should remember the key indicators of liquidity problems (current and quick ratios and turnover periods for receivables, payables and inventory).

To recap briefly, if a business suddenly finds that it is unable to cover or renew its short-term liabilities (for example, if the bank suspends its overdraft facilities), there will be a danger of insolvency if it cannot convert enough of its current assets into cash quickly.

Current liabilities are often a cheap method of finance (trade payables do not usually carry an interest cost). Businesses may therefore consider that, in the interest of higher profits, it is worth accepting some risk of insolvency by increasing current liabilities, taking the maximum credit possible from suppliers.

### 1.1.3 Cash flow risks

Cash flow risks relate to the volatility of a firm's day to day operating cash flows. A key risk is having insufficient cash available because cash inflows have been unexpectedly low, perhaps due to delayed receipts from customers. If, for example, a firm has had a very large order, and the customer fails to pay promptly, the firm may not be able to delay payment to its supplier in the same way.

## 1.2 Credit risk



### Definition

Credit risk: Financial risks associated with the possibility of default by a counterparty. The most common form of credit risk for businesses is the risk of non-payment of a debt.

The most common type of credit risk is when customers fail to pay for goods that they have been supplied with on credit, or (in the case of a bank or bond investor) when a borrower defaults on a loan or bond payment.

A business can also be vulnerable to the credit risks of other firms with which it is heavily connected. A business may suffer losses as a result of a key supplier or partner in a joint venture having difficulty accessing credit to continue trading.

## 1.3 Market risk



### Definition

Market risk: The financial risks of possible losses due to changes in market prices or rates.

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Types of market risk are as follows:

- a) **Interest rate risk:** risk from unexpected future changes in a market rate of interest
- b) **Exchange rate risk** (foreign exchange risk, FX risk or currency risk): risk from unexpected future changes in an exchange rate
- c) **Commodity price risk:** risk from unexpected future changes in the market price of a commodity
- d) **Equity price risk:** risk from unexpected future changes in the price of a share or in the level of share prices generally in a stock market

Unlike credit risk, market risk is a two-way risk in the sense that market prices may move unexpectedly in a favourable direction as well as in an adverse direction.

## 1.4 Foreign investment risks

Risks here are linked to the strategies of setting up a presence in a foreign country or deciding to participate in global markets.

### 1.4.1 Economic risk

Economic risk refers to the effect of exchange rate movements on the international competitiveness of a company. For example, a UK company might use raw materials which are priced in US dollars, but export its products mainly within the Eurozone area. Both a depreciation of sterling against the dollar and an appreciation of sterling against the euro would erode the competitiveness of the company.

## 1.5 Accounting risks

There are various risks associated with the requirements to produce accounts that fairly reflect financial risks. These risks are particularly significant if the business has financial



instruments that are accounted for in accordance with the requirements of IAS 32, *Financial Instruments: Presentation*, IFRS 7, *Financial Instruments: Disclosures*, IFRS 9, *Financial Instruments* and IAS 39, *Financial Instruments: Recognition and Measurement*.

We have discussed the requirements of these standards already and later in section 1 we look at the requirements that relate to the disclosure of risks. In section 4 we discuss the hedging provisions of IFRS 9 and IAS 39. Note that IFRS 9 is the examinable standard; however, its predecessor, IAS 39 is relevant because entities may apply its hedging provisions for portfolios of financial assets and liabilities or as an accounting policy choice.

### 1.5.1 Accounts risks

The main risk is loss of reputation or financial penalties through being found to have produced accounts that are misleading. However, accounts that fully and fairly disclose risks may also be problematic, if investors react badly. This doesn't just apply to misreporting financial risks; it also includes misleading reporting in other areas, either in accounts or in other reports, for example environmental reporting.

### 1.5.2 Income risks

Income may become increasingly volatile if fair value accounting for financial instruments is used. This may have an adverse impact on the ability of companies to pay dividends and on their share price and cost of capital, as accounts users find it difficult to determine what is causing the volatility. Investors may not be sure if low market valuations of financial assets are temporary or permanent.

### 1.5.3 Measurement risks

Measurement of financial risks and valuation of financial instruments may be problematic. There may well be considerable uncertainty affecting assets valued at market prices when little or no market currently exists for those assets. The problem is enhanced for financial instruments which are not tradable and therefore have no market value. Arguably, also in slow markets use of market values underestimates long-term asset values.

### 1.5.4 Systems risks

Accounting fairly for risks may require investment in new systems and there may be an increased risk of systems problems as systems have to cope with linking of assets with derivatives, accommodating changes in hedge allocations and measuring hedge effectiveness.

## 1.6 Financial risk management

### 1.6.1 Managing risks

There are various ways of managing risks, including financial risks. One risk management model is known as the TARA framework (transfer, avoid, reduce, accept):

- a) **Transfer the risk**, wholly or partly, to someone else. Risk transfer is possible by means of arrangements such as insurance, credit default swaps, franchising arrangements and joint ventures.
- b) **Avoid the risk** entirely, usually by withdrawing from the business. Businesses must accept some risks in order to make profit.
- c) **Reduce the risk**. Risk may be reduced to an acceptable level by means of arrangements such as diversification of operations or investments; internal control over financial, operational and compliance risks; and hedging with derivative instruments.

- d) **Accept the risk** and do nothing. If a risk is not considered significant, or if future price movements are more likely to be favourable than adverse, it may be appropriate to accept the risk and remain exposed to it.

The TARA framework can be represented using a diagram. Figure 15.1: TARA Framework

		Severity	
		Low	High
Frequency	Low	<b>Accept</b> Risks are not significant. Keep under review, but costs of dealing with risks unlikely to be worth the benefits.	<b>Transfer</b> Insure risk or implement contingency plans. Reduction of severity of risk will minimise insurance premiums.
	High	<b>Control or reduce</b> Take some action, eg, enhanced control systems to detect problems or contingency plans to reduce impact.	<b>Abandon or avoid</b> Take immediate action, eg, change major suppliers or abandon activities.

### 1.6.2 Evaluating financial risks

Where outcomes associated with risk can be predicted reliably, and the probabilities of those outcomes can be estimated, statistical techniques can be used to analyse and evaluate those risks. The statistical techniques examinable in SBM&L were covered in the chapter Business risk management.

When evaluating financial risks businesses will gather and use various sources of data to aid their decision making. The amount of data available is greater than ever but there is still often a need to make generalisations about a wider group (eg, the population) based on samples of data available. This can lead to errors, incorrect conclusions and flawed decision making.

Users of information produced by data analytics should therefore take steps to ensure the analysis is reliable, and should apply a degree of professional scepticism in their interpretation of this data.

Scepticism does not mean that the users assume that the data or its conclusions must be wrong; rather it means being aware that data analysis is not always accurate for several reasons:

- There may be bias inherent in the data that is analysed. This may be intentional or unintentional.
- The data may have been intentionally manipulated during the analysis process.
- The data may have been analysed accurately, but the presentation of the data, or the conclusions drawn from it may be flawed or may have been designed to mislead the users.

Data bias and professional scepticism are covered in more detail in Chapter 8.

### 1.6.3 Diversification

As we discussed in the chapter Business risk management, risk diversification involves creating a **portfolio of different risks** based on a number of events which, if some turn out well and others turn out badly, the average outcome will be neutral. Diversification can be used to manage financial risks in a variety of ways.

- a) Having a mix of equity and debt finance, of short- and long-term debt, and of fixed and variable interest debt
- b) Diversification of trading interests or portfolio of investments
- c) International portfolio diversification can be very effective for the following reasons.
- d) Different countries are often at different stages of the trade cycle at any one time.
- e) Monetary, fiscal and exchange rate policies differ internationally.
- f) Different countries have different endowments of natural resources and different industrial bases.
- g) Potentially risky political events are likely to be localised within particular national or regional boundaries.
- h) Securities markets in different countries differ considerably in the combination of risk and return that they offer.

However, there are a number of factors that may limit the potential for international diversification.

- a) Legal restrictions exist in some markets, limiting ownership of securities by foreign investors.
- b) Foreign exchange regulations may prohibit international investment or make it more expensive.
- c) Double taxation of income from foreign investment may deter investors.
- d) There are likely to be higher information and transaction costs associated with investing in foreign securities.
- e) Some types of investor may have a parochial home bias for domestic investment.

#### 1.6.4 Hedging



#### Definition

**Hedging:** Taking an action that will offset an exposure to a risk by incurring a new risk in the opposite direction.

Hedging is perhaps most important in the area of currency or interest rate risk management, and we review the various hedging instruments in the next two sections. Generally speaking, these involve an organisation making a commitment to offset the risk of a transaction that will take place in the future.

However, there will possibly be significant transaction costs from purchasing hedging products, including brokerage fees and transaction costs. Because of lack of expertise, senior management may be unable to monitor hedging activities effectively. There may also be tax and accounting complications.

#### 1.6.5 Macro hedging

Macro hedging, also known as portfolio hedging, is a technique where financial instruments with similar risks are grouped together and the risks of the portfolio are hedged together. Often this is done on a net basis, with assets and liabilities included in the same portfolio. For example, instead of using interest rate swaps to hedge interest rate exposure on a loan by loan basis, banks hedge the risk of their entire loan book or specific portions of the loan book.

In practice, however, macro hedging is difficult, as it may be hard to find an asset that offsets the risk of a broader portfolio.

## Example

ABC Company is an international company with a large amount of debt finance. The debt of £600 million is mainly denominated in £ sterling and currently consists of 50% fixed interest debt and 50% floating rate debt. The treasury department is authorised by the board of directors to vary the proportions of fixed and floating rate debt, except that there must always be at least 25% of each in the company's medium- and long-term debt structure. The company's treasurer believes that in the near future interest rates will rise by one or perhaps two percentage points (100-200 basis points).

For simplicity of illustration, we shall assume that all the debt has the same remaining time to maturity.

The treasurer could use macro hedging and arrange a swap on, say, £100 million of notional principal. In the swap ABC Company will pay a fixed rate and receive a floating rate of interest. The net effect of the swap will be to change the balance of debt from £300 million of fixed rate liabilities and £300 million of floating rate liabilities to a new balance of £400 million fixed rate and £200 million floating rate debt.

This will provide some protection against the risk of a rise in interest rates. The hedge has been achieved with a single macro hedging instrument - the swap.

### 1.6.6 Transfer

One method of transferring risk is **securitisation**, the conversion of financial or physical assets into tradable financial instruments. This creates the potential to increase the scale of business operations by converting relatively illiquid assets into liquid ones.

For example, if a South American oil company securitises its future oil revenues, it secures an amount of cash now and transfers the risk of future fluctuations in the oil price to the special purpose vehicle that purchases the revenue rights (and its investors).

### 1.6.7 Internal strategies

Internal strategies for managing financing and credit risks include working capital management and maintaining reserves of easily liquidated assets. Specific techniques businesses use include:

- vetting prospective partners to assess credit limits
- position limits, ceilings on limits granted to counterparties
- monitoring credit risk exposure
- credit triggers terminating an arrangement if one party's credit level becomes critical
- credit enhancement, settling outstanding debts periodically, also margin and collateral payments

## 1.7 Corporate reporting requirements

We summarised the general requirements of the financial reporting standards relating to financial instruments in the chapter Financial instruments and financial markets. In this section we focus on the disclosures relating to financial risks and the requirements of IFRS 7. After we have covered hedging for interest and foreign exchange risks, we summarise the requirements of the standards relating to hedge accounting in section 4.

### 1.7.1 Qualitative disclosures

For each type of risk arising from financial instruments, an entity must disclose:

- a) the exposures to risk and how they arise

- b) its objectives, policies and processes for managing the risk and the methods used to measure the risk
- c) any changes in (a) or (b) from the previous period

### 1.7.2 Quantitative disclosures

For each financial instrument risk, summary quantitative data about risk exposure must be disclosed. This should be based on the information provided internally to key management personnel. More information should be provided if this is unrepresentative.

Information about **credit risk** must be disclosed by class of financial instrument.

- a) maximum exposure at the year end
- b) the amount by which related credit derivatives or similar instruments mitigate the maximum exposure to credit risk
- c) the amount of change during the period and cumulatively, in fair value that is attributable to changes in credit risk. This can be calculated as (Amount of change in fair value attributable to credit risk) = (Total amount of change in fair value) - (Amount of change in fair value attributable to market risk)
- d) any collateral pledged as security
- e) in respect of the amount disclosed in (d), a description of collateral held as security and other credit enhancements
- f) information about the credit quality of financial assets that are neither past their due dates nor impaired
- g) financial assets that are past their due dates or are impaired, giving an age analysis and a description of collateral held by the entity as security
- h) collateral and other credit enhancements obtained, including the nature and carrying amount of the assets and policy for disposing of assets not readily convertible into cash

For **liquidity risk** entities must disclose:

- a) a maturity analysis of financial liabilities
- b) a description of the way risk is managed

Disclosures required in connection with **market risk** are:

- a) sensitivity analysis, showing the effects on profit or loss of changes in each market risk
- b) if the sensitivity analysis reflects interdependencies between risk variables, such as interest rates and exchange rates, the method, assumptions and limitations must be disclosed

There are two options in relation to disclosure of sensitivity analysis.

#### Option 1

An entity should disclose:

- a) sensitivity analysis for each type of market risk to which the entity is exposed at the reporting date, showing how profit or loss and equity would have been affected by changes in the relevant risk variables;
- b) the methods and assumptions used in preparing the sensitivity analysis; and
- c) changes from the previous period in the methods and assumptions used, and the reasons for such changes.

## Option 2

Alternatively, if an entity prepares a sensitivity analysis, such as value at risk, that reflects interdependencies between risk variables (eg, interest rates and exchange rates) **and uses it to manage financial risks**, it may use that sensitivity analysis. In this case the entity should also disclose:

- a) an explanation of the method used in preparing such a sensitivity analysis, and of the main parameters and assumptions underlying the data provided; and
- b) an explanation of the objective of the method used and of limitations that may result in the information not fully reflecting fair value.

## 2 Interest rate risk



### Section overview

- Interest rate risk is the risk of losses or gains arising from unexpected movements in interest rates. When the risk is significant, it can be hedged with derivatives.
- When deciding which techniques or derivatives to use to hedge against interest rate risk, issues such as cost, flexibility, expectations and ability to benefit from favourable interest rate movements should be considered.
- Financial instruments should not be chosen in isolation - their impact on the overall financial strategy of the company should also be considered.

### 2.1 Futures

There are two types of interest rate future: bond futures and short-term interest rate futures. With a bond future, the underlying item is a quantity of notional bonds. With a short-term interest rate future, the underlying item is a notional (usually three-month) bank deposit of a given size. These futures can be used to hedge against the risk of changes in bond yields (and bond prices) or changes in money market interest rates.

This section focuses mainly on short-term interest rate futures. Prices of short-term interest rate futures are quoted as 100 minus the interest rate for the contract period expressed in annual terms (the interest rate used is the rate for a benchmark such as three-month SONIA). This means for example that if a futures contract is bought or sold at a price of 96.40, this means that the underlying notional bank deposit is being bought or sold with an interest rate of 3.60%.

Futures contract prices move in 'ticks', with the tick size for interest rate futures usually being one basis point or 0.01% interest rate movement in the underlying market. If the underlying item for the contract is a notional 3-month deposit of \$1,000,000, the value of a movement in the futures price by one tick is  $\$1,000,000 \times 0.0001 \times 3/12 = \$25$ . A movement in price by 10 ticks would therefore have a value (gain or loss) of \$250, and so on.

Futures contracts require an initial margin deposit when a position in the futures is opened, and also subsequent maintenance margin deposits ('variation margin' payments) if losses are incurred on the position.

Futures contracts can be created and traded at any time up to the settlement date for the contract. Settlement dates on futures exchanges are typically in March, June, September and December each year. Most futures positions are closed before settlement date, with a resulting gain or loss on the trading.

## Hedging against the risk of an increase in short-term interest rates

Borrowers wishing to hedge against the risk of an increase in short-term interest rates in the near future can do so by:

- a) selling short-term interest rate futures: this creates a short position in the contract; then
- b) buying the same number of contracts at the required time to close out the position (or possibly to wait until settlement date for the contract, when the futures exchange will close the position and make settlement).

Closing the position results in a gain or loss on the futures trading, from the difference between the initial selling price and the subsequent buying price to close the position.

## Hedging against the risk of a fall in short-term interest rates

Lenders or depositors wishing to hedge against the risk of a fall in short-term interest rates in the near future can do so by:

- buying short-term interest rate futures: this creates a long position in the contract; then
- selling the same number of contracts at the required time to close out the position (or possibly to wait until settlement date for the contract, when the futures exchange will close the position and make settlement).

Closing the position results in a gain or loss on the futures trading, from the difference between the initial buying price and the subsequent selling price to close the position.

Selling or buying short-term interest rate futures involves trading in a future short-term interest rate. The selling or buying price for futures is usually different from the current spot market interest rate. For example, if the spot market three-month SONIA rate is 5.0% in February, March futures will usually be trading at a price above or below 95.00. The difference between the futures price and the spot market price is known as 'basis': basis will gradually reduce in size as the settlement date for the contract gets nearer, and at the settlement date, basis should be zero (ie, the settlement price for the futures contract should be the same as the spot market SONIA rate).

## Bond futures

The price of bond futures reflects the price of the underlying notional bonds for the contract. For example, if the underlying bonds for a contract have a coupon rate of 10%, and the current price is 103.00, the implied yield on the bond is approximately 9.7% ( $= 100/103 \times 10\%$ ).

(The underlying bonds for a futures contract are notional bonds, because the price of a real bond changes as the bond approaches its redemption date and is typically 100 at the redemption date. Notional bonds avoid the problem of price changes due to a reducing time to maturity and redemption.)



### Worked example: Interest rate futures

Yew has taken a three-month \$1,000,000 loan with interest payable of 8%, the loan being due for rollover on 4 March. At 1 January, the company treasurer considers that interest rates are likely to rise in the near future. The futures price is 91.00, representing a 3-month interest rate of 9%. A eurodollar future is a contract for a notional three-month deposit of \$1,000,000.

Yew wants to hedge against the risk of a rise in the three-month interest rate before 4 March. It therefore sells one March contract at a price of 91.00.

Suppose that at 4 March, the spot three-month interest rate is 11%. Yew closes the futures position by purchasing a March futures contract, but the price for buying the contract might be, say, 89.05.

### Requirement

Calculate the effect of the futures hedge.

### Solution

On 4 March, the interest payable on the loan for the next three months will be 11%, the spot market SONIA rate. Yew must pay this rate on its loan. However, it will have made a profit on its futures trading, and the profit on the futures will offset the cost of borrowing.

Original selling price to open futures position 1 January	91.00
Buying price to close position on 4 March	<u>89.05</u>
Gain	<u>1.95</u>

The gain is 1.95% or 195 ticks, which has a cash value of  $195 \times \$25$  per tick = \$4,875. The net borrowing cost for Yew for the three months from 4 March is as follows:

	%	\$
Three-month interest cost on loan	11.00	(\$1,000,000 $\times$ 11% $\times$ 3/12)
Gain on futures contract	<u>(1.95)</u>	<u>(4,875)</u>
Net cost	<u>9.05</u>	<u>22,625</u>

Hedging with the futures contract fixed the interest rate for the 3 months from 4 March at 9.05%. This is close to the rate at which the futures contract was sold (91.00 or 9%). The difference of 0.05% is caused by the basis - the difference between the spot SONIA rate and the futures price on 4 March.



### Worked example: Setting up a futures contract

This example is a reminder of the step by step procedure that you will have seen in Financial Management.

Panda has taken a 6-month \$10,000,000 loan at a variable rate of interest, with the interest rate due for rollover on 8 September. At 25 June, the company treasurer considers that interest rates are likely to rise in the near future. The current futures price is 91.00, representing an interest rate of 9%. The futures contract size is a notional 3-month deposit of \$1,000,000: to hedge against a rise in the 6- month interest rate, the company sells September contracts.

At 8 September, suppose the 6-month SONIA rate is 11% and the futures price is 88.50.

### Requirement

Demonstrate how futures can be used to hedge against interest rate movements.

### Solution



## Set up the hedge

Sell September contracts.

How many contracts:  $\frac{\text{Exposure}}{\text{Contract size}} \times \frac{\text{Loan period}}{\text{Length of contract}} = \frac{10\text{m}}{1\text{m}} \times \frac{6\text{ months}}{3\text{ months}}$

= 20 contracts

## Outcome in futures market on 8 September

Closing futures position at a price of 88.50.

Original selling price to open futures position 25 June	91.00
Buying price to close position on 8 September	<u>88.50</u>
Gain	<u>2.50</u>

The gain is 2.50% or 250 ticks, which has a cash value of  $250 \times \$25$  per tick = \$6,250. For 20 contracts the total gain is \$125,000.

The net borrowing cost for Panda for the six months from 8 September is as follows:

	%		\$
Six-month interest cost on loan	11.00	$(\$10,000,000 \times 11\% \times 6/12)$	550,000
Gain on futures contract	<u>(2.50)</u>		<u>(125,000)</u>
Net cost	<u>8.50</u>		<u>425,000</u>

(Check:  $\$425,000/\$10,000,000 \times 12/6 \times 100\% = 8.5\%$ .)

The difference between the interest rate in the original sale to open the futures position (9%) and the effective interest rate that has been secured (8.5%) is explained by the basis - the difference between the spot SONIA rate of 11% and the interest rate in the futures contract to close the position on 8 September (11.5%).



### Professional skills focus: Structuring problems and solutions

One of the professional skills assessed in the CA exams considers your ability to evaluate the relevance of information provided. Questions covering interest rate hedging will include an abundance of information. It is therefore important that you can identify the relevant information needed from the scenario to allow you to calculate the impact of the hedging strategy stated in the requirement.

#### 2.1.1 Basis risk

**Basis risk** refers to the fact that the **basis will usually result in an imperfect hedge using futures**. The basis will be **zero** only at the **maturity date of the contract**.

If a firm takes a position in the futures contract with a view to closing out the contract before its maturity, there is still likely to be basis. The firm can only **estimate what effect** this will **have on the hedge**.

### 2.1.2 Advantages of interest rate futures

a) **Cost**

Costs of arranging interest rate futures are reasonably **low** and payments of margin to the futures exchange are low, unless a large loss builds up on the futures position.

b) **Amount hedged**

A company can therefore **hedge relatively large exposures** with a **relatively small initial employment of cash**.

### 2.1.3 Disadvantages of interest rate futures

a) **Inflexibility of terms**

Traded interest rate futures are for **fixed deposit periods** (usually three months) and there are standard settlement dates for contracts traded on the exchange, typically in **March, June, September and December**. Contracts are for **fixed, large amounts**, so may not entirely match the amount being hedged.

b) **Basis risk**

The company may be liable to the risk that the **price of the futures contract** may not move in the expected direction.

c) **Daily settlement**

The company will have to settle **daily profits or losses** on the contract. When losses arise on a futures position, the futures exchange will demand additional payments of margin to cover the loss. (Margin ensures that when a futures position is closed, there is no credit risk because the futures exchange has already received cash for the settlement.)



#### Interactive question 1: Profit from futures trading

A three-month sterling interest rate futures contract (assume a contract size of £500,000) is quoted on a recognised investment exchange. Its settlement/delivery date is 20 December 20X6.

##### Requirement

On 22 November the future is trading at 94.63.

On 24 November the future is quoted at 94.53. If you sell the future on 22 November at 94.63 and buy on 24 November at 94.53, how much profit will you make?

See **Answer** at the end of this chapter.

---

#### Interactive question 2: Interest rate futures

Rumble Inc will shortly be making a short-term investment and wants to borrow \$4 million for three months, starting in three months' time. However, interest rates are currently volatile and it is worried about adverse movements in these rates before it takes out the loan.

Rumble Inc is considering using interest rate futures to hedge the \$4 million loan. It is now 1 March and the current futures prices are (for standard \$1 million three-month contracts):

March delivery	96.00
June delivery	96.10
September delivery	96.20

These contracts will expire at the end of the quoted months. The spot 3-month SONIA rate is 3.5% and Rumble can borrow at a rate of approximately SONIA + 1%.

At 1 June, the price of the June futures contract is 95.07 and the price of the September futures contract is 95.10.

### Requirement

Assuming that Rumble takes out a loan at a rate of SONIA + 1% on 1 June, illustrate the outcome of hedging with the futures contract if SONIA at that date is 4%.

See **Answer** at the end of this chapter.



### Professional skills focus: Applying judgement

Hedging strategies for interest rate risk are based on an expectation of future movements in interest rates. You are expected to recognise that the calculation of the outcome achieved from a hedging strategy is only an estimate at a given point in time and will change as the underlying variables of market prices change. You will therefore need to combine financial analysis (derivatives calculations) with scenario information and apply your judgement when suggesting an appropriate hedging strategy.

## 2.2 Interest rate options

Interest rate options can be purchased over the counter from a bank. Alternatively, they can be traded on a futures and options exchange, as options on interest rate futures.

### Over the counter interest rate options

- An over the counter interest rate call option gives its holder the right, but not the obligation, to borrow at the rate of interest in the exercise price for the option, on or before the expiry date for the option. The right to borrow is applied to a notional loan of a given length of time. A call option therefore fixes the maximum cost for borrowing the underlying amount for the given time period.
- An over the counter interest rate put option gives its holder the right, but not the obligation, to lend or deposit at the rate of interest in the exercise price for the option, on or before the expiry date for the option. The right to lend is applied to a notional loan or deposit of a given length of time.

If the option is exercised, it is settled by a payment by the option writer (the bank) of an amount for the difference between the exercise rate for the option and the current spot interest rate for the benchmark rate specified in the option contract (eg, three-month sterling SONIA).

### Exchange-traded options on interest rate futures

Exchange-traded options are options on short-term interest rate futures or bond futures. The standard size of a short sterling option is £500,000.

- a) A call option gives its holder the right but not the obligation to buy a quantity of short-term interest rate futures with a given settlement date (eg, March futures). It therefore gives its holder the right to open a long position in the futures.
- b) A put option gives its holder the right but not the obligation to sell a quantity of short-term interest rate futures with a given settlement date. It therefore gives its holder the right to open a short position in the futures.
- c) If a company needs to hedge against the risk of an increase in short-term interest rates (for example if it needs to hedge borrowings at some future date) it could do so by **purchasing put options to sell short-term interest rate futures** and only exercise the options if interest rates have risen, causing a fall in the price of the futures contract.
- d) Similarly, if a company wants to hedge against the risk of a fall in the short-term interest rate (for example if it is lending or depositing money), it could do so by **purchasing call options to buy short-term interest rate futures**.

We shall revise the use of traded interest rate options by looking at a question.



### Interactive question 3: Exchange-traded options

Rumble (see Interactive question 2) is considering using options to hedge against interest rate movements on its \$4 million loan. It is now 1 March and SONIA remains at 3.5%. Rumble will be able to borrow on 1 June at SONIA + 1%.

Options on three-month futures (\$1,000,000 contract size, premium cost in %) are as follows.

		Calls			Puts	
	March	June	September	March	June	September
96.00	0.120	0.195	0.270	0.020	0.085	0.180
96.25	0.015	0.075	0.155	0.165	0.255	0.335
96.50	0	0.085	0.085	0.400	0.480	0.555

Rumble chooses to trade in options on futures with an exercise price of 96.25.

#### Requirement

Illustrate the effect of using options to hedge against the risk of a rise in interest rates with an option hedge at 3.75% and assuming that on 1 June:

1. 3-month SONIA is 4% and the June futures price is 95.90.
2. 3-month SONIA is 2% and the June futures price is 97.95.

See **Answer** at the end of this chapter.

#### 2.2.1 Advantages of interest rate options

- a) **Upside risk** - the company has the choice not to exercise the option and will, therefore, be able to take advantage of favourable movements in interest rates.
- b) **Over the counter options** - these are tailored to the specific needs of the company and are therefore more flexible than exchange-traded options for a more exact hedge.
- c) Exchange-traded options are useful for **uncertain transactions** - for example, you may be unsure if a loan will actually be needed. If it becomes evident that the option is not required it can be sold.

## 2.2.2 Disadvantages of interest rate options

- a) **Premium** – the premium cost for options can make options **relatively expensive** compared with the costs of other hedging instruments. It is payable whatever the movement in interest rates and whether or not the option is exercised.
- b) **Expiry date** – the expiry date for exchange-traded options is limited by the fact that futures contracts are traded with settlement dates of up to only one year or so in advance.
- c) **Traded options** – if a company purchases exchange-traded options then the **large fixed amounts** of the available contracts may not match the amount to be hedged. The large amounts of the contracts will also prohibit organisations with smaller amounts to be hedged from using them.

Because of the potentially high cost of option premiums, the financial benefit from hedging with options is likely to be greatest when the market price of the underlying item is volatile, therefore the interest rate risk is high.

## 2.3 Caps, floors and collars



### Definitions

**Cap:** A series of interest rate call options with different expiry dates, on the same underlying amount of principal and the same exercise rate for each of the options.

**Floor:** A series of interest rate put options with different expiry dates, on the same underlying amount of principal and the same exercise rate for each of the options.

**Collar:** A combination of purchasing an interest rate call option and selling a put option, or a combination of purchasing an interest rate put option and selling a call option. Like caps and floors, collars can be arranged for a series of call/put options with different exercise dates.

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The premium cost for a collar is much lower than for a cap or a floor alone.



### Context example: Caps and collars

A company has a three-year loan at a variable interest rate (SONIA + 1%) with interest payable every six months, and wants to hedge against the risk of a rise in the SONIA rate over the term of the loan. At the same time, it wants to benefit from falls in the interest rate. The current 6-month SONIA rate is 8% and the company does not want to pay interest at more than 11%.

It could create a hedge by purchasing a cap from its bank. This would consist of a series of call options with expiry dates every six months, to coincide with the reset dates for interest on the loan. As the company is paying SONIA plus 1% and does not want to pay more than 11%, it may buy a cap with an exercise rate of 10%.

- At the expiry date for each option, if the SONIA rate is above 10%, the company will exercise the option and receive a cash payment from the bank for the difference between the SONIA spot rate and the exercise rate of 10%. This will offset the higher cost of interest on the loan.
- At the expiry date for each option, if the SONIA rate is below 10%, the company will let the option lapse and will pay interest on the loan at SONIA plus 1%.

The cap will therefore restrict the cost of borrowing to no more than 11% (the exercise rate of 10% plus 1%) for the full term of the loan. However, the cost of the premium for the cap could be very high.

An alternative arrangement might be to arrange a collar rather than a cap. A collar might consist of buying a series of call options with an exercise rate of 10% and selling a series of put options with an exercise rate of, say, 7%. As a result, the collar would fix the effective SONIA rate within a range from 7% to 10%. The company would exercise a call option if the SONIA rate is higher than 10% at expiry, but would have to settle a put option if the SONIA rate is below 7%. However, the net cost of the collar – the cost of the call options minus the income from selling the put options – would be less than the cost of a cap.

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## 2.4 Forward rate agreements (FRAs)

A forward rate agreement (FRA) is a cash-settled forward contract on a notional short-term loan. FRAs are over the counter instruments whose terms can be set according to the end user's requirements, but tend to be illiquid as they can only be sold back to the issuing investment bank.

FRAs, which were described in the chapter Financial instruments and financial markets, can be used to fix an effective interest rate for a short-term loan starting at a future date.

So a borrower wanting to hedge their interest rate risk for a period of three months starting in two months' time would purchase a '2 v 5' FRA – this shows that the FRA period starts two months from now and finishes five months from now. The FRA is purchased over-the-counter from a bank.

- If the actual interest rate in two months' time is higher than the rate fixed by the FRA, the bank pays the customer the difference.
- If the actual interest rate is lower than the rate fixed by the FRA, the customer pays the bank the difference.

The overall effect is to leave the rate paid by the borrower fixed at the rate in the FRA. Thus an FRA is the equivalent of a forward contract on short-term interest rates.



### Worked example: Forward Rate Agreement

It is 30 June. Lynn plc will need a £10 million six-month loan from 1 October. Lynn wants to hedge the risk of a rise in interest rates in the next three months, using an FRA. The relevant FRA rate on 30 June is 6%.

#### Requirements

1. State what FRA is required.
2. Explain the result of the FRA and the effective loan rate if the six-month FRA benchmark rate has moved on 1 October to:
  - (1) 5%
  - (2) 9%

#### Solution

1. The Forward Rate Agreement to be bought by the borrower is '3-9' (or 3v9)
2. Result of the FRA and the effective loan rate:
  - (1) At 5% because interest rates have fallen, Lynn plc will pay the bank:

	£
FRA payment £10 million × (5% - 6%) × $\frac{6}{12}$	(50,000)
Payment on underlying loan 5% × £10 million × $\frac{6}{12}$	<u>(250,000)</u>
Total payments	<u>(300,000)</u>
Effective interest rate	6%

(2) At 9% because interest rates have risen, the bank will pay Lynn plc:

	£
FRA receipt £10 million × (9% - 6%) × $\frac{6}{12}$	150,000
Payment on underlying loan at market rate 9% × £10 million × $\frac{6}{12}$	<u>(450,000)</u>
Total payments	<u>(300,000)</u>
Effective interest rate	6%

Note that whereas a hedge against a rise in interest rate is achieved by **selling** futures, it is achieved by **buying** an FRA.

There are several important dates when dealing with FRAs.

1. The **trade date** is the date on which the FRA is dealt. The **spot date** is usually two business days after the traded date.
2. The **fixing date** is the date on which the reference rate used for the settlement is determined.
3. FRAs settle with a single cash payment made on the first day of the underlying loan - this date is the **settlement date**.
4. The date on which the notional loan or deposit expires is known as the **maturity date**.

FRAs are settled at the beginning of the notional loan period by a payment from one party to the other, depending on whether the FRA rate is above or below the benchmark interest rate (typically, SONIA).

For example, if a company buys a 2 v 5 FRA on a notional principal amount of £5 million at a rate of 5.78% and if the three-month SONIA rate at settlement is 6.00%, the company will receive from the FRA bank a payment for 0.22% on £5 million for 3 months, discounted to a present value because settlement is immediate and not at the end of the notional loan period.

The settlement amount for an FRA is calculated using the following formula:

$$S = L \frac{(r_{\text{REF}} - r_{\text{FRA}}) \times \frac{ND}{DY}}{1 + r_{\text{REF}} \times \frac{ND}{DY}}$$

Where:

L = the notional amount of the loan

S = settlement amount

$r_{\text{REF}}$  = the reference rate, typically a SONIA rate or EURIBOR

$r_{\text{FRA}}$  = the rate in the FRA

ND = the number of days the loan is for

DY = the day count basis applicable to money market transactions in the currency of the loan

### 2.4.1 Advantages of FRAs

#### (a) Protection provided

An FRA protects the borrower from **adverse interest rate movements** above the rate negotiated.

#### (b) Flexibility

FRAs are **flexible**. They can, in theory, be arranged for any amounts and any duration, although they are normally for amounts of over \$1 million.

#### (c) Cost

FRAs may well be **free** and will in any case **cost little**.

### 2.4.2 Disadvantages of FRAs

#### (a) Rate available

The rate the bank will set for the FRA will reflect **expectations of future interest rate movements**. If interest rates are expected to rise, the bank may set a **higher rate** than the rate currently available.

#### (b) Falling interest rate

The borrower will **not be able to take advantage** if interest rates fall unexpectedly.

#### (c) Term of FRA

The FRA will **terminate on a fixed date**. They are also likely to be difficult to obtain for interest periods of over 12 months. This problem can be overcome by using an interest rate swap (see below).

#### (d) Binding agreement

FRAs are **binding agreements** so are less easy to sell to other parties.



### Interactive question 4: FRA settlement value

Suppose a 4 v 10 US\$10 million FRA is transacted with an FRA rate of 3.5%. The four-month forward period starts on the spot date and extends to the settlement date. For this FRA, the reference rate is six-month US\$ SONIA. Suppose the reference rate is 3.8% on the fixing date. What is the settlement amount? (The US\$ money market uses a 360-day basis for calculating interest, not a 365-day basis.)

See **Answer** at the end of this chapter.

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## 2.5 Swaps

An interest rate swap is a contract between two parties. The two parties agree to exchange a stream of payments at one interest rate for a stream of payments at a different rate, normally at regular intervals for a period of several years. The two parties to a swap agreement can come to an arrangement whereby both will reduce their costs of borrowing. Swaps are generally terminated by agreeing a **settlement interest rate**, generally the current market rate.

There are two main types of interest rate swaps – **coupon swaps** and **basis swaps**.

In a **coupon swap**, one party makes payments at a fixed rate of interest in exchange for receiving payments at a floating rate (which changes for each payment). The other party pays the floating rate and receives the fixed rate.



In a **basis swap**, the parties exchange payments on one floating rate basis (for example at three-month SONIA or at a six-month CD rate) for payments on another floating rate basis (for example at six-month SONIA).

Most interest rate swaps are coupon swaps.

- (a) A company which has **debt at a fixed rate of interest** can make a **swap** so that it ends up paying **interest at a variable rate**, if for example it believes that interest rates are going to go down.
- (b) A company which has **debt at a variable rate of interest** (floating rate debt) ends up paying a **fixed rate of interest**, if for example it would prefer to pay a fixed rate of interest for cash planning purposes.



### Context example: Recap of how an interest rate swap works

Goldstar plc has been given a high credit rating. It can borrow at a fixed rate of 6.75%, or at a variable interest rate equal to SONIA plus 2%. It would like to borrow at a variable rate. Runner up plc is a company with a lower credit rating, which can borrow at a fixed rate of 8.5% or at a variable rate of SONIA plus 2.5%. It would like to borrow at a fixed rate.

A swap allows both parties to end up paying interest at a lower rate via a swap than is obtainable from a bank. Where does this gain come from? To determine this, set out a table of the rates at which both companies could borrow from the bank.

	Goldstar	Runner up	Difference
Can borrow at fixed rate	6.75%	8.5%	1.75%
Can borrow at floating rate	SONIA + 2%	SONIA + 2.5%	0.5%
Difference between the differences			1.25%

Goldstar has a better credit rating than Runnerup in both loan markets, but its advantage is comparatively higher in the fixed interest market. The 1.25% differential represents a potential gain which can be made out of a swap arrangement.

Assume that the potential gain of 1.25% is split equally between Goldstar and Runnerup, at 0.625% each. Goldstar will therefore be seeking a floating rate loan of SONIA plus 1.375% (0.625% less than that at which it can borrow from the bank). Similarly, Runnerup will be targeting a fixed interest loan of 8.5% - 0.625% = 7.875%.

Swap terms	Goldstar	Runner up	Sum total
Borrow	(6.75%)	(SONIA + 2.5%)	(SONIA + 9.25%)
Swap floating rate to Goldstar	(SONIA + 1.375%)	SONIA + 1.375%	
Swap fixed rate to Runnerup	6.75%	(6.75%)	
Net paid	(SONIA + 1.375%)	(7.875%)	(SONIA + 9.25%)
Would have paid without swap	(SONIA + 2%)	(8.5%)	(SONIA + 10.5%)
Gain	0.625%	0.625%	1.25%

The results of the swap are that Goldstar ends up paying variable rate interest, but at a lower cost than it could get from a bank, and Runnerup ends up paying fixed rate interest, also at a lower cost than it could get from investors or a bank.

Note that for the swap to give a gain to both parties:

- a) Each company must borrow in the loan market in which it has comparative advantage. Goldstar has the greatest advantage when it borrows fixed interest. Runnerup has the least disadvantage when it borrows floating rate, as it pays 1.75% more for fixed debt, but only 0.5% more for variable debt.
  - b) The parties must actually want interest of the opposite type to that in which they have the comparative advantage. In this example, Goldstar wants a floating rate and Runnerup wants a fixed rate.
- 

### 2.5.1 Basis swaps



#### Definition

**Basis swap:** A series of payments which vary over time (floating), exchanged for a series of payments which also vary over time (floating), according to a different method of calculation or different schedule of payments.

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For example, a company may agree to swap floating payments of 12-month US\$ SONIA vs 6-month US\$ SONIA. This could be a trade based on the shape of the yield curve.

There are many different types of basis swaps. Some include:

- different tenors of the same index (for example three-month SONIA v six-month SONIA)
- the same or different tenors of different indexes (three-month US\$ SONIA v three-month US Treasury bill yield)
- an index and its average (six-month SONIA v the weekly average of six-month SONIA over six months)

Basis swaps can also include swapping a stream of floating payments in one currency into a stream of floating payments in another currency. These are called cross-currency basis swaps.

### 2.5.2 Swaptions



#### Definitions

**Swaptions:** Options on swaps, giving the holder the right but not the obligation to enter into a swap with the seller.

**Payer swaption:** Gives the holder the right to enter into the swap as the fixed rate payer (and the floating rate receiver).

**Receiver swaption:** Gives the holder the right to enter into the swap as the fixed rate receiver (and the floating rate payer).

**Bermudan swaption:** Allows the owner to enter the swap on multiple specified dates.

**European swaption:** Allows the owner to enter the swap only on the maturity date.

**American swaption:** Allows the owner to enter into the swap on any date that falls within a range of two dates.

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A swaption is a 'hybrid' hedging instrument that combines the features of different financial instruments.

For example, A Ltd might buy a swaption from a bank, giving A Ltd the right, but not the obligation, to enter into an interest rate swap arrangement with the bank at or before a specified time in the future.

Swaptions generate a worst case scenario for buyers and sellers. For example, an organisation that is going to issue floating rate debt can buy a payer swaption that offers the option to convert to being a fixed rate payer should interest rates increase.



### Worked example: Swaption

It is now 1 January 20X6. Towyn plc pays a variable rate of interest on a \$1,000,000 eurodollar loan which is due to mature on 30 June 20X9. The interest rate currently payable on this loan is 6.75% per annum. The company treasurer is now concerned about the possibility of interest rate rises over the near future. The company's bank has indicated that an American-style dollar swaption is available with the following features.

Interest rate = 7.5%

Exercise period = 1 July 20X6 to 31 December 20X6

Maturity date = 30 June 20X9

Premium = \$20,000

#### Requirement

Assess under what circumstances Towyn plc will gain from exercising the swaption. Ignore the time value of money.

#### Solution

The swaption would be likely to be exercised if interest rates rose above 7.5%. To evaluate the benefit of the swaption, ignoring the time value of money, it is first necessary to evaluate its cost over the remaining three-year period of the loan.

	\$
Interest: $\$1,000,000 \times 7.5\% \times 3$	225,000
Premium	20,000
Total cost	<u>245,000</u>

This represents an effective annual rate of interest of 8.17% ( $\$245,000 / (\$1,000,000 \times 3)$ ). The average rate of interest payable by the company without the swap would therefore have to exceed 8.17% for the swaption to be beneficial.

### 2.5.3 Advantages of swaps

#### (a) Flexibility and costs

Swaps are **flexible**, since they can be arranged in any size, and they can be **reversed** if necessary. **Transaction costs are low**, particularly if no intermediary is used, and are potentially much lower than the costs of terminating one loan and taking out another.

#### (b) Credit ratings

Companies **with different credit ratings** can **borrow in the market** that offers each the

best deal and then swap this benefit to reduce the mutual borrowing costs. This is an example of the principle of **comparative advantage**.

**(c) Capital structure**

Swaps allow **capital restructuring** by changing the nature of interest commitments without renegotiating with lenders.

**(d) Risk management**

Swaps can be used to **manage interest rate risk** by swapping floating for fixed rate debt if rates are expected to rise. Swaps can also be used to swap a variable rate for a fixed rate investment if interest rates are expected to fall.

**(e) Convenience**

Swaps are relatively **easy to arrange**.

**(f) Predictability of cash flows**

If a company's future cash flows are uncertain, it can use a swap to ensure it has **predictable fixed rate commitments**.

### 2.5.4 Disadvantages of swaps

**(a) Additional risk**

The swap is subject to **counterparty risk**; the risk that the other party will default leaving the first company to bear its obligations. This risk can be avoided by using an intermediary.

**(b) Movements in interest rates**

If a company takes on a floating rate commitment, it may be vulnerable to **adverse movements in interest rates**. If it takes on a fixed rate commitment, it won't be able to **take advantage of favourable movements in rates**.

**(c) Lack of liquidity**

The **lack of a secondary market in swaps** makes it **very difficult to liquidate a swap contract**.



### Interactive question 5: Interest rate swap

Seeler Muller, a German company, wishes to borrow US\$300 million for five years at a floating rate to finance an investment project in California. The cheapest rate at which it can raise such a loan is US dollar SONIA + 0.75%. Seeler Muller can issue a fixed interest five-year bond at 9% per annum interest.

Another German company, Overath Maier, needs a five-year fixed interest loan at \$300 million. The cheapest rate at which it can arrange the loan is 10.5% per annum. It could, however, borrow in US dollars at the floating rate of US dollar SONIA + 1.5%.

Both companies have approached the same bank that deals in interest rate swaps. The bank is currently offering the following five-year swap rates against US dollar SONIA: 8.78% - 8.48%

#### Requirement

Seeler Muller can issue a fixed interest five-year dollar bond at 9% per annum interest. The bank would charge a swap arrangement fee of 0.15% per year to both parties. You are required to devise a swap by which both parties can benefit.

You are also required to explain why the companies would prefer to arrange a swap through their bank rather than directly with each other.

See **Answer** at the end of this chapter.

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## 2.6 Devising an interest rate hedging strategy

Different hedging instruments often offer alternative ways of managing risk in a specific situation. The choice of instrument or method of hedging should consider a number of factors, such as **cost, flexibility, expectations and ability to benefit from favourable interest rate movements**. Self-test question 1 considers the different ways in which a company can hedge interest rate risk.

# 3. Foreign exchange risk



## Section overview

- Similar issues to those taken into consideration for interest rate hedging strategies apply to foreign exchange risk management strategies. Some of these issues have already been covered in Professional Level Financial Management.
  - Internal methods such as matching and leading and lagging can also be used as part of the overall strategy.
- 

## 3.1 Causes of exchange rate fluctuations

### 3.1.1 Currency supply and demand

The exchange rate between two currencies – that is, the buying and selling rates, both ‘spot’ and forward – is determined primarily by supply and demand in the foreign exchange markets, which are influenced by such factors as the relative rates of inflation, relative interest rates, speculators and government policy.

Try to keep clear the difference between a forward exchange rate in a forward forex (FX) contract and predictions of what the future spot exchange rate will be at a future date.

- a) The difference between a spot rate of exchange for immediate settlement and a forward exchange rate for settlement at a future date is attributable entirely to differences in interest rates between the two currencies for the forward period. For example, the difference between the spot exchange rate for US\$/£ and the six-month forward rate is attributable to the difference between the six-month money market rates in the US and the UK.
- b) Companies may want to predict or forecast what the spot exchange rate will be at a future date, for example for the purpose of financial forecasting. Predicting what spot exchange rates will be in the future is difficult and predictions may well turn out to be wrong, especially when the exchange rate is volatile. However, two theories or models for making predictions of future spot rates are interest rate parity theory and purchasing power parity (PPP) theory.

### 3.1.2 Interest rate parity theory

The difference between spot and forward rates reflects differences in interest rates. If this was not the case then investors holding the currency with the lower interest rates would switch to the other currency for (say) three months, ensuring that they would not lose on returning to the original currency by fixing the exchange rate in advance at the forward rate. If enough investors acted in this way (known as **arbitrage**), forces of supply and demand would lead to a change in the forward rate to prevent such risk-free profit making.

The principle of interest rate parity can be stated as:

$$F_0 = S_0 \times \frac{(1 + i_c)}{(1 + i_b)}$$

Where:  $F_0$  = expected future spot rate

$S_0$  = current spot rate

$i_c$  = interest rate in country c, where country c is the country with the variable currency

$i_b$  = interest rate in country b, where country b is the country with the base currency.

For example, if we are predicting future spot rates for the US\$/£1 rate,  $i_c$  would be the US interest rate and  $i_b$  the UK interest rate.



### Interactive question 6: Northland and Southland

The spot exchange rate between two currencies, the Northland florin (NF) and the Southland dollar (S\$), is NF4.7250 = S\$1.

It is expected that 12-month interest rates will be 6% in Northland and 9% in Southland for each of the next three years.

#### Requirement

Using interest rate parity theory, predict the spot exchange rate at the end of each of the next three years.

See **Answer** at the end of this chapter.

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### 3.1.3 Purchasing power parity (PPP)

PPP theory predicts that the exchange value of foreign currency depends on the relative purchasing power of each currency in its own country and that **spot exchange rates will vary over time according to relative price changes**.

Formally, PPP can be expressed in the following formula.

$$S_1 = S_0 \times \frac{(1 + h_c)}{(1 + h_b)}$$

Where:  $S_1$  = expected spot rate

$S_0$  = current spot rate

$h_c$  = expected inflation rate in country c, the variable currency country

$h_b$  = expected inflation rate in country b, the base currency country

Note again that the expected future spot rate will not be the same as the forward exchange rate currently quoted in the forward market.



## Context example: Forecasting exchange rates

The spot exchange rate between UK sterling and the Danish kroner is £1 = 9.40 kroner. Assuming that there is now purchasing parity, an amount of a commodity costing £100 in the UK will cost 940 kroner in Denmark.

- Over the next year, price inflation in Denmark is expected to be 5% while inflation in the UK is expected to be 8%. The predicted spot exchange rate at the end of the year using PPP theory will be:  $9.40 \times (1.08/1.05) = 9.6686$
- Suppose that the predicted rate of inflation in the following year is 3% in Denmark and 2% in the UK. Using PPP theory, we would predict a spot rate at the end of Year 2 of:  $9.40 \times (1.08/1.05) \times (1.02/1.03) = 9.5747$

In reality, if spot rates do change with different rates of inflation in the two countries, this is only correct over the long term. Even so, PPP theory may be used to predict spot rates for the purpose of investment appraisal (estimating future cash flows) when a foreign investment is proposed.



## Interactive question 7: Forecasting exchange rates

Assume that the \$/£ exchange rate is currently \$1.7/£, expected inflation in the UK is 4% and the expected inflation rate in the US is 5%. What is the expected exchange rate in one year's time according to the PPP?

See **Answer** at the end of this chapter.

### 3.1.4 International Fisher effect

The International Fisher effect states that currencies with high interest rates are expected to depreciate relative to currencies with low interest rates.

For the UK, the Fisher equation can be expressed as:

$$(1 + i) = (1 + r)(1 + h)$$

Where:  $i$  = the nominal return

$r$  = the real return

$h$  = the expected inflation rate

Countries with relatively high rates of inflation will generally have high nominal rates of interest, partly because high interest rates are a mechanism for reducing inflation, and partly because of the Fisher effect. Higher nominal interest rates serve to allow investors to obtain a high enough real rate of return where inflation is relatively high.

According to the International Fisher effect, interest rate differentials between countries provide an unbiased predictor of future changes in spot exchange rates. The currency of countries with relatively high interest rates is expected to depreciate against currencies with lower interest rates, because the higher interest rates are considered necessary to compensate for the anticipated currency depreciation. Given free movement of capital internationally, this idea suggests that the real rate of return in different countries will equalise as a result of adjustments to spot exchange rates.

The International Fisher effect can be expressed as:

$$\frac{1+i_c}{1+i_b} = \frac{1+h_c}{1+h_b}$$

Where:  $i_c$  = nominal interest rate in country c

$i_b$  = nominal interest rate in country b

$h_c$  = inflation rate in country c

$h_b$  = inflation rate in country b



### Interactive question 8: International Fisher effect 1

Suppose that the nominal interest rate in the UK is 6% and the expected rate of inflation is 4%. If the expected rate of inflation in the US is 5%, what is the nominal interest rate in the US? What is the real interest rate in each country?

See **Answer** at the end of this chapter.

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### Interactive question 9: International Fisher effect 2

Suppose that the nominal interest rate in the UK is 6% and the nominal interest rate in the US is 7%. What is the expected change in the dollar/sterling exchange rate over a year?

See **Answer** at the end of this chapter.

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## 3.2 Foreign exchange risk management



### Context example: The effect of Brexit on sterling exchange rates

The immediate effect of the Brexit vote saw sterling down more than 10% against the dollar at \$1.33, compared with \$1.50 before the results were announced, which was the lowest level since 1985. The pound was also down more than 7% against the euro.

Despite continuing uncertainty over the nature of the agreement that Britain would strike with the EU, in early 2018 the pound had regained some ground. It was close to the highest levels seen since the EU referendum, after the government struck a provisional deal with over a transition period to smooth the Brexit process.

However, at the time of writing, the re-emergence of the prospect of a 'No-deal' Brexit has seen the pound sink even lower, to \$1.27. There is now a transition period until the end of 2020 while the UK and EU negotiate additional arrangements.

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Foreign exchange risk has three aspects:

- Transaction risk. This is the risk that an unexpected movement in an exchange rate could have an adverse effect on the value of a transaction (eg, the transaction cost or income). Transaction risk can be managed in a number of different ways.
- Translation risk. This is the risk of gains or losses that will be reported in the financial statements arising from movements in exchange rates.



- c) Economic risk. This is a strategic risk, arising from the strategic effect of locating business operations in a country with a strong or a weak currency.

We shall begin by looking at the management of transaction risk. The implications of translation risk will be considered later.

As with interest rate risk management, you should consider **cost, flexibility, expectations and ability to benefit from favourable movements in rates** when trying to determine how to hedge against foreign currency transaction risks.

As well as using currency derivatives mentioned, it is possible to use internal hedging techniques to protect against foreign currency risk. These include matching receipts and payments, invoicing in your own currency and leading and lagging the times that cash is received and paid. These were covered in detail in Professional Level Financial Management and are reviewed briefly below.

### 3.2.1 Currency of invoice

An exporting company can avoid currency risk by invoicing customers in its own home currency. An importing company can make arrangements to be invoiced in its own currency by overseas suppliers. This transfers all the currency risk to the other party. However, this is unlikely to continue in the long term, as the overseas customers and suppliers are unlikely to be willing to bear the entire currency risk exposure burden.

### 3.2.2 Matching receipts and payments

A company can reduce or eliminate its foreign exchange transaction exposure by matching receipts and payments. Wherever possible, a company that expects to make payments and have receipts in the same foreign currency should plan to offset its payments against its receipts in the currency.

Since the company will be setting off foreign currency receipts against foreign currency payments, it does not matter whether the currency strengthens or weakens against the company's 'domestic' currency because there will be no purchase or sale of the currency.

The process of matching is made simpler by having foreign currency accounts with a bank. Receipts of foreign currency can be credited to the account pending subsequent payments in the currency. (Alternatively, a company might invest its foreign currency income in the country of the currency - for example, it might have a bank deposit account abroad - and make payments with these overseas assets/deposits.)

### 3.2.3 Leading and lagging

Lead payments are payments made in advance, while lagged payments are those that are delayed. This tactic is often used to take advantage of movements in exchange rates.

### 3.2.4 Netting

As the name suggests, netting involves setting off intercompany balances before payment is arranged. This is common in multinational groups where a significant amount of intragroup trading takes place.

## 3.3 Forward contracts

A forward contract is a contract that fixes the exchange rate for the purchase or sale of a quantity of one currency in exchange for another, for settlement at a future date. Companies can therefore arrange with a bank to buy or sell foreign currency at a future date, at a rate of exchange determined when the contract is made.

Remember that it is a binding contract. A forward contract fixes the rate for a transaction, and these contracts must be settled regardless of whether or not the spot rate at the settlement date is more favourable than the agreed forward rate.

The advantage of a forward contract is that it removes uncertainty in a future exchange rate by fixing the rate. The disadvantage is that it takes away the opportunity to gain from any favourable movement in the exchange rate in the forward period.

You should remember from your earlier studies that a forward rate might be higher or lower than the spot rate. For example, if the spot rate for euros is €1.25/£1, the forward rate could be:

Higher – €1.27 – the forward rate for the euro is said to be at a **discount** to the spot rate.

Lower – €1.23 – the forward rate is said to be at a **premium** to the spot rate.

FORWARD RATES AS ADJUSTMENTS TO SPOT RATES	
Forward rate for the overseas currency is weaker than spot	Quoted at discount
Forward rate for the overseas currency is stronger than spot	Quoted at premium

A **discount** is therefore **added** to the spot rate, and a **premium** is **subtracted** from the spot rate. Premiums or discounts are attributable to interest rate differences between the two currencies.



### Worked example: Adjusting for a premium or discount

1 January:	Spot rate US \$	\$1.5500	-	\$1.5610
	One-month forward discount:	0.0020	-	0.0022
	Three-month forward premium:	0.0022	-	0.0018

#### Requirement

What are the forward rates quoted for one and three month contracts respectively?

#### Solution

Spot rate = \$1.5500 - \$1.5610

One-month forward = \$1.5520 - \$1.5632 Obtained by adding the discount to the spot.

Three-month forward = \$1.5478 - \$1.5592

Obtained by deducting the premium from the spot.

A company may arrange a forward contract with its bank and subsequently realise that the intended transaction will not take place, so that the sale or purchase of the currency is not required. In this situation, the bank will close out the original forward contract, in effect by arranging another forward contract for the same settlement date, to cancel out the original contract. The close-out is then settled with a cash payment by one party to the other, depending on the difference between the forward rates in the two contracts.

### 3.3.1 Option forward contracts

Option forward contracts are forward exchange contracts where the customer has the option to call for performance of the contract:

- at any date from the contract being made, up to a specified date in the future; or
- at any date between two dates both in the future.

Performance must take place at some time: it cannot be avoided altogether.

Option forward contracts are normally used to cover whole months straddling the likely payment date, where the customer is not sure of the exact date on which they will want to buy or sell currency. The purpose of an option forward contract is to avoid having to renew a forward exchange contract and extend it by a few days, because this can be expensive.



### Worked example: Option forward contract

A UK company must pay \$100,000 in approximately 1½ months' time and takes out an option forward exchange contract to eliminate the foreign currency transaction risk.

Exchange rate details are:

- today's spot rate = \$1.5500 to the £
- one month forward rate = \$1.5475 to the £
- two month forward rate = \$1.5450 to the £

#### Requirement

Explain how the foreign debt will be settled in 1½ months' time.

#### Solution

The bank will offer an option forward exchange contract to the company, allowing the company to choose when, between one month's time and two months' time, the currency is needed. The rate will be either the one-month rate or the two-month rate, whichever is more beneficial to the bank.

At one-month rate cost =  $\$100,000 \div 1.5475 = \text{£}64,620.36$  At two-month rate cost =  $\$100,000 \div 1.5450 = \text{£}64,724.92$

The bank is selling the dollars and receiving sterling in exchange. Therefore the rate chosen will be the two-month rate.

### 3.3.2 Advantages of forward exchange contracts

- They are **transacted over the counter**, and are not subject to the requirements of a trading exchange.
- They can, in theory, be for **any amount**.
- The length of the contract can be **flexible**, but contracts are generally for less than two years.

### 3.3.3 Disadvantages of forward exchange contracts

- The organisation does not have the **protection** that trading on an exchange brings.
- The contracts are **difficult to cancel** as they are contractual obligations.
- There is a risk of **default** by the counterparty to the contract.

### 3.3.4 Synthetic foreign exchange agreements

In order to reduce the volatility of their exchange rates, some governments have banned foreign currency trading.

In such markets, **synthetic foreign exchange agreements (SAFEs)**, also known as non-deliverable forwards, are used. These instruments resemble forward contracts but no currency is actually delivered. Instead the two counterparties settle the profit or loss (calculated as the difference between the agreed SAFE rate and the prevailing spot rate) on a notional amount of currency (the SAFE's face value). At no time is there any intention on the part of either party to exchange this notional amount.

SAFEs can be used to create a foreign currency loan in a currency that is of no interest to the lender.



### Context example: Synthetic agreements

A borrower might require US dollars but wants to make the loan repayments in a currency that isn't traded. In this case, the borrower will receive dollars and repayments will be calculated in dollars. However, actual payment will be in the other preferred currency, calculated using the current exchange rate.

The lender might wish to lend in US dollars and also receive payment in US dollars. Therefore, at the same time as lending the dollars to the borrower, the lender may also enter into a SAFE agreement with a counterparty that matches the cash flows from the foreign currency repayments.

What has happened is that the lender has a synthetic dollar loan, the borrower has a synthetic second currency loan and the counterparty has a SAFE agreement with the lender.

It is important to remember that **settlement of SAFEs will always be in dollars** as the counterparty will be unable to settle in the alternative currency (as it is not traded).

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### Context example: Settlement of synthetic agreements

A lender enters into a 3-month SAFE with a counterparty to buy \$5 million worth of Philippine pesos at a rate of \$1 = PHP44.000. The spot rate is \$1 = PHP43.850.

When the SAFE is due to be settled in three months' time, the spot rate is \$1 = PHP44.050. This means that the lender will have to pay 5 million  $\times$  (44.050 - 44.000) = PHP250,000 to the counterparty.

As this will be settled in dollars at the prevailing spot rate, the payment to the counterparty will be  $\text{PHP}250,000 / 44.050 = \$5,675$ .

---



### Interactive question 10: Forward contract

A German exporter will receive an amount of \$1,500,000 from a US customer in three months' time. He can arrange a forward exchange contract to cover this transaction. The current spot rate is \$1 = €0.7810 - 0.7840 and the 3-month forward rate is quoted at 0.0005 - 0.0003 premium.

#### Requirement

Calculate how much the exporter will receive under the terms of the forward contract. See **Answer** at the end of this chapter.

---

### 3.4 Money market hedge

Money market hedges can be set up to cover future foreign currency payments or future foreign currency receipts. They can be used instead of forward contracts and have exactly the same effects.

#### 3.4.1 Hedging future currency payments with a money market hedge

Suppose a company needs to **pay** a foreign creditor in the foreign currency in three months' time. Instead of arranging a forward contract, the company could create a money market hedge.

- a) Borrow an appropriate amount in the home currency now, from the money market. This fixes the cost of buying the foreign currency after three months. The cost in domestic currency is the amount borrowed plus the interest on the loan.
- b) Convert the home currency to foreign currency immediately, at the spot rate and put this money on deposit in the money market.
- c) The amount placed on deposit should be sufficient, with accumulated interest, to make the foreign currency payment after three months.
- d) When the time comes to pay the creditor:
  - pay the creditor out of the foreign currency bank account
  - repay the home country loan account

The effect is exactly the same as using a forward contract, and will usually cost almost exactly the same amount. If the results from a money market hedge were very different from a forward hedge, speculators could make money without taking a risk. Therefore market forces ensure that the two hedges produce very similar results.



#### Worked example: Hedging payments

A UK company owes a New Zealand company NZ\$3,000,000, payable in 3 months' time. The current exchange rate is NZ\$2.0000 = £1.

The UK company elects to use a money market hedge to manage the exchange risk. The current borrowing and investing rates in the two countries are:

	New Zealand	UK
	%	%
Investing	2.5	4.5
Borrowing	3.0	5.2

#### Requirement

Calculate the cost to the UK company of using a money market hedge to make the payment of NZ\$3 million.

#### Solution

The UK company will be making a 3-month deposit of NZ dollars that will accumulate with interest to NZ\$3 million after 3 months. The interest rate on investing is 2.5% (annual rate), which is equivalent to 0.625% for 3 months, so the amount required for the deposit is:

$\text{NZ\$}3,000,000 / 1.00625 = \text{NZ\$}2,981,366$ .

These dollars are obtained by purchasing them spot in exchange for £ sterling, at a cost of £1,490,683 (= 2,981,366/2.000).

The sterling is obtained by borrowing for 3 months at 5.2% per annum (= 1.3% for 3 months). The amount payable on the sterling loan after three months will be:

$\text{£}1,490,683 \times 1.013 = \text{£}1,510,062$

The cost of the NZ\$3 million will therefore be £1,510,062, giving an effective forward exchange rate of  $\text{NZ\$}1.9867 = \text{£}1$ .

(Since the UK interest rate is higher than the NZ interest rate, the NZ dollar forward rate is at a premium to the spot rate.)

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### 3.4.2 Hedging future currency receipts with a money market hedge

A similar technique can be used to cover a foreign currency **receipt** from a debtor. When a company is expecting to receive an amount of foreign currency at a future date, and wants to use money market hedging to hedge the risk, the aim should be to borrow in the foreign currency for the period up to the time that the foreign currency receipt will occur. The amount borrowed should be sufficient so that, with interest, the amount payable at maturity of the borrowing will be equal to the foreign currency receipt: the receipt is then used to repay the loan plus interest.

To 'manufacture' a forward exchange rate with a money market hedge, follow the steps below.

- borrow an appropriate amount in the foreign currency today
- convert it immediately to home currency
- place it on deposit in the home currency
- when the debtor's cash is received:
  - repay the foreign currency loan with the foreign currency receipt
  - take the cash from the home currency deposit account



#### Worked example: Hedging receipts

An Australian company is due to receive ¥15,000,000 from a Japanese company, payable in 4 months' time. The current exchange rate is  $\text{A\$}1 = \text{¥}62.6000 - 62.8000$ .

The Australian company elects to use a money market hedge to manage the exchange risk. The current borrowing and investing rates in the two countries are:

	Australia	Japan
	%	%
Investing	4.5	2.7
Borrowing	6.0	3.3

#### Requirement

Calculate the amount the Australian company will receive in its own currency if it uses a money market hedge.

## Solution

Borrow yen so that the amount payable after 4 months will be ¥15,000,000. Interest rate on borrowing in yen = 3.3% per annum, or 1.1% for 4 months. Amount to borrow =  $¥15,000,000/1.011 = ¥14,836,795$ .

Borrow this amount and convert into Australian dollars at spot rate 62.8000, to obtain A\$236,255. Place these dollars on deposit for 4 months at interest rate of 4.5% per annum, or 1.5% for 4 months. After 4 months, the deposit with interest will be  $A\$236,255 \times 1.015 = A\$239,799$ .

When the ¥15,000,000 is received, use the money to pay off the loan in yen.

So the effective exchange rate that has been obtained is  $¥15,000,000/A\$239,799 = ¥62.5524 : A\$1$



### Interactive question 11: Money market hedging

Nicole, a French company, has made a large sale worth \$5,000,000 to a US company, Sims Inc. Sims Inc is due to settle the amount it owes to Nicole in three months' time, on 15 December.

Currency market rates

Spot rate \$ per €1 = 1.5904 - 1.5912

Money market rates p.a.

Euro 2.6%

US 1.6%

#### Requirement

Demonstrate how Nicole can use the money market to hedge the foreign currency receipt. See **Answer** at the end of this chapter.

### 3.4.3 Choosing the hedging method

The cheapest method available is the one that ought to be chosen.



### Interactive question 12: Choosing the cheapest method

Plumpton plc has bought goods from a US supplier, and must pay \$4,000,000 in three months' time. The company's finance director wishes to hedge against the foreign exchange risk, and the three methods which the company usually considers are:

- using forward exchange contracts;
- using money market borrowing or lending; and
- making lead payments.

The following annual interest rates and exchange rates are currently available.

	Deposit rate	US dollar		Sterling	
		Borrowing rate	Deposit rate	Borrowing rate	Deposit rate
	%	%	%	%	%
1 month	7	10.25	10.75	14.00	14.00
3 months	7	10.75	11.00	14.25	14.25

**\$/£ exchange rate (\$ = £1)**

Spot	1.8625 - 1.8635
1 month forward	0.60c - 0.58c pm
3 months forward	1.80c - 1.75c pm

**Requirement**

Which is the cheapest hedging method for Plumpton plc?

- forward contract
- money market hedge
- lead payment

See **Answer** at the end of this chapter.

### 3.5 Currency futures

A currency future is a contract to buy or sell a standard amount of one currency in exchange for another, for notional delivery at a set date in the future. For example, the Chicago Mercantile Exchange trades sterling futures contracts with a standard size of £62,500: these contracts are on the US dollar/sterling exchange rate.

The foreign currency futures market provides an alternative to the forward market, but it also complements that market. Like the forward market, the currency futures market provides a mechanism whereby users can alter portfolio positions. It can be used on a highly geared basis for both hedging and speculation and thus facilitates the transfer of risk - from hedgers to speculators, or from speculators to other speculators.

#### 3.5.1 Which type of contract?

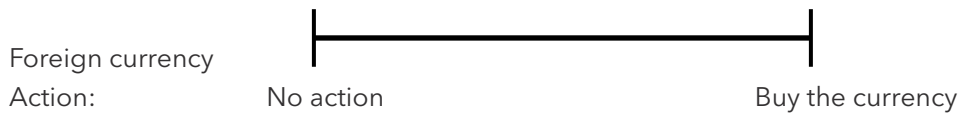
Typically, a currency future is for the purchase or sale of a quantity of one currency in exchange for US dollars. If you are going to make a payment in a foreign currency (not US dollars) on a future date, you will need to buy that currency. To hedge take the following action:

**Step 1 Buy** the appropriate **foreign currency futures** contracts **now** (just as you would with a forward contract).

**Step 2 Sell** the same number of **foreign currency futures** contracts when you buy the actual currency (closing out).



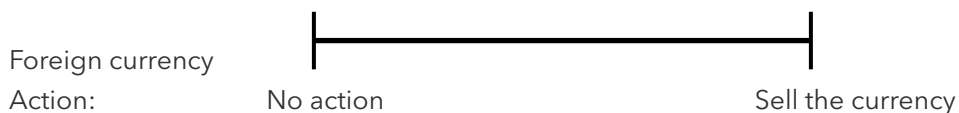




If you are going to receive monies in a foreign currency on a future date, you will need to sell that currency. To hedge take the following steps:

**Step 1 Sell** the appropriate **foreign currency futures** contracts **now**.

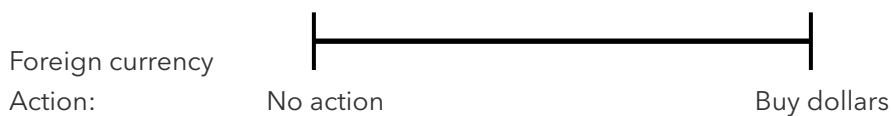
**Step 2 Buy** the same number of **foreign currency futures** contracts when you sell the actual currency.



Companies from outside the US that **are going to make a payment in US dollars** on a future date will need to buy US dollars. To hedge you cannot buy US dollar futures, therefore the company will have to sell futures in its own currency:

**Step 1 Sell** your **home currency futures** contracts **now**.

**Step 2 Buy** the same number of **home currency futures** contracts when you buy the dollars.

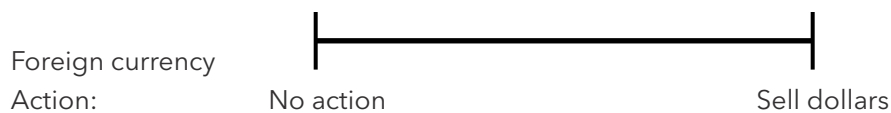


Companies from outside the US **that are going to receive an amount in US dollars** on a future date will need to sell US dollars. To hedge you cannot sell US dollar futures so the company has to buy futures in its own currency:

Step 1 **Buy** the appropriate **home currency futures** contracts **now**.

Step 2 **Sell** the same number of **home currency futures** contracts on the date that you receive dollars.





### 3.5.2 Tackling futures questions

A number of stages are involved.

#### Step 1 The set-up process

This may involve the following steps.

##### Choose which contract

You must choose a future with a settlement date following the date when the hedged transaction will take place.

Also select the required currency future.

Euro futures are for €125,000 in exchange for US dollars. The contract size for sterling futures is £62,500.

##### Choose number of contracts

You need to divide the amount being hedged by the size of contract, rounding to the nearest whole contract.

You may also need to calculate how much of the currency of the future is needed. You do this by using today's price for the futures contract to convert the amount being hedged into the currency of the futures contract, and then divide by the size of the futures contract.

#### Step 2 Close out the position

Close out the position at the required date. A gain or loss will arise when the position is closed out.

#### Step 3 Hedge outcome

##### Calculate futures market outcome

This will be:

Movement in rate (number of ticks) × Value of one tick × Number of contracts

##### Calculate net outcome

Spot market payment or receipt translated at closing rate

+ Futures market profit/(loss)

The currency used for this calculation will be the opposite to the currency of the receipt/payment being hedged. Therefore, unless a dollar receipt or payment is being hedged, the value of the futures profit or loss will also have to be converted using the closing spot rate.

The gain or loss on the futures position will accrue during the contract.



### Worked example: Currency futures

A US company buys goods worth €720,000 from a German company, payable in 30 days which is on 2 September. The US company wants to hedge against the euro strengthening against the dollar.

Current spot is €1 = \$0.9215 - 0.9221 and the futures rate is 0.9245. The standard size of a 3-month € futures contract is €125,000.

In 30 days' time on 2 September the spot rate is 0.9345 – 0.9351. Closing futures price at this date is 0.9367.

### Requirement

Evaluate the hedge.

### Solution

#### Step 1 - Set up

The US company wants to buy euros to make the payment to the supplier. It should therefore buy an appropriate quantity of euro futures, with a settlement date for the contract being the first after the transaction in 30 days' time. In this example, the US company will sell September contracts.

#### Number of contracts

Each contract is for €125,000.

$$\frac{720,000}{125,000} = 5.76, \text{ say } 6 \text{ contracts}$$

#### Step 2 - Closing futures price

When the position is closed, the futures price is 0.9367.

#### Step 3 - Hedge outcome

A tick in price movement = €0.0001. The value of a tick is in US dollars:  $125,000 \times 0.0001 = \$12.50$ .

#### Outcome in futures market

Opening futures price	0.9245	Buy at low price
Closing futures price	0.9367	Sell at high price
Movement	0.0122	
Futures profit/loss	122 ticks $\times$ \$12.50 $\times$ 6 contracts = \$9,150	Profit

#### Net outcome

	\$
Spot market payment to buy euros (720,000 $\times$ 0.9351)	673,272
Futures market profit	<u>(9,150)</u>
Net cost of euros	<u>664,122</u>

In this instance, the risk feared was the risk that the payment would go up in \$ terms, as you needed more \$ to buy each € that you needed to pay the European supplier.

This risk has materialised as in the end you need to pay \$0.9351 to buy each € rather than \$0.9221.

Buying the € futures has mitigated this loss because at the end you can sell them for more than you paid because euros have become more valuable.

### Interactive question 13: Currency futures

Allbrit plc, a company based in the UK, imports and exports to the US. On 1 May it signs three agreements, all of which are to be settled on 31 October.

- 1) a sale to a US customer of goods for \$205,500

2) a sale to another US customer for £550,000

3) a purchase from a US supplier for \$875,000

On 1 June the spot rate is  $\text{£}1 = 1.5500 - 1.5520 \text{ \$}$  and the October forward rate is at a premium of 4.00 - 3.95 cents per pound. Sterling futures contracts are trading at the following prices:

### **Sterling futures (IMM) Contract size £62,500**

<b>Contract settlement date</b>	<b>Contract price \$ per £1</b>
Jun	1.5370
Sep	1.5180
Dec	1.4970

### **Requirements**

13.1 Calculate the net amount receivable or payable in pounds if the transactions are covered on the forward market.

13.2 Demonstrate how a futures hedge could be set up and calculate the result of the futures hedge if, by 31 October, the spot market price for dollars has moved to 1.5800 - 1.5820 and the sterling futures price has moved to 1.5650.

See **Answer** at the end of this chapter.

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### **3.5.3 Basis risk**

Basis risk is the risk that the price of a futures contract will differ from the spot rate when the futures position is closed out. The **difference** between the spot rate and futures price (the 'basis') **falls over time** and should be zero at the settlement date for the futures contract. However, if a futures position is closed out before the settlement date, which is usual, there will be some basis. Basis does not decrease in a predictable way (which will create an imperfect hedge). There is no basis risk when a contract is held to maturity.

In order to **manage** basis risk it is important to choose a currency future with the **closest maturity date** to the actual transaction. This reduces the **unexpired basis** when the transaction is closed out.

The possible size of the basis when a futures position is closed can be estimated when the futures position is opened. An estimate of the likely basis can be made by measuring the basis when the position is opened (= difference between futures price and the spot exchange rate) and assuming that this will fall at a linear rate to zero by the settlement date for the contract.

Estimating what the basis might be will enable a company to estimate how imperfect the hedge is likely to be because of basis risk.



### **Context example: Basis risk**

A US company trades in Europe and will need to pay €5 million in 5 months' time. It is now 1 March and futures contracts mature at the relevant month end. The current spot rate is \$1.2500/€1. The following futures contracts are available (\$ per €1).

September 1.2456

December 1.2382

If September contracts are used, there will be two months of unexpired basis. If December contracts are used, there will be five months. If basis is assumed to decline at a constant rate, the unexpired basis on 1 August under each contract would be:

	September	December
Spot rate now	1.2500	1.2500
Futures price	1.2456	1.2382
Difference (basis now)	0.0044	0.0118
Months until contract matures	7	10
Unexpired portion of contract on 1 August	2/7	5/10
Unexpired basis	0.0013	0.0059

The September contracts have the lower unexpired basis. Given the shorter time horizon there is less risk of significant differences between the predicted futures price and the actual futures prices on 1 August when the contracts are settled.

In this case, however, the September contracts are closed two months before expiry and there is no guarantee that the price of the futures contract will be the same as the predicted price calculated by basis at that date. It is **assumed** that the unexpired basis above is 0.0013 but it could be either more or less.

This creates a problem in that the futures contract, which in theory gives a fixed interest cost, may vary and therefore the amount of interest is not fixed or predictable. Typically, this risk is much **smaller** than the risk of remaining unhedged and, therefore, the impact of this risk is smaller and **preferable** to not hedging at all.

### 3.5.4 Hedge efficiency

Hedgers who need to buy or sell the underlying currency or commodity do not use the margin to trade more than they otherwise would. They can use the futures markets quite safely provided they understand how the system operates. The only risk to hedgers is that the futures market does not always provide a perfect hedge. This can result from two causes.

- a) Amounts must be **rounded to a whole number of contracts**, causing inaccuracies.
- b) **Basis risk** - as discussed above. The actions of speculators may increase basis risk.

A measure of **hedge efficiency** compares the profit made on the futures market with the loss made on the cash or commodity market, or vice versa.



#### Worked example: Hedge efficiency

You are given the following details about the results of a hedge by a US company for a payment of SFr650,000 in 30 days' time under two scenarios. In each case compute the hedge efficiency.

Assume today's spot rate is SFr1 = \$0.5803. Contract size is SFr125,000. Number of contracts =  $650,000/125,000 = 5.2$ , round to 5.

Futures hedge (five contracts)	\$/SFr	Scenario 1	\$/SFr	Scenario 2
		\$		\$
Today: Buy 5 at	0.5725		0.5725	
In 30 days: Sell 5 at	<u>0.6030</u>		<u>0.5610</u>	
Gain/(loss) per contract in ticks	<u>305</u>		<u>(115)</u>	
Total gain/(loss) on 5 contracts: $125,000 \times 5 \times \text{Gain/(loss)}$		19,063		(7,187)
<b>Cash transaction</b>				
In 30 days: SFr650,000 are actually bought at	0.6112	<u>(397,280)</u>	0.5680	<u>(369,200)</u>
Net cost of the Swiss francs		<u>(378,217)</u>		<u>(376,387)</u>

### Requirement

Calculate the hedge efficiency.

### Solution

The futures hedge gives slightly more or less than the target payment of \$377,195 (SFr 650,000  $\times$  0.5803) because of hedge inefficiency. To compute the hedge efficiency in each case, compute gain/loss as a percentage. In Scenario 1 the gain comes from the futures market. In Scenario 2 the gain comes from the cash market.

### Hedge efficiency

	\$	\$
Target payment ( $650,000 \times 0.5803$ )	377,195	377,195
Actual cash payment	<u>397,280</u>	<u>369,200</u>
Gain/(loss) on spot market	<u>(20,085)</u>	<u>7,995</u>
Futures gain/(loss)	<u>19,063</u>	<u>(7,187)</u>
Hedge efficiency	<u>94.9%</u>	<u>111.2%</u>

### 3.5.5 Advantages of currency futures

- Transaction** costs should be **lower** than for forward contracts.
- The **exact date** of **receipt** or **payment** of the currency does **not have to be known**, because the futures contract does not have to be closed out until the actual cash receipt or payment is made. In other words, the futures hedge gives the equivalent of an 'option forward' contract, limited only by the expiry date of the contract.
- Because future contracts are traded on exchange-regulated markets, **counterparty risk** should be **reduced** and buying and selling contracts should be easy.

### 3.5.6 Disadvantages of currency futures

- The **contracts can not be tailored** to the user's exact requirements.
- Hedge inefficiencies** are **caused** by having to deal in a whole number of contracts and by **basis risk**.
- Only certain currencies** are the subject of futures contracts.
- The **procedure for converting** between two currencies, neither of which is the US dollar, is twice as complex for futures as for a forward contract.
- Using the market will involve various costs, including brokers' fees.

### 3.6 Comparison of hedging methods

	Forward	Money Market	Futures
Tailored	a	a	r
Secondary market to 'unwind' hedge	r	a	a
Transaction cost	Via spread	Via spreads on interest and spot rate	Brokerage fees
Complexity	Low	Medium	High
Management costs	Low	Medium	High
Application	Small/medium companies	Banks	May be used by companies with large currency exposures

### 3.7 Currency options

A currency option is an agreement involving a right, but not an obligation, to buy or sell a certain amount of currency at a stated rate of exchange (the **exercise price**) on or before some specified time in the future. Currency options involve the payment of a premium, which is the most the buyer of the option can lose.

An option reduces the risk of losses due to currency movements, but allows currency gains to be made. The premium cost means that if the currency movement is adverse, the option will be exercised, but the hedge will not normally be quite as good as that of the forward or futures contract. However, if the currency movement is favourable, the option will not be exercised, and the result will normally be better than that of the forward or futures contract. This is because the option allows the holder to profit from the improved exchange rate.

The purpose of currency options is to reduce or eliminate exposure to currency risks, and they are particularly useful for companies in the following situations.

- Where there is **uncertainty** about **foreign currency receipts or payments**, either in timing or amount. Should the foreign exchange transaction not materialise, the option can be sold on the market (if it has any value) or exercised if this would make a profit.
- To **support the tender** for an **overseas contract**, priced in a foreign currency.
- To allow **the publication of price lists** for the company's goods in a foreign currency.
- To protect the import or export of **price-sensitive goods**.

In both situations (b) and (c), the company would not know whether it had won any export sales or would have any foreign currency income at the time that it announces its selling prices. It cannot make a forward exchange contract to sell foreign currency without becoming exposed in the currency.

#### 3.7.1 Types of currency options

A business needs to decide which types of currency options it needs to purchase.

With over the counter options there is usually no problem in making this decision. If, for example, a business needs to buy US dollars at some stage in the future, it can hedge by purchasing a US dollar call option. With traded options, however, only a limited number of currencies are available and there is no US dollar option as such. The company's requirements have to be rephrased.

- A UK company wishing to sell US dollars in the future can hedge by purchasing £ sterling call options (ie, options to buy sterling with dollars). A sterling option has a standard contract size of £31,250.
- Similarly, a German company which needs to buy US dollars can hedge by purchasing euro put options.

Transaction on future date		Now		On future date	
Receive	currency	Buy	currency put	Sell	currency
Pay	currency	Buy	currency call	Buy	currency
Receive	\$	Buy	currency call	Buy	currency
Pay	\$	Buy	currency put	Sell	currency

### 3.7.2 Currency option calculations

If an options calculation appears to be complicated, it is best to use a similar method to the method we used for futures to assess the impact of options.

#### Step 1 Set up the hedge

- choose contract date
- decide whether put or call option required
- decide which exercise or strike price applies
- how many contracts
- calculate premium (Price in table  $\times$  0.01)  $\times$  Size of contract  $\times$  Number of contracts

#### Step 2 Ascertain closing price

You should be given this.

#### Step 3 The premium may need to be converted using the spot rate.

Calculate outcome of hedge

You may have to calculate the outcome under more than one closing spot rate.

- outcome in options market. This will include:
  - exercising the option
  - cash flows on exercise
  - converting amount uncovered/over-covered at spot rate
  - net outcome



#### Worked example: Currency options

A UK company owes a US supplier \$2,000,000 payable in July. The spot rate is £1 = \$1.5350 - 1.5370 and the UK company is concerned that the \$ might strengthen. A traded currency option is for a standard amount of £31,250. Premium cost per contract (cents per £1):

Strike price	Calls			Puts		
	June	July	August	June	July	August
147.50	6.34	6.37	6.54	0.07	0.19	0.50
150.00	3.86	4.22	4.59	0.08	0.53	1.03
152.50	1.58	2.50	2.97	0.18	1.25	1.89

A strike price of 147.50 corresponds to an exchange rate of £1 = \$1.4750.



## Requirement

Show how traded currency options can be used to hedge the risk at 1.525. Calculate the sterling cost of the transaction if the spot rate in July is:

- (1) 1.4600 - 1.4620
- (2) 1.6100 - 1.6120

## Solution

### Step 1 Set up the hedge

- 1) Which date contract? July
- 2) Put or call? Put, we need to put (sell) pounds in order to generate the dollars we need
- 3) Which strike price? 152.50, that is 1.5250
- 4) How many contracts?  
 $\frac{2,000,000}{1.525} \approx 1,311,540$ , say 1,312 contracts
- 5) Use July put figure for 1.5250 of 1.25. Remember it has to be multiplied by 0.01.

$$\text{Premium} = (1.25 \times 0.01) \times \text{Contract size} \times \text{Number of contracts}$$

$$\text{Premium} = 0.0125 \times 31,250 \times 42$$

$$= \$16,406 \div 1.5350 \text{ (to obtain premium in £)}$$

$$= \text{£}10,688$$

We need to pay the option premium in \$ now. Therefore the bank sells low at 1.5350.

### Step 2 Closing spot and futures prices

Case (a) \$1.46

Case (b) \$1.61

Assume here the price to use for options calculation is the same as the closing spot rate.

### Step 3 Outcome

Options market outcome

Strike price put	1.5250	1.5250
Closing price	1.46	1.61
Exercise?	Yes	No
Outcome of options position (31,250 × 42)	£1,312,500	-

### Balance on spot market

		\$
Exercise option (31,250 × 42 × 1.5250)		2,001,563
Value of transaction		2,000,000
Balance		1,563
Translated at spot rate $\frac{1,563}{1.46}$		= £1,071

### Net outcome

	£	£
Spot market outcome translated at closing		
spot rate $\frac{2,000,000}{1.61}$	-	(1,242,236)
Options position	(1,312,500)	-
Difference in hedge at closing rate	1,071	
The difference is a receipt as the amount owed was over-hedged.		
Premium (remember premium has to be added in separately as translated at the opening spot rate)	(10,688)	(10,688)
	(1,322,117)	(1,252,924)

### Professional skills focus: Structuring problems and solutions

You are expected to be able to identify and apply relevant technical knowledge and skills to analyse a specific problem. When setting up a currency hedge using exchange traded options you need to be able to make a number of decisions by correctly interpreting the information given in the question. Such information could include; the date of the contract; the type of contract (put or call); the most appropriate strike price; how many contracts are required; and the cost of the premium.

Using a logical approach to structure the information will help you to decide on an appropriate hedging strategy to manage currency risk.



### Interactive question 14: Over the counter option

Edted is a UK company that has purchased goods worth \$2,000,000 from a US supplier. Edted is due to make payment in three months' time. Edted's treasury department is looking to hedge the risk using an over the counter option. A three-month dollar call option has a price of 1.4800.

#### Requirements

Ignoring premium costs, calculate the cost to Edted if the exchange rate at the time of payment is: 14.1 £1 = \$1.4600

14.2 £1 = \$1.5000

See **Answer** at the end of this chapter.



### Interactive question 15: Traded option

Vinnick, a US company, purchases goods from Santos, a Spanish company, on 15 May on three months' credit for €600,000.

Vinnick is unsure in which direction exchange rates will move so has decided to buy options to hedge the contract at a rate of €1 = \$1.2950.

The details for €10,000 options at 1.2950 are as follows.

Calls			Puts		
July	August	September	July	August	September
2.55	3.57	4.01	1.25	2.31	2.90

The current spot rate is 1.2821.

### Requirement

Calculate the dollar cost of the transaction if the spot rate in August is:

(1) 1.3330

(2) 1.2500

See **Answer** at the end of this chapter.

---

### 3.7.3 Option premiums

The level of currency option premiums depends on the following factors:

- the **exercise price**
- the maturity of the option
- the **volatility** of exchange and interest rates
- **interest rate differentials**, affecting how much banks charge

### 3.7.4 Advantages of currency options

Foreign currency options have the advantage that while offering protection against adverse currency movements, they need not be exercised if movements are favourable. Thus the maximum cost is the option price, while there is no comparable limit on the potential gains.

### 3.7.5 Disadvantages of currency options

- The cost depends on the expected volatility of the exchange rate: the premium cost for a currency option can be high.
- Options must be paid for as soon as they are bought.
- Tailor-made options lack negotiability.
- Traded options are not available in every currency.

### 3.7.6 Forex (FX) collars

Interest rate collars have already been described. An FX collar is similar. It is a form of option that may be attractive because it reduces the net cost of the option.

A collar is a derivative instrument that combines:

- buying a call and selling a put option with a lower exercise price; or
- buying a put and selling a call option with a higher exercise price.
- The effect is to obtain an effective exchange rate for the underlying currency that is in the range between the exercise prices for the call and the put options.
- If the aim is to obtain a maximum buying price for a quantity of currency, a collar is created by:
- buying a call with an exercise price that is the maximum acceptable rate; and

- selling a put with an exercise price that is the minimum rate that is acceptable.

If the aim is to obtain a minimum selling price for a quantity of currency, a collar is created by:

- buying a put with an exercise price that is the minimum acceptable rate; and
- selling a call with an exercise price that sets a maximum acceptable rate.

As indicated above, the reason for arranging a collar is to acquire an option that ensures a 'worst possible' exchange rate, but that also limits the cost of the premium. The income from selling an option offsets the cost of buying the other option.

For example, suppose that a company wants to use an FX collar to fix a maximum buying price for a quantity of currency. The collar will consist of a purchased call option and the sale of a put option at a lower exchange rate.

- If the spot rate at expiry is above the exercise rate in the call option, the holder of the collar will exercise the call option and obtain the currency at the option strike rate.
- However, if the spot rate at expiry is below the strike rate for the put option, the put option will be exercised and the holder of the collar will have to buy the currency at the rate in the put option.
- If the spot rate at expiry is between the exercise rate in the call option and the exercise rate in the put option, neither option will be exercised, and the collar holder will buy the currency in the spot market at the spot market rate.
- So the exchange rate secured by the FX collar is a rate within the range of the exercise rates for the two options.

In some cases it may be possible to arrange a zero cost collar, where the cost of the purchased option is matched exactly by the income from the sale of the other option in the collar arrangement. However, if a zero cost collar is possible, the range of exercise rates that will be created by the collar is likely to be within a very narrow range, and a forward FX contract might be a simpler arrangement.

### Example

A UK company will need to buy US\$2 million in three months' time and due to the high volatility of the dollar-sterling exchange rate it wants to hedge its currency exposure on this transaction. There is a possibility that the dollar will increase in value, but there is also a possibility that it will fall in value. The company decides to hedge the risk with an FX collar. The collar consists of a call option with a strike rate of  $\$1.4500 = \text{£}1$  and a put option with a strike rate of  $\$1.5000 = \text{£}1$ . (The put option has a 'lower' strike rate in the sense that the value of the dollar is lower at a rate of 1.5000 than at a rate of 1.4500.)

- If the spot exchange rate at expiry is  $\$1.4000$ , the company will exercise the call option in the collar, and buy the \$2 million at a rate of 1.4500.
- If the spot exchange rate at expiry is  $\$1.5500$ , the put option in the collar will be exercised, and the company will have to buy the \$2 million at a rate of 1.5000.
- If the spot exchange rate at expiry is  $\$1.4700$  - between the two strike rates - neither option will be exercised and the company will buy the dollars at the spot rate of 1.4700.

## 3.8 Currency swaps

A currency swap (or cross-currency swap) is an interest rate swap with cash flows in different currencies. The parties to the swap exchange 'interest payments' on notional quantities of principal in two currencies. For example, one party may make payments on interest on £10 million and the other party may make payments of interest on a corresponding amount of another currency, say \$15 million.

Like interest rate swaps, currency swaps can be arranged for terms of several years. With a currency swap there are two (or possibly three) sets of cash flows.

- a) There is a regular exchange of 'interest' payments on the notional amounts of principal throughout the term of the swap.
- b) At maturity of the swap, the parties exchange the actual amounts of principal. Each party must pay the amount of principal in the currency for which it has been paying 'interest' in the swap.

There may also be an exchange of principal amounts at the beginning of the swap (in the opposite direction to the exchange of principal amounts at the end of the swap), but this is unusual in practice. Swap arrangements are not usually linked with actual loan arrangements.

Currency swaps are arranged over the counter with a bank.



### Context example: Currency swaps 1

A UK company wants to borrow New Zealand dollars for five years but is having difficulty arranging a New Zealand dollar loan. It wants to borrow NZ\$8 million. As an alternative it may be able to arrange a five-year swap with a bank in which the agreed exchange rate is NZ\$2 = £1.

The UK company will pay an agreed rate of interest on NZ\$8 million to the swaps bank, with payments at agreed intervals.

- The swaps bank will pay an agreed rate of interest on £4 million to the UK company.
- At maturity of the swap, after five years, the UK company will pay NZ\$8 million to the bank and will receive £4 million in return.



### Context example: Currency swaps 2

Consider a UK company X with a subsidiary in France that owns vineyards. Assume a spot rate of £1 = €1.20. Suppose the parent company wishes to raise a loan of €1.2 million for the purpose of buying another French wine company. At the same time, the French subsidiary Y wishes to raise £1 million to pay for new up to date capital equipment imported from the UK. The UK parent company X could borrow the £1 million sterling and the French subsidiary Y could borrow the €1.2 million, each effectively borrowing on the other's behalf. This is known as a back to back loan.

#### 3.8.1 Advantages of currency swaps

The main benefit of currency swaps is that a company can use a swap to take on what is in effect a loan in a foreign currency. In the first example above, the UK company is effectively borrowing NZ\$8 million for five years. Currency swaps may be possible to arrange in a foreign currency that is difficult to borrow in a direct loan.

The swap can then be used as a hedge against FX risk over a long period of time. In the example of the NZ\$-£ currency swap, the UK company may be planning an investment in New Zealand that will produce a stream of revenue over 5 years in NZ\$. The revenue from the investment can be used to make the swap payments, thereby creating a match between revenue and payments that creates a hedged position.

Other benefits of currency swaps can be stated briefly as follows.

**(a) Flexibility**

Swaps are **easy to arrange** and are **flexible** since they can be arranged in any size and are reversible.

**(b) Cost**

**Transaction costs are low**, only amounting to legal fees, since there is no commission or premium to be paid.

**(c) Market avoidance**

The parties can **obtain the currency they require** without subjecting themselves to the **uncertainties** of the foreign exchange markets.

**(d) Access to finance**

The company can gain **access to debt finance in another country** and currency where it is little known, and consequently has a poorer credit rating, than in its home country. It can therefore take advantage of lower interest rates than it could obtain if it arranged the currency loan itself.

**(e) Financial restructuring**

Currency swaps may be used to **restructure the currency base** of the company's liabilities. This may be important where the company is trading overseas and receiving revenues in foreign currencies, but its borrowings are denominated in the currency of its home country. Currency swaps thereby provide a means of reducing exchange rate exposure.

**(f) Conversion of debt type**

At the same time as exchanging currency, the company may be able to **convert fixed rate debt to floating rate or vice versa**. Thus it may obtain some of the benefits of an interest rate swap in addition to achieving the other purposes of a currency swap.

**(g) Liquidity improvement**

A currency swap could be used to **absorb excess liquidity** in one currency which is not needed immediately, to create funds in another where there is a need.

### 3.8.2 Disadvantages of currency swaps

**(a) Risk of default by the other party to the swap (counterparty risk)**

If one party became **unable to meet its swap payment obligations**, this could mean that the other party risked having to make them itself.

**(b) Position or market risk**

A company whose main business lies outside the field of finance should **not increase financial risk** in order to make **speculative gains**.

**(c) Sovereign risk**

There may be a risk of **political disturbances or exchange controls** in the country whose currency is being used for a swap.

**(d) Arrangement fees**

Swaps have arrangement fees payable to third parties. Although these may appear to be inexpensive, this is because the intermediary accepts **no liability** for the swap. (However, the third party does suffer some spread risk, as it warehouses one side of the swap until it is matched with the other, and then undertakes a temporary hedge on the futures market.)

Currency swaps are much less common than interest rate swaps.

## 3.9 FX swaps

An FX swap is a spot currency transaction coupled with an agreement that it will be reversed at a pre-specified date by an offsetting forward transaction.

Although the FX swap is arranged as a single transaction, it consists of two separate legs. The counterparties agree to exchange two currencies at a particular rate on one date and to reverse payments normally at a different rate on a specified future date. The two legs can therefore be seen as one spot **transaction** and **one forward transaction** going in **opposite directions**.

An FX swap is called a **buy/sell** swap when the base currency, eg, the dollar, is bought on the near date and sold on the far date, and is called a **sell/buy** swap when the base currency is sold on the near date and bought on the far date.

An FX swap is useful for hedging because it allows companies to shift temporarily into or out of one currency in exchange for a second currency without incurring the exchange rate risk of holding an open position in the currency they temporarily hold. This avoids a change in currency exposure which is the role of the forward contract.

FX swaps are most commonly used by banks. For example, two banks may arrange an FX swap to exchange an amount of currency spot and to make a reverse transaction (at a different rate) in, say, one or two days' time.



### Context example: FX swap

An example of an FX swap is where Bank ABC enters into an FX swap with Bank 123 to:

- sell US\$1,000,000 worth of Japanese yen (JPY) today
- buy US\$1,000,000 worth of JPY in one week's time This FX swap (known as a spot to forward date swap) would look something like this:

In the above example, the FX swap is made up of a spot FX transaction and a one-week forward transaction. Other types of FX swaps include transactions where both the first and second halves (legs) occur in the future. These are known as forward against forward swaps and are, in effect, two forward transactions operating in parallel.



### Interactive question 16: El Dorado part 1

El Dorado plc, an engineering company based in the UK, has won a contract to build a theme park ride in Sri Lanka. This project will require an initial investment of 500 million Sri Lankan rupees and will be sold for 900 million rupees to the Sri Lankan Government in one year's time. As the Sri Lankan Government will pay in rupees, El Dorado is exposed to movements in the £/rupee exchange rate.

#### Requirement

Construct a forex (FX) swap that will help to hedge the exchange rate risk. See **Answer** at the end of this chapter.



### Interactive question 17: El Dorado part 2

Look again at El Dorado part 1.

Assume that the current spot rate is 100 rupees/£ and the Sri Lankan Government has offered a forex swap at that rate. The estimated spot rate in one year's time (when the Government will pay for the theme park ride) is 180 rupees/£. The current UK borrowing rate is 8%.

## Requirement

Should El Dorado hedge the exposure using the swap or should it just do nothing? Show all workings to support your answer.

See **Answer** at the end of this chapter.

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### 3.10 Devising a foreign currency hedging strategy

Given the wide range of financial instruments (both internal and external) available to companies that are exposed to foreign currency risk, how can an appropriate strategy be devised that will achieve the objective of reduced exposure while at the same time keeping costs at an acceptable level and not damaging the company's relationship with its customers and suppliers?

There is no individual best way of devising a suitable hedging strategy - each situation must be approached on its own merits. Unless you are told otherwise, it should be assumed that the company will be wanting to minimise its risk exposure - it is up to you to come up with the most appropriate way of doing so. You should be prepared to justify your choice of strategy; this is covered in self-test question 2.

#### Professional skills focus: Concluding, recommending and communicating

You are expected to be able to make evidence-based recommendations which can be justified by reference to supporting data and other information. Questions on currency risk will often ask you to advise on an appropriate hedging strategy. It is important that you consider relevant technical knowledge alongside specific data provided in the question.

## 4 Hedge accounting



### Section overview

- The basic rules for accounting for financial instruments were explained in the chapter Financial instruments and financial markets. Different rules apply when financial instruments are used for hedging.
- If a business uses financial instruments for fair value or cash flow hedging, it will be subject to hedge accounting rules if certain conditions are fulfilled. The rules relating to where changes in value are recognised differ for fair value and cash flow hedges.
- IAS 39 has now been replaced by IFRS 9, but entities are still permitted to apply the IAS 39 hedging rules. IFRS 9 is the default standard for your exam.

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Hedge accounting is the accounting process which reflects in financial statements the commercial substance of hedging activities. It results in the gains and losses on the linked items being recognised in the same accounting period and in the same section of the statement of comprehensive income, ie, both in profit or loss, or both in other comprehensive income.

Hedge accounting reduces or eliminates the volatility in profit or loss which would arise if changes in the value of derivatives had to be accounted for separately. Designation of hedging arrangements means that volatility in the values of the original derivatives is offset.

Hedge accounting rules are particularly important for many companies, as companies will use derivatives for risk management and not speculative purposes.



## 4.1 Hedge accounting components

The main components of hedge accounting are:

- a) The **hedged item**: this is an asset, a liability, a firm commitment (such as a contract to acquire a new oil tanker in the future) or a forecast transaction (such as the issue in four months' time of fixed rate debt) which exposes the entity to risks of fair value/cash flow changes. The hedged item generates the risk which is being hedged.
- b) The **hedging instrument**: this is a derivative or other financial instrument whose fair value/cash flow changes are expected to offset those of the hedged item. The hedging instrument reduces/eliminates the risk associated with the hedged item.
- c) There is a designated relationship between the item and the instrument which is documented. To be eligible for hedge accounting the hedge documentation must be in place at the inception of the hedge relationship. Until the necessary documentation is in place hedge accounting cannot be applied even if the underlying hedging activity is valid. There can be no retrospective designation of a hedge relationship.
- d) At inception the hedge must be expected to be highly effective and it must turn out to be highly effective over the life of the relationship (see below).
- e) The effectiveness of the hedge can be reliably assessed on an ongoing basis.
- f) In respect of a cash flow hedge, a forecast transaction is highly probable.
- g) To qualify for hedging, the changes in fair value/cash flows must have the potential to affect profit or loss.
- h) There are two main types of hedge:
  - 1) The **fair value hedge**: the gain and loss on such a hedge are recognised as a fair value gain or loss in profit or loss.
  - 2) The **cash flow hedge**: the gain and loss on such a hedge are initially recognised in other comprehensive income and subsequently reclassified to profit or loss when the underlying transaction takes place.

Hedge effectiveness is the degree to which the changes in the fair value or cash flows of the hedged item that are attributable to a hedged risk are offset by changes in the fair value or cash flows of the hedging instrument. Hedge effectiveness should be tested on both a prospective and retrospective basis because hedge accounting should only be applied when:

- at the time of designation the hedge is expected to be highly effective; and
- the hedge turns out to have been highly effective throughout the financial reporting periods for which it was designated.

IFRS 9 has a principles-based test for hedge effectiveness, whereas according to its predecessor, IAS 39, the highly effective hurdle was achieved if the actual results of a hedge were within the range from 80% to 125%.

## 4.2 Hedged items



### Definitions

**A hedged item**: is an asset, liability, firm commitment, highly probable forecast transaction or net investment in a foreign operation that:

- exposes the entity to risk of changes in fair value or future cash flows; and
- is designated as being hedged.

**A firm commitment:** is a binding agreement for the exchange of a specified quantity of resources at a specified price on a specified future date or dates.

**A forecast transaction:** is an uncommitted but anticipated future transaction.

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Hedged items are exposed to a variety of risks that affect the value of their fair value or cash flows. For hedge accounting, these risks need to be identified and hedging instruments which modify the identified risks selected and designated.

The risks for which the above items can be hedged are normally classified as:

- market risk  
Which can be made up of:
  - price risk
  - interest rate risk
  - currency risk
- credit risk
- liquidity risk

IFRS 9 allows for a portion of the risks or cash flows of an asset or liability to be hedged. The hedged item may, for example, be:

- a) Oil inventory (which is priced in \$) for a UK company, where the fair value of foreign currency risk is being hedged but not the risk of a change in \$ market price of the oil
- b) A fixed rate liability, exposed to foreign currency risk, where only the interest rate and currency risk are hedged and the credit risk is not hedged

Other important aspects of the definition are:

- a) The hedged item can be:
  - 1) a single asset, liability, unrecognised firm commitment, highly probable forecast transaction or net investment in a foreign operation;
  - 2) a group of assets, liabilities, firm commitments, highly probable forecast transactions or net investments in foreign operations with similar risk characteristics; or
  - 3) a portion of a portfolio of financial assets or financial liabilities which share exposure to interest rate risk. In such a case the portion of the portfolio that is designated as a hedged item is a hedged item with regard to interest rate risk only.
- b) Assets and liabilities designated as hedged items can be either financial or non-financial items.
  1. Financial items can be designated as hedged items for the risks associated with only a portion of their cash flows or fair values. So a fixed rate liability which is exposed to foreign currency risk can be hedged in respect of currency risk, leaving the credit risk not hedged.
  2. IFRS 9 allows **separately identifiable and reliably measurable risk components of non-financial items** to be designated as hedged items.
- c) **Unrecognised** assets and liabilities **cannot be designated as hedged items**. So unrecognised intangibles cannot be hedged items.
- d) Only assets, liabilities, firm commitments or highly probable transactions that involve a party external to the entity can be designated as hedged items.

- e) As an exception, an intragroup monetary item qualifies as a hedged item in the consolidated financial statements if it results in an exposure to foreign exchange rate gains and losses that are not eliminated on consolidation.

### 4.3 Designation of a group of assets as hedged items

IFRS 9 permits the designation of a group of assets as a hedged item provided that the following

**conditions** are met:

- a) it consists of items individually, eligible hedged items;
- b) the items in the group are managed together on a group basis for risk management purposes; and
- c) in the case of a cash flow hedge of a group of items whose variabilities in cash flows are not expected to be approximately proportional to the overall variability in cash flows of the group:
  - 1. it is a hedge of foreign currency risk; and
  - 2. the designation of that net position specifies the reporting period in which the forecast transactions are expected to affect profit or loss, as well as their nature and volume. (IFRS 9, para. 6.6.1)

For a hedge of a net position whose hedged risk affects different line items in the statement of profit or loss and other comprehensive income, any hedging gains or losses in that statement are presented in a separate line from those affected by the hedged items [IFRS 9, para. 6.6.4].

### 4.4 Hedging instruments



#### Definition

**A hedging instrument:** is a designated derivative or, for a hedge of the risk of changes in foreign currency exchange rates only, a designated non-derivative financial asset or non-derivative financial liability, whose fair values or cash flows are expected to offset changes in the fair value or cash flows of a designated hedged item.

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The types of hedging instruments that can be designated in hedge accounting are:

- a) **derivatives**, such as forward contracts, futures contracts, options and swaps; and
- b) **non-derivative financial instruments, but only for the hedging of currency risk.** This category includes foreign currency cash deposits, loans and receivables, available for sale monetary items and held to maturity instruments carried at amortised cost.

Any derivative financial instrument, with the exception of written options to which special rules apply, can be designated as a hedging instrument. Derivative instruments have the important property that their fair value is highly correlated with that of the underlying.

### 4.5 Hedge accounting conditions

Before a hedging relationship qualifies for hedge accounting under IFRS 9, all of the following conditions must be met:

- a) The hedging relationship must consist only of eligible hedging instruments and eligible hedged items.
- b) At the inception of the hedge, there must be formal designation and documentation of the hedging relationship and the entity's risk management objective and strategy for undertaking the hedge. Documentation must include identification of the hedged item, the hedging instrument, the nature of the hedged risk and how the entity will assess whether the hedging relationship meets the hedge effectiveness requirements (including its analysis of the sources of hedge ineffectiveness and how it determines the hedge ratio).
- c) The hedging relationship meets all of the hedge effectiveness requirements:
  - An economic relationship exists between the hedged item and the hedging instrument, ie, the hedging instrument and the hedged item are expected to have offsetting changes in fair value.
  - The effect of credit risk does not dominate the fair value changes, ie, the fair value changes due to credit risk are not a significant driver of the fair value changes of either the hedging instrument or the hedged item.
  - The hedge ratio of the hedging relationship (quantity of hedging instrument vs quantity of hedged item) is the same as that resulting from the quantity of the hedged item that the entity actually hedges and the quantity of the hedging instrument that the entity actually uses to hedge that quantity of hedged item.



### Definition

**Hedge ratio:** the relationship between the quantity of the hedging instrument and the quantity of the hedged item in terms of their relative weighting.

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## 4.6 Fair value hedges

A fair value hedge is a hedge of an entity's exposure to changes in fair value of a recognised asset or liability or an unrecognised firm commitment, or a part thereof, that is attributable to a particular risk and could affect profit or loss. Examples of fair value hedges include the hedge of exposures to changes in fair value of fixed rate debt using an interest rate swap and the use of an oil forward contract to hedge movements in the price of oil inventory.



### Context example: Simple fair value hedge

On 1 August 20X5 an entity owned 50,000 litres of vegetable oil which had cost it £5 per litre and which had a selling price (spot price = fair value) of £6 per litre. The entity was concerned that the fair value might fall over the next three months, so it took out a three-month future to sell at £6 per litre. On 31 October the spot price of the oil had fallen to £5.60. On that date the entity closed out its future and sold its inventory, both transactions being at the spot price.

The sale of 50,000 litres at £5.60 generates revenue of £280,000; deducting the cost of £250,000 the profit recognised in profit or loss should be £30,000.

The entity also makes a profit of £0.40 (6.00 - 5.60) per litre in the futures market, so on 50,000 litres a profit of £20,000 should be recognised in profit or loss.

Subject to any futures market transaction costs, the entity has protected itself against a fall in fair value below the £6 fair value at 1 August 20X5.

## Examples of fair value hedging

Hedged item	Risk exposure	Type of risk	Example of hedging instrument
Commodity inventory	Change in value due to changes in the price of commodity	Market risk (price risk)	Forward contract
Equities	Change in the value of the investments due to changes in the price of equity	Market risk (price risk)	Purchase put option
Issued fixed rate bond	Change in the value of the bond as interest rates change	Market risk (interest rate risk)	Interest rate swap
Purchase of materials denominated in foreign currency in three months	Depreciation of the local currency and increase in the cost of material	Market risk (foreign currency)	Forward contract

IFRS 9 does not require that in order for a hedging relationship to qualify for hedge accounting, it should lead to a reduction in the overall risk of the entity. A hedging relationship that satisfies the conditions for hedge accounting may be designed to protect the value of a particular asset.

If a fair value hedge meets the conditions for hedge accounting during the period, it should be accounted for as follows:

- a) The gain or loss on the hedging instrument is recognised in profit or loss (or other comprehensive income if the hedged item is an equity instrument for which an entity has elected to present changes in fair value in other comprehensive income).
- b) The gain or loss on the hedged item is recognised in profit or loss. This also applies if the hedged item is a financial asset debt instrument measured at fair value through other comprehensive income (see the chapter International financial management). If the hedged item is an equity instrument for which an entity has elected to present changes in fair value in other comprehensive income, then the gain or loss is recognised in other comprehensive income.
- c) When the hedged item is an unrecognised firm commitment, the cumulative change in fair value of the hedged item subsequent to designation as a hedged item is recognised as an asset or liability and a corresponding amount is recognised in profit or loss.



### Context example: Gain or loss on hedged item recognised in profit or loss

At 1 November 20X5 an entity held inventory with a cost of £400,000 and a fair value of £600,000. The entity acquired a derivative to hedge against a fall in the fair value of its inventory below

£600,000. At its year end two months later the fair value of its inventory had fallen by £20,000 and the derivative it holds had a value of £20,000.

The journals required at the year end are as follows.

DEBIT	Financial asset	£20,000
CREDIT	Profit or loss	£20,000

To recognise the gain on the derivative hedging instrument

DEBIT	Profit or loss	£20,000
CREDIT	Inventories	£20,000

To adjust the carrying amount of inventories by the loss in its fair value (because closing inventories reduce cost of sale, a decrease in their carrying amount increases cost of sales and reduces profit).

The effect is that:

- The loss on the hedged item has been recognised in profit or loss.
- There is a nil net effect in profit or loss, because the hedge has been 100% effective.
- Inventories are carried at £380,000. This is neither cost (£400,000) nor fair value (£580,000).
- The entity has been protected against loss of profit. If it had sold the inventory on 1 November, it would have made a profit of £200,000 (600,000 - 400,000); if it sells the inventory on 1 January 20X6, it will make a profit of £200,000 (580,000 - 380,000).



### Interactive question 18: Fair value hedge

A company owns inventories of 80,000 gallons of oil which cost £1,000,000 on 1 December 20X5.

In order to hedge the fluctuation in the market value of the oil, on 1 December 20X5 the company signs a futures contract to deliver 80,000 gallons of oil on 31 March 20X6 at the futures price of £15 per gallon.

The market price of oil on 31 December 20X5 is £16 per gallon and the futures price at that date for delivery on 31 March 20X6 is £18 per gallon.

#### Requirement

Explain how these transactions should be accounted for at 31 December 20X5 with hedge accounting as per IFRS 9.

See **Answer** at the end of this chapter.

## 4.7 Cash flow hedges

A cash flow hedge is a hedge of the exposure to the variability of an entity's cash flow, where the variability is attributable to a particular risk associated with a recognised asset or liability (or a highly probable forecast transaction) and could thereby affect profit or loss.

Examples of cash flow hedges include:

- The use of interest rate swaps to change floating rate debt into fixed rate debt. The entity is hedging the risk of variability in future interest payments which may arise for instance from changes in market interest rates. The fixed rate protects this cash flow variability (but with the consequence that the fair value of the instrument may now vary in response to market interest movements).

- b) The use of a commodity forward contract for a highly probable sale of the commodity in future. The entity is hedging the risk of variability in the cash flows to be received on the sale, due to changes in the market price of the goods.

The hedge of foreign currency assets and liabilities using forward exchange contracts can be treated as either a fair value or a cash flow hedge. This is because movements in exchange rates change both the fair value of such assets and liabilities and ultimate cash flows arising from them. Similarly, a hedge of the foreign currency risk of a firm commitment may be designated as either a fair value or a cash flow hedge.

A forecast transaction is an uncommitted but anticipated future transaction. To qualify for cash flow hedge accounting, the forecast transaction should be:

- a) specifically identifiable as a single transaction or a group of individual transactions which share the same risk exposure for which they are designated as being hedged
- b) highly probable
- c) with a party that is external to the entity

If a cash flow hedge meets the qualifications for hedge accounting during the period it should be accounted for as follows:

- a) the portion of the gain or loss on the hedging instrument that is determined to be an effective hedge should be recognised in other comprehensive income and held in a separate component in equity; and
- b) the ineffective portion of the gain or loss on the hedging instrument should be recognised in profit or loss.

On a cumulative basis the effective portion can be calculated by adjusting the separate component of equity associated with the hedged item to the lesser of the following (in absolute amounts):

- a) the cumulative gain or loss on the hedging instrument from inception of the hedge
- b) the cumulative change in the fair value (present value) of the expected future cash flows on the hedged item from inception of the hedge

Any remaining gain or loss on the hedging instrument is the ineffective portion and should be recognised in profit or loss.

The hedged item is not itself recognised in the financial statements.



### Context example: Simple cash flow hedge

On 1 November 20X5 an entity, whose functional currency is the £, entered into a contract to sell goods on 30 April 20X6 for \$300,000. In fixing this \$ price it worked on the basis of the spot exchange rate of \$1.50 = £1, so that revenue would be £200,000. To ensure it received £200,000 on 30 June 20X6 the entity took out a 6-month future to sell \$300,000 for £200,000.

On 31 December 20X5 (which is the company's reporting date) the spot exchange rate was \$1.65 =

£1. The future was therefore worth £18,182 ( $£200,000 - (\$300,000/1.65)$ ) and the entity recognised that amount as a financial asset and as a profit in other comprehensive income.

On 30 April 20X6 the spot exchange rate was \$1.75 = £1 and the future was worth £28,571 ( $£200,000 - (\$300,000/1.75)$ ). The entity closed out its future position at the then spot price and sold the goods. The accounting entries would be:

DEBIT	Customer (\$300,000/1.75)	£171,429	
DEBIT	Financial asset (£28,571 - £18,182)	£10,389	
DEBIT	Other comprehensive income)		
	(Reclassification of gain to profit or loss)	£18,182	
CREDIT	Revenue		£200,000

The customer account and the financial asset are then cleared by cash receipts. Note that revenue is measured at the amount fixed as a result of the hedging transaction.



### Interactive question 19: Cash flow hedge 1

The package delivery service operated by Okavango Ltd uses a fleet of delivery vans. It has proved to be very successful, and the company wants to expand its operations. The finance director has identified a key risk as being the volatility of diesel prices, and has taken out a forward contract to hedge against this.

On 1 August 20X5, Okavango entered into a forward contract to hedge its expected fuel requirements for the second quarter of the next financial year for delivery of 1 million litres of diesel on 31 December 20X5 at a price of £2.10 per litre.

The company intended to settle the contract net in cash and purchase the actual required quantity of diesel in the open market on 31 December 20X5.

At the company's year end the forward price for delivery on 31 December 20X5 had risen to £2.20 per litre of fuel.

#### Requirement

How should the above transaction be accounted for in the financial statements of Okavango for the year ending 30 September 20X5 using the hedging provisions of IFRS 9?

See **Answer** at the end of this chapter.



### Interactive question 20: Cash flow hedge 2

Bruntal is a manufacturer and retailer of gold jewellery.

On 31 October 20X1, the cost of Bruntal's inventories of finished jewellery was £8.280 million with a gold content of 24,000 troy ounces. At that date their sales value was £9.938 million.

The selling price of gold jewellery is heavily dependent on the current market price of gold (plus a standard percentage for design and production costs).

Bruntal's management wished to reduce its business risk of fluctuations in future cash inflow from sale of the jewellery by hedging the value of the gold content of the jewellery. In the past this has proved to be an effective strategy.

Therefore it sold futures contracts for 24,000 troy ounces of gold at £388 per troy ounce at 31 October 20X1. The contracts mature on 30 October 20X2.

On 30 September 20X2 the fair value of the jewellery was £9.186 million and the forward price of gold per troy ounce for delivery on 30 October 20X2 was £352.



## Requirement

Explain how the above transactions would be treated in Bruntal's financial statements for the year ended 30 September 20X2 using the hedging provisions of IFRS 9.

See **Answer** at the end of this chapter.

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## Interactive question 21: Cash flow hedge 3

On 1 November 20X2, Blenheim entered into a contract to purchase 3,000 tonnes of refined sunflower oil. The contract is for delivery in February 20X3 at a price of £1,440 per tonne. Blenheim uses sunflower oil to make its products.

At 31 December 20X2, an equivalent new contract for delivery of 3,000 tonnes of refined sunflower oil in February 20X3 could be entered into at £1,400 per tonne.

Blenheim does not intend to take delivery of the sunflower oil and instead intends to settle the contract net in cash, then purchase the actual required quantity based on demand at the time.

The contract is designated as a cash flow hedge of the highly probable forecast purchase of sunflower oil. All necessary documentation was prepared to treat the contract as a cash flow hedge. No accounting entries have been made.

Tax rules follow accounting rules in respect of financial instruments in the tax jurisdiction (with both profit and other comprehensive income items subject to tax at 30%) in which Blenheim operates. No current or deferred tax adjustments have been made for this transaction.

## Requirement

Show how this transaction should be accounted for in the financial statements of Blenheim for the year ended 31 December 20X2 using the hedging provisions of IFRS 9.

See **Answer** at the end of this chapter.

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## 4.8 Summary of hedge accounting

The following table summarises the accounting treatment under IFRS 9 of fair value hedges and cash flow hedges.

	Fair value hedge	Cash flow hedge
Gain or loss on hedging instrument	Profit or loss (or OCI if the hedged item is an equity instrument for which an entity has elected to present changes in fair value in OCI)	Other comprehensive income

Adjustment to hedged item	Profit or loss (or OCI if an equity instrument and OCI election made)	N/A
Hedge ineffectiveness is recorded in profit or loss	Yes	Yes
Gains or losses reclassified to profit or loss later	N/A	Yes

#### 4.8.1 Types of hedge and their treatment

The following grid will also be useful in distinguishing the types of hedge and their treatment.

	Firm commitment	Forecast transaction (highly probable)
Foreign currency	Either fair value hedge or cash flow hedge	Cash flow hedge
Other	Fair value hedge	Cash flow hedge

### 4.9 Hedge accounting in IAS 39: main differences

#### 4.9.1 Key points

- Entities may apply the new IFRS 9 rules in their entirety or entities may apply the hedge accounting rules of IAS 39 to all of its hedging relationships while following the classification and measurement rules of IFRS 9.
- Entities undertaking macro hedging activities may apply the new general hedge accounting model in IFRS 9 while continuing to apply the specific macro hedging (see below requirements of IAS 39).
- The IASB is working on its dynamic risk management project and intends to publish a discussion paper in 2019.
- IFRS 9 is the default standard for your exam; however in practice the IAS 39 rules for hedging are still permitted.

#### 4.9.2 What is macro hedging?

Macro hedging, also known as portfolio hedging, is a technique whereby financial instruments with similar risks are grouped together and the risks of the portfolio are hedged together. Often this is done on a net basis with assets and liabilities included in the same portfolio. For example, instead of using interest rate swaps to hedge interest rate exposure on a loan-by-loan basis, banks hedge the risk of their entire loan book or specific portions of the loan book.

Currently, IFRS 9 does not address macro hedging.

In general, IAS 39 does not permit an overall net position to be designated as a hedged item, for example a UK entity that has to make a purchase of £10 million in 30 days and a sale of £2 million in 30 days cannot designate the net purchase of £8 million as the hedged item. The exception is that IAS 39 permits macro hedging for the interest rate risk associated with a portfolio of financial assets or liabilities. There are, however, clearly prescribed procedures that must be followed in order to do so.

### 4.9.3 Fair value designation for credit exposures

Many banks use credit derivatives to manage credit risk exposures arising from their lending activities. The hedges of credit risk exposure allow banks to transfer the risk of credit loss to a third party. This may also reduce regulatory capital requirements.

IFRS 9 allows credit exposure or part of the credit exposure to be measured at fair value through profit or loss if an entity uses a credit derivative measured at fair value through profit or loss to manage the credit risk of all, or part of, the credit exposure. In addition, an entity may make the designation at initial recognition or subsequently, or while the financial instrument is unrecognised.



### Interactive question 22: Credit derivative and credit exposure

Excel Bank extends a fixed rate loan commitment of £1 million to a customer. The bank's risk management strategy is to hedge the credit risk exposure of any individual loan commitment to the extent that it exceeds £500,000. As a result, Excel Bank enters into a credit default swap of £500,000 in relation to this loan commitment to the customer.

#### Requirement

Explain the accounting for the credit default swap and the loan commitment under IFRS 9.

See **Answer** at the end of this chapter.

### 4.9.4 Summary of key differences

The IFRS 9 model for hedge accounting differs from that in IAS 39 in the following key areas:

	IAS 39	IFRS 9
<b>Eligibility of hedging instruments</b>	Derivatives may be designated as hedging instruments. Non-derivatives may be designated as hedging instruments only for hedge of foreign currency risk.	Any financial instrument may be a hedging instrument if it is measured at fair value through profit or loss.
	<b>Therefore, under IAS 39 non-derivative items are less widely used as hedging instruments than under IFRS 9.</b>	
<b>Eligibility of hedged items</b>	Recognised assets, liabilities, firm commitments, highly probable forecast transactions and net investments in foreign operations may be designated as hedged items. In some circumstances, risk components of a financial asset or liability may be designated as a hedged item.	In addition to IAS 39 eligible hedged items, IFRS 9 allows a risk component of a non-financial asset or liability to be designated as a hedged item in some circumstances.
	<b>Therefore fewer items can be designated as hedged items under IAS 39</b>	

<b>Qualifying criteria for applying hedge accounting</b>	A hedging relationship only qualifies for hedge accounting if certain criteria are met, including a quantitative hedge effectiveness test under which hedge effectiveness must fall in the range 80% - 125%.	Hedge effectiveness criteria are principles-based and aligned with risk management activities.
	<b>Therefore genuine hedging relationships captured by IFRS 9 may be missed when applying IAS 39 rules.</b>	
<b>Rebalancing</b>	The concept of rebalancing does not exist within IAS 39.	Rebalancing is permitted by IFRS 9 in some circumstances (see above).
	<b>Lack of guidance on rebalancing means that hedge accounting needs to be discontinued under IAS 39, while it could continue under IFRS 9.</b>	
<b>Discontinuation of hedging relationships</b>	Hedge accounting may be discontinued at any time.	Hedge accounting may not be discontinued where the hedging relationship continues to meet qualifying criteria. Can only discontinue when qualifying criteria are no longer met.
<b>Accounting for the time value component of options and forward contracts</b>	The part of an option that reflects time value and the forward element of a forward contract are treated as derivatives held for trading purposes.	The time value component of an option is a cost of hedging presented in OCI. The forward element of a forward contract may also be presented in OCI.
	<b>IAS 39 therefore led to greater volatility in profit or loss than IFRS 9 does.</b>	

## Summary

Tick off

There are numerous financial instruments available for hedging interest rate risk and foreign currency risk – the key is being able to determine which one(s) are most compatible with the overall financial strategy.

Issues that should be taken into consideration when deciding between alternatives include cost, flexibility, expectations and ability to benefit from favourable movements in interest and currency rates.

As well as financial instruments, companies can make use of internal techniques to reduce currency exposure, including matching assets and liabilities, and leading and lagging.

Financial reporting standards require extensive disclosures about the financial risks companies face and also determine how companies should account for hedging arrangements.

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	Can you explain the key financial risks faced by a business? (Topic 1)
2.	Can you set up an interest rate futures hedge to manage interest rate risk? (Topic 2)
3.	Can you use interest rate parity to predict the exchange rate? (Topic 3)
4.	Can you manage foreign currency risk using an exchange traded option? (Topic 3)
5.	Can you correctly account for a fair value hedge using the provisions of IFRS9? (Topic 4)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed.

Question	Learning benefit from attempting this question
1 Octavo	This is a good introductory question covering interest rate risk and is a revision of what you would have covered in your Financial Management studies. Work through this question carefully before attempting exam standard questions.
10 YMP	This question asks you to explain, with supporting calculations, the appropriate financial reporting treatment of three different types of financial asset. It is therefore a good test of your understanding of IFRS9. Having a good layout for your calculations will help you tackle this question.
11 Fidden	This is a good question to practice foreign currency hedging using forward contracts, MMH and options. Currency hedging is popular in the SBM&L exam so make sure you can answer this question before moving on to exam standard questions. Refer back to section 3 of the chapter if you need to.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development before you start the next chapter.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.

# Technical reference

## 1. IAS 32, Financial Instruments: Presentation

- IAS 32 outlines the requirements for the presentation of financial instruments, particularly the classification of these instruments into financial assets, financial liabilities and equity instruments. The standard also provides guidance on the classification of interest, dividends and gains or losses relating to the financial instruments.

## 2. IFRS 9, Financial Instruments

- IFRS 9 forms a complete replacement for IAS 39, although the hedging provisions of IAS 39 still remain as an option. IFRS 9 sets out the recognition and measurement requirements for financial instruments and some contracts to buy or sell non-financial items.

## 3. IFRS 7, Financial Instruments: Disclosures

- IFRS 7 prescribes disclosure about the significance of financial instruments to an entity's position and performance, and about the nature and extent of the risks arising from those financial instruments, in both quantitative and qualitative terms.

## 4. IAS 39, Financial Instruments: Recognition and Measurement

- IAS 39 is a companion to IAS 32 and outlines the requirements for the recognition and measurement of financial assets, financial liabilities, and some contracts to buy or sell non-financial items.

## 5. IAS 21, The Effects of Changes in Foreign Exchange Rates

- IAS 21 prescribes how to include foreign currency transactions and foreign operations in the financial statements of an entity, and how to translate financial statements into a presentation currency. The principal issues are: which exchange rate(s) to use, and how to report the effects of changes in exchange rates.

# Self-test questions

Answer the following questions.

## 1 Octavo

It is 31 December. Octavo needs to borrow £6 million in three months' time for a period of six months. For the type of loan finance which Octavo would use, the rate of interest is currently 6% per year and the corporate treasurer is unwilling to pay a higher rate.

The treasurer is concerned about possible future fluctuations in interest rates, and is considering the following possibilities:

- FRAs
- Interest rate futures
- Interest rate guarantees or short-term interest rate caps

### Requirement

Explain briefly how each of these three alternatives might be useful to Octavo.

## 2 Zorr

Assume you are a financial manager with the nationally owned postal and telecommunications company in Zorro, a country in Asia. In organisations such as this, periodic settlements are made between local and foreign operators. Net receipts or payments are in US\$.

### Requirement

Explain the main types of foreign exchange risk exposure that are likely to affect the organisation and advise the company on policies it could consider to reduce exposure to these risks.

## 3 Prices (Premiums)

Prices (premiums) on 1 June for sterling traded currency options on the Philadelphia Stock Exchange are shown in the following table:

Sterling option contracts of £31,250 contracts (cents per £)

Exercise price \$/£	Calls		Puts	
	September	December	September	December
1.5000	5.55	7.95	0.42	1.95
1.5500	2.75	3.85	4.15	6.30
1.6000	0.25	1.00	9.40	11.20

Prices are quoted in cents per £. On the same date, the September sterling futures contract (contract size £62,500) is trading at \$/£ 1.5390 and the current spot exchange rate is \$1.5404 - \$1.5425.



Stark Inc, a US company, is due to receive sterling £3.75 million from a customer in four months' time at the end of September. The treasurer decides to hedge this receipt using either September £ traded options or September £ futures.

### Requirement

Compute the results of hedging using:

1. Futures
2. Options (illustrating the results with all three possible exercise prices)

at each of the following spot exchange rates at the end of September:

- (1) 1.4800
- (2) 1.5700
- (3) 1.6200

Assume that the futures price moves by the same amount as the spot rate, and that by the end of September the options contracts are on the last day before expiry.

## 4 Futures contracts

- 4.1 Briefly discuss the problems of using futures contracts to hedge exchange rate risks.
- 4.2 Identify and explain the key reasons why small vs large companies may differ in terms of both the extent of foreign exchange and interest rate hedging that is undertaken, and the tools used by management for such purposes.

## 5 Edgington

It is 31 May 20X5. Edgington, a UK computer retailer, is about to enter a contract with Curren, a US company, to purchase computer equipment costing \$7 million. Payment will be made on the date of delivery, which per the contract is due on 31 October 20X5.

Edgington is considering two alternatives:

1. Do not hedge and therefore accept any consequent exchange rate risks.
2. Enter into a foreign exchange forward contract today to purchase \$7 million on 31 October 20X5.

The current spot exchange rate and forward rate are both £1 = \$1.5758.

If it decides to hedge, Edgington intends to treat the contract as a fair value hedge for financial reporting purposes, assuming that it can satisfy the hedge accounting conditions.

Edgington's directors have made the following assumptions about foreign exchange rate movements:

	30 June 20X5 (Edgington's year end)	31 October 20X5
Spot rate	£1 = \$1.4847	£1 = 1.3763
Fair value of forward contract	£273,056 positive (in Edgington's favour)	£644,285 positive

### Requirements

- 5.1 Based on the assumptions that the directors have made, advise Edgington on whether

it should enter into the forward contract or accept the foreign exchange risk without hedging.

5.2 Produce journal entries based on the assumptions, showing the impact of the forward contract on the financial statements for the year ended 30 June 20X5 and 30 June 20X6 under each of the following scenarios.

- There is no hedging arrangement in place.
- Edgington enters into the forward contract, but does not satisfy the conditions for hedge accounting.
- Edgington enters into the forward contract, satisfies the conditions for hedge accounting and uses fair value hedge accounting.

## 6 PRW

PRW appears to have hedged a large foreign currency payment due on 30 April 20X8 with a foreign currency transaction that it entered into in October 20X7 and has accounted for this hedge using cash flow hedging. It is currently 31 March 20X8 and you are involved in the audit of PRW for the year ended 28 February 20X8. There has been a large fair value loss on the hedging arrangement as calculated at 28 February 20X8. The documentation connected with the hedging was not given to you until some days after you requested it, and you are suspicious that it may not have been prepared until after you asked to see it.

### Requirement

Explain the corporate reporting issues and assurance risks that arise as a result of your suspicions about the hedging documentation, and describe the assurance work you would carry out on the hedging arrangements.

## 7 Crude oil

A company owns 100,000 barrels of crude oil which were purchased on 1 July 20X2 at a cost of \$26.00 per barrel.

In order to hedge the fluctuation in the market value of the oil the company signs a futures contract on the same date to deliver 100,000 barrels of oil on 31 March 20X3 at a futures price of \$27.50 per barrel. The conditions for hedge accounting were met.

Due to unexpected increases in production, the market price of oil on 31 December 20X2 was \$22.50 per barrel and the futures price for delivery on 31 March 20X3 was \$23.25 per barrel at that date.

### Requirement

Explain the impact of the transactions on the financial statements of the company for the year ended 31 December 20X2.

## 8 The Macgorrie Company

The Macgorrie Company makes silver wire. On 30 June 20X7 Macgorrie enters into a firm commitment to buy 110 tonnes of silver on 31 December 20X8. The spot price of silver at 30 June is £350 per tonne.

Also on 30 June 20X7, in order to reduce the risk of increases in silver prices, Macgorrie enters into a forward contract which is a derivative, to buy 90 tonnes of silver at £350 per tonne on 31 December 20X8. The forward contract has a nil fair value at 30 June 20X7. Macgorrie has designated the forward contract as a fair value hedge. The conditions for hedge accounting were met.

On 31 December 20X7 the spot price of silver was £385 per tonne and the forward contract had a positive fair value of £2,835.

### Requirement

Indicate whether the following statements are true or false in respect of the hedging arrangement in the financial statements of Macgorrie for the year to 31 December 20X7.

1. The unhedged 20 tonnes of silver must be part of the hedge effectiveness calculation.
2. The hedging arrangement falls within the range of 80% to 125%.

## 9 Finney plc

Finney plc is a UK-based company that produces engineering equipment for the mining industry. Finney has a number of investments both in the UK and overseas, as well as an active treasury function that trades in commodities.

You are Marina Bujnowicz, and you recently joined Finney as an accountant to help finalise the financial statements for the year ended 30 September 20X2.

You receive the following email from a director of Finney, Simone Hammond:

**To:** Marina Bujnowicz  
**From:** Simone Hammond  
**Date:** 3 November 20X2

Re: Financial Statements for year ended 30 September 20X2

Dear Marina,

Finney's treasury department has gathered together information relating to outstanding issues for inclusion in the financial statements (**Attachment**).

Please review this information and prepare for me a briefing note, including any relevant calculations, that sets out the financial reporting consequences for the year ended 30 September 20X2 of the issues contained in the attachment.

Regards  
Simone

### Attachment: Outstanding issues

#### Copper inventories contract

At 1 July 20X2 Finney had inventories of 1,000 tonnes of copper. The average historic cost of the copper was £9,200 per tonne.

To protect against a decline in copper prices, on 1 July 20X2 Finney entered into a futures contract, using a recognised commodities exchange, to sell 1,000 tonnes of copper for £9,200 a tonne. (The fair value of the futures contract at that date was zero.) The contract matures on 31 December 20X2. Our compliance department designated the futures contract as a fair value hedge of the copper inventory, and believes it to be highly effective in offsetting changes in the fair value of the copper.

At 30 September 20X2, the fair value of the copper inventory had fallen to £8,200 a tonne and, at this date, the fair value of the original futures contract (written on 1 July 20X2) for 31 December 20X2 delivery was £950 per tonne. At 30 September 20X2, a new futures contract could be written for delivery of copper on 31 December 20X2 at £8,250 a tonne.

### UK investment

On 1 October 20X0 Finney bought 2 million shares at £1.60 each, representing a 0.9% shareholding, in Coppery plc. At the acquisition date there was no intention to sell the shares in the short term.

The gain recognised in respect of the investment in Coppery in other comprehensive income for the year ended 30 September 20X1 was £300,000.

On 1 April 20X2 Coppery was acquired by Zoomla plc, a large mining corporation. The terms of the deal were that shareholders in Coppery would receive, for each share they owned:

1. On 1 April 20X2, two shares in Zoomla, worth £1.10 each.
2. On 1 April 20X3, cash of £0.15.

Finney has a weighted average cost of capital of 10%.

At 30 September 20X2, the market price of a Zoomla share was £1.20.

### Overseas investment

On 1 October 20X0, Finney bought ordinary shares in Bopara Inc, an unquoted American copper mining company, for \$15 million. The investment represented a 0.2% shareholding in Bopara and was classified as available-for-sale.

At 30 September 20X1, Finney's shareholding in Bopara was valued, by a market analyst, at \$12.8 million. The reduction in value was due to changes in copper prices which affected share prices in the sector. This was reflected in Finney's financial statements for the year ended 30 September 20X1.

In September 20X2 there was an explosion in one of Bopara's largest mines, which caused its permanent closure. Finney's shareholding in Bopara decreased in value to \$11.34 million at 30 September 20X2 as a consequence.

Relevant exchange rates were:

- 1 October 20X0 £1 = \$1.50
- 30 September 20X1 £1 = \$1.60
- 30 September 20X2 £1 = \$1.62

### Requirement

Draft the briefing note requested by Simone.

## 10 Yonti Metal Processors

Yonti Metal Processors Ltd (YMP) is a successful private company which processes nickel, tin, zinc and other high-value metals to make products for industrial applications.

You are a senior in an accounting firm, Harcourt, Berry & Fudd (HBF). HBF is currently planning the audit of YMP for the year ended 30 June 20X2.

## Audit manager's instructions

The YMP audit engagement manager calls you into his office and gives you the following instructions:

'I would like you to take responsibility for the audit of financial assets for YMP. In the current year it has been investing surplus cash in a range of financial instruments.

'I have provided you with a summary of YMP's investment policies (**Exhibit 1**). I have also provided the client's schedule of financial assets and supporting explanations (**Exhibit 2**) which agrees with the figure of £3.712 million presented in the draft statement of financial position at 30 June 20X2. I am worried, however, that the measurement and recognition of financial assets is not in full accordance with IFRS.

'Specifically, for the year ended 30 June 20X2, for each type of financial asset in **Exhibit 2**, I would like you to explain, with supporting calculations, the appropriate financial reporting treatment. Show journal entries to correct the draft financial statements where appropriate and produce a revised version of the table in **Exhibit 2**.'

## Requirement

Respond to the instructions of the audit engagement manager.

## Exhibit 1: YMP's investment policies

The treasury division of YMP is responsible for making short-term and long-term investments. The treasury division is operated as a profit centre.

Investments, including derivatives, are used for both speculative purposes and for hedging. Speculation can involve regular trading in securities.

## Exhibit 2: Financial assets schedule - prepared by the finance director

Description	Carrying amount at 1 July 20X1	Additions	Fair value changes	Carrying amount at 30 June 20X2
Aqua plc 500,000 ordinary shares	-	£712,000	-	£712,000
Nickel derivative	-	Nil	-	Nil
Government bonds	£3,000,000	-	-	£3,000,000
Interest rate swap	-	Nil	-	Nil

## Aqua plc

On 14 April 20X2, YMP acquired 500,000 ordinary shares in Aqua plc, an AIM-listed company, representing a holding of 2% of the issued share capital of Aqua. The total cost was £712,000, including commission costs of £7,000. At the date of purchase, the quoted price was 139p-141p.

This trade was made for speculative purposes and all the Aqua shares are expected to be sold by YMP in August 20X2 when the commission to sell will be 1.5p per share. At 30 June 20X2, the Aqua shares were quoted at 165p-167p.

## Nickel derivative

On 16 February 20X2, YMP entered into a forward contract to purchase 20,000 kilos of nickel at £9 per kilo. The production director has claimed that YMP intends to take physical delivery of the metal at its factory on 30 September 20X2. The forward contract had no initial cost on 16 February 20X2 and was not designated as part of a hedge arrangement.

The forward contract was made with the counterparty through a clearing house. The spot prices of nickel per kilo on commodities markets were:

16 February 20X2      £9

30 June 20X2   £10

Using a financial model, I have estimated that the fair value of the forward contract is £25,000 at 30 June 20X2, but this value has not been recognised in the financial statements.

## Government bonds and interest rate swap

On 3 August 20X0 YMP invested £2.6 million in a new issue of 7% fixed rate government bonds, redeemable in 20X9, with a nominal value of £2.6 million. YMP classified the bond as available-for-sale. By 30 June 20X1 the fair value of the government bond had increased to £3 million (ex-interest). YMP wished to protect this increase in value and thereby avoid fair value risk exposure on the bond arising from possible future interest rate increases.

Consequently, on 4 July 20X1, it entered into a five-year, pay-fixed, receive-variable interest rate swap. This arrangement was completed through YMP's bank using another corporate customer on the other side of the deal. The fair value of the 7% government bonds was still £3 million at this date. The fair value of the swap at inception was zero.

Documentation prepared at the inception date relating to the hedge included identification of the hedge relationship, hedged item, hedge instrument; and evidence of hedge effectiveness. YMP is willing to provide any additional documentation as required. As a result of an increase in market interest rates, the fair value of the 7% government bond decreased to £2.8 million (ex-interest) by 30 June 20X2. I estimate that the fair value of the swap at 30 June 20X2 is £210,000. No adjustments have been made in the draft financial statements for these fair value changes.

## 11 Fidden plc

Fidden plc is a medium-sized UK company with export and import trade with the US. The following transactions are due within the next six months. Transactions are in the currency specified.

Purchases of components, cash payment due in three months: £116,000 Sale of finished goods, cash receipt due in three months: \$197,000

Purchase of finished goods for resale, cash payment due in six months: \$447,000 Sale of finished goods, cash receipt due in six months: \$154,000

### Exchange rates (London market)

	\$/£
Spot	1.7106 - 1.7140
Three months forward	0.82 - 0.77 cents premium
Six months forward	1.39 - 1.34 cents premium
Interest rates	

Three months or six months	<b>Borrowing</b>	<b>Lending</b>
Sterling	12.5%	9.5%
Dollars	9%	6%

**Foreign currency option prices (New York market) Prices are cents per £, contract size £12,500**

Exercise price	Calls			Puts		
	Mar	Jun	Sep	Mar	Jun	Sep
\$						
1.60	-	15.20	-	-	-	2.75
1.70	5.65	7.75	-	-	3.45	6.40
1.80	1.70	3.60	7.90	-	9.32	15.35

Assume that it is now December with three months to the expiry of March contracts and that the option price is not payable until the end of the option period, or when the option is exercised.

**Requirements**

- 11.1 Calculate the net sterling receipts and payments that Fidden might expect for both its three- and six-month transactions if the company hedges foreign exchange risk on:
- the forward foreign exchange market
  - the money market
- 11.2 If the actual spot rate in six months' time turned out to be exactly the present six-month forward rate, calculate whether Fidden would have done better to have hedged through foreign currency options rather than the forward market or the money market.

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

## Answer to Interactive question 1

The asset underlying the future is a notional three-month deposit of £500,000. In the example, the price of the future alters by 0.10% (94.63 - 94.53), or 10 ticks. The value per tick is £500,000 × 0.0001

× 3/12 = £12.50. So the profit on each contract would be:

£12.50 × 10 ticks = £125

## Answer to Interactive question 2

### Set up

Sell futures to hedge against the risk of an increase in the interest rate.

Choose the futures contract with the next delivery date/settlement date following the date when it is intended to close the position. In this case the company should sell June futures on 1 March.

How many contracts?  $\frac{\text{Exposure}}{\text{Contract size}} \times \frac{\text{Loan period}}{\text{Length of contract}} = (\$4\text{m}/\$1\text{m}) \times (3/3) = 4 \text{ contracts}$

### Closing the position on 1 June

Original sale price on 1 March	96.10
Buying price to close the position on 1 June	<u>95.07</u>
Gain per contract	<u>1.03</u>
Total gain on futures = 103 ticks × \$25 per tick × 4 contracts = \$10,300.	

	%		\$
Interest cost on loan (SONIA + 1%)	5.00	(\$4,000,000 × 5% × 3/12)	50,000
Gain on futures contract	<u>(1.03)</u>		<u>(10,300)</u>
Net cost	<u>3.97</u>		<u>39,700</u>

## Answer to Interactive question 3

### Set up

Buy put options on June futures at a price of (100 - 3.75) 96.25.

How many contracts?  $\frac{\text{Exposure}}{\text{Contract size}} \times \frac{\text{Loan period}}{\text{Length of contract}} = (\$4\text{m}/\$1\text{m}) \times (3/3) = 4 \text{ contracts}$

**Premium** = 0.255% (June puts)

Total premium cost:

Contracts × premium ×  $\frac{\text{Size of contract}}{\left( \frac{12 \text{ months}}{\text{Length of contract}} \right)}$  = 4 × 0.00255 × [\$1m/(12/3)] = \$2,550



## Outcome

	Scenario (a)SONIA 4% Futures price 95.90	Scenario (b)SONIA 2% Futures price 97.95
Buy put options		
On 1 June	Exercise options to sell futures at 96.25	Do not exercise options
Sell at	96.25	
Closing by buying at	95.90	
Gain per contract	0.35	

	\$	\$
Total gain on futures (35 ticks × \$25 × 4 contracts)	(3,500)	-
Borrow at SONIA + 1% (= 5% or 3%): interest cost	50,000	30,000
Option premium	2,550	2,550
Net cost	49,050	32,550

In this example, the high cost of the option premiums means that hedging with options would not have been financially worthwhile without a much more substantial increase in the SONIA rate between 1 March and 1 June.

### Answer to Interactive question 4

On the settlement date, the borrower will receive the following amount from the lender:

$$S = \$10\text{m} \times \frac{(0.038 - 0.035) \times (180/360)}{[1 + (0.038 \times (180/360))]}$$

$$S = \$14,720.31$$

### Answer to Interactive question 5

Company wants	Seeler Muller Floating	Overath Maier Fixed
Would pay (no swap)	(SONIA + 0.75%)	(10.5%)
<b>With a swap</b>	(9.00%)	(SONIA + 1.5%)
Borrow at		
Swap with bank	(SONIA)%	(8.78)%
Pay		
Receive	8.48%	SONIA
Net cost	(SONIA + 0.52%)	(10.28)%
Net benefit from swap	0.23%	0.22%

Both companies make a net gain by arranging a swap, and the bank would make a profit from the difference of 0.3% between its fixed pay rate and fixed receive rate for the five-year swaps.

The swap arrangements would be as follows.

- **Step 1** Seeler Muller borrows \$300 million for five years at a fixed interest rate of 9%, possibly by issuing a bond.
- **Step 2** Overath Maier borrows \$300 million for five years at a floating rate of SONIA + 1.5%, possibly as a bank loan or a syndicated bank loan.
- **Step 3** Each company enters into a separate five-year swap deal with its bank. In its swap Seeler Muller pays 'interest' at US dollar SONIA to the bank and receives in return 'interest' at 8.48%. Taking the loan and the swap together, its net interest cost is SONIA + 0.52%. This is 0.23% less than it would pay if it had borrowed directly at SONIA + 0.75%.

In its swap Overath Maier receives 'interest' at US dollar SONIA from the bank and in return pays 'interest' at 8.78%. Taking the loan and the swap together, its net interest cost is 10.28%. This is 0.22% less than it would pay if it had borrowed directly at a fixed rate of 10.5%.

The exchange of 'interest' payments in the swaps could be timed to coincide with the payments by the companies on their direct loans.

- **Step 4** At the end of five years the companies repay their loans at 9% fixed (Seeler Muller) and SONIA + 1.5% (Overath Maier), and their swap arrangements terminate.

With these swap arrangements the bank profits by 0.30%, the difference between its pay and receive rates on five-year swaps. In theory, the two companies would therefore benefit jointly by 0.3% if they arranged their swaps directly with each other. In practice this does not happen, for three reasons:

1. It is a straightforward task to approach a bank to arrange a swap. It is much more difficult to find another company that has matching but opposite borrowing and interest payment requirements.
2. Banks that arrange swaps do not need to match different requirements of their customers. They can deal separately and individually with each customer, quoting their swap rates.
3. The credit risk (counterparty risk) is much lower when dealing with a bank than when dealing with another non-bank corporate.

### Answer to Interactive question 6

At end of Year 1 =  $4.7250 \times (1.06/1.09) = 4.5950$

At end of Year 2 =  $4.7250 \times (1.06/1.09)^2 = 4.4685$

At end of Year 3 =  $4.7250 \times (1.06/1.09)^3 = 4.3455$

These are predictions of future spot rates. However, the one-year forward rate for NF/\$\$ will be close to 4.5950, due to the differences in interest rates. (Forward contracts with settlement dates beyond 12 months exist only for a limited number of currency pairs.)

### Answer to Interactive question 7

The exchange rate will be:

Future spot rate =  $1.7 \times \frac{1.05}{1.04} = 1.716$

That is, the dollar is expected to depreciate relative to the pound by \$0.016 or 0.9%.

## Answer to Interactive question 8

The nominal interest rate in the US is:

$$\frac{1+i_c}{1+i_b} = \frac{1+h_c}{1+h_b}$$

$$1+i_c = \left[ \frac{1+h_c}{1+h_b} \right] \times (1+i_b)$$

$$\begin{aligned} & \left[ \frac{1+0.05}{1+0.04} \right] \times (1+0.06) \\ & = 1.070 \end{aligned}$$

The nominal interest rate in the US is therefore 7%.

The real interest rate in both countries is approximately 2% (the difference between the nominal interest rate and the inflation rate for each country).

## Answer to Interactive question 9

Since:

$$\text{\$ interest rate} - \text{\pounds interest rate} = 0.01$$

it means that:

$$\frac{\text{Future spot rate} - \text{Current spot rate}}{\text{Current spot rate}} = 1\%$$

The implication is that the dollar will depreciate by 1%.

## Answer to Interactive question 10

The German bank will buy \$ at the lower rate 0.7810.

The premium should be deducted from this rate  $0.7810 - 0.0005 = 0.7805$ . As the \$ is the base currency, multiply the amount in \$ by the forward rate:  $1,500,000 \times 0.7805 = \text{€}1,170,750$

## Answer to Interactive question 11

We need to borrow now to match the receipt we shall obtain.

	France		US
Now	€3,129,764	@1.5912	\$4,980,080
	@1.0065**		@1.004*
3 months	€3,150,107		\$5,000,000

$$12^{*\frac{3}{12}} \times 1.6\% = 0.4\%$$

$$12^{**\frac{3}{12}} \times 2.6\% = 0.65\%$$

- Borrow an amount in US dollars which will be repaid in three months, so that principal and interest will equal \$5,000,000 (1.6% p.a. = 0.4% for 3 months). Total paid off by \$ receipt in three months' time

- Convert principal in \$ to € at spot (€1 = \$1.5912)
- Invest € in money market (2.6% p.a. = 0.65% for 3 months)
- The deposit will grow to €3,150,107

## Answer to Interactive question 12

The three choices must be compared on a similar basis, which means working out the cost of each to Plumpton either now or in three months' time. In the following paragraphs, the cost to Plumpton now will be determined.

### Choice 1: the forward exchange market

Plumpton must buy dollars in order to pay the US supplier. The exchange rate in a forward exchange contract to buy \$4,000,000 in three months time (bank sells) is:

	\$
Spot rate	1.8625
Less three months premium	<u>0.0180</u>
Forward rate	<u>1.8445</u>

The cost of the \$4,000,000 to Plumpton in three months' time will be:

$$\frac{\$4,000,000}{1.8445} = \text{£}2,168,609.38$$

This is the cost in **three months**. To work out the cost now, we could say that by deferring payment for three months, the company is:

- saving having to borrow money now at 14.25% a year to make the payment now; or
- avoiding the loss of interest on cash on deposit, earning 11% a year

The choice between (a) and (b) depends on whether Plumpton plc needs to borrow to make any current payment (a) or is cash rich (b). Here, assumption (a) is selected, but (b) might in fact apply.

At an annual interest rate of 14.25% the rate for three months is  $14.25/4 = 3.5625\%$ . The 'present cost' of £2,168,609.38 in three months' time is:

$$\frac{\text{£}2,168,609.38}{1.035625} = \text{£}2,094,010.26$$

### Choice 2: the money markets

Using the money markets involves:

- 1) **borrowing in the foreign currency**, if the company will eventually receive the currency
- 2) **lending in the foreign currency**, if the company will eventually pay the currency. Here, Plumpton will pay \$4,000,000 and so it would lend US dollars.

It would lend enough US dollars for three months, so that the principal repaid in three months' time plus interest will amount to the payment due of \$4,000,000.

- 1) Since the US dollar deposit rate is 7%, the rate for three months is approximately  $7/4 = 1.75\%$ .
- 2) To earn \$4,000,000 in three months' time at 1.75% interest, Plumpton would have to lend now:

$$\frac{\$4,000,000}{1.0175} = \$3,931,203.93$$

These dollars would have to be purchased now at the spot rate of (bank sells) \$1.8625. The cost would be:

$$\frac{\$3,931,203.93}{1.8625} = \text{£}2,110,713.52$$

By lending US dollars for three months, Plumpton is matching eventual receipts and payments in US dollars, and so has hedged against foreign exchange risk.

### Choice 3: lead payments

Lead payments should be considered when the currency of payment is expected to strengthen over time, and is quoted forward at a premium on the foreign exchange market. Here, the cost of a lead payment (paying \$4,000,000 now) would be  $\$4,000,000 \div 1.8625 = \text{£}2,147,651.01$ .

### Summary

	£
Forward exchange contract	2,094,010.26 (cheapest)
Currency lending	2,110,713.52
Lead payment	2,147,651.01

### Answer to Interactive question 13

13.1 Before covering any transactions with forward or futures contracts, match receipts against payments. The sterling receipt does not need to be hedged. The dollar receipt can be matched against the payment, giving a net payment of \$669,500 on 31 October.

The appropriate spot rate for buying dollars on 1 May (bank sells low) is 1.5500. The forward rate for October is **spot - premium** =  $1.5500 - 0.0400 = 1.5100$ .

Using a forward contract, the sterling cost of the dollar payment will be  $669,500/1.5100 =$

$\text{£}443,377$ . The net cash received on 31 October will therefore be  $\text{£}550,000 - 443,377 = \text{£}106,623$ .

### 13.2 Set up

#### Step 1

- Which contract  
December contracts
- Type of contract  
Sell sterling futures in May, we sell the sterling in order to buy the \$ that we need
- Number of contracts  
Here we need to convert the dollar payment to £, as contracts are in £ Using December futures price:

$$\frac{669,500}{1.4970} = \text{£}447,228$$

$$\text{No of contracts} = \frac{\text{£}447,228}{62,500} = 7.16 \text{ contracts, round to } 7$$

## Step 2 - Closing futures price

1.5650

## Step 3 - Result of futures market

Value per tick (in US dollars) = £62,500 × 0.0001 = \$6.25

### Futures market outcome

Opening futures price	1.4970	Sell
Closing futures price	1.5650	Buy
Movement	0.0680	Loss
Futures market loss = 680 ticks × \$6.25 × 7 = \$29,750		

### Net outcome

		\$
Spot market payment		(669,500)
Futures market loss		<u>(29,750)</u>
		\$
		<u>(699,250)</u>
Translated at closing spot rate		1.5800
The bank sells low hence we use the rate of 1.5800		£442,563

## Answer to Interactive question 14

14.1 As the option is an over the counter option, it is possible to have a dollar call option and to cover the exact amount.

If the exchange rate is 1.4600, the option will be exercised and the cost will be:

$$\frac{2,000,000}{1.4800} = \text{£}1,351,351$$

14.2 If the exchange rate is 1.5000, the option will not be exercised, and the cost will be:

$$\frac{2,000,000}{1.5000} = \text{£}1,333,333$$

## Answer to Interactive question 15

### Step 1 Set up the hedge

- (1) Which date contract? August
- (2) Put or call? Call, we need to buy euros
- (3) Which strike price? 1.2950
- (4) How many contracts?

$$\frac{600,000}{10,000} = 60$$

(5) Use August call figure of 3.57. Remember it has to be multiplied by 0.01.

Premium =  $(3.57 \times 0.01) \times \text{Contract size} \times \text{Number of contracts}$

Premium =  $0.0357 \times 10,000 \times 60$

= \$21,420

### Step 2 Closing spot and futures prices

Case (a) 1.3330

Case (b) 1.2500

Assume here the price to use for options calculation is the same as the closing spot rate.

### Step 3 Outcome

#### Options market outcome

Strike price call	1.2950	1.2950
Closing price	1.3330	1.2500
Exercise?	Yes	No
Outcome of options position	€600,000	-

#### Net outcome

	\$	\$
Spot market outcome translated at closing spot rate $600,000 \times 1.2500$	-	(750,000)
Options position $600,000 \times 1.2950$	(770,000)	-
Premium	(21,420)	(21,420)
	<u>(798,420)</u>	<u>(771,420)</u>

### Answer to Interactive question 16

The following forex swap could be used:

- **Swap pounds today** at an agreed swap rate for the rupees required to make the initial investment.
- **Take out a sterling loan today** to purchase the rupees.
- In one year's time, **swap back the rupees** obtained in bullet point one for pounds at the same agreed swap rate.
- In a similar way to taking out a loan in rupees, El Dorado is only exposed on the profit earned from the project.

### Answer to Interactive question 17

With the swap	Year 0	Year 1
	£m	£m
Buy 500 million rupees (spotrate = 100)	(5.0)	

Swap 500 million rupees back (spot rate 100)		5.00
Sell 400 million rupees at 180/£		2.22
Interest on sterling loan (£5m × 8%)		(0.40)
	(5.0)	<u>6.82</u>

Net outcome is a net receipt of £1.82 million.

<b>Do nothing</b>	<b>Year 0</b>	<b>Year 1</b>
	<b>£m</b>	<b>£m</b>
Buy 500 million rupees (spotrate = 100)	(5.0)	
Sell 900 million rupees (spot rate = 180)		5.00
Interest on sterling loan (£5m × 8%)		<u>(0.40)</u>
	<u>(5.0)</u>	<u>4.6</u>

Net outcome is a net payment of £0.4 million.

**El Dorado is better off undertaking the swap.**

### Answer to Interactive question 18

The futures contract was intended to protect the company from a fall in oil prices (which would have reduced the profit when the oil was eventually sold). However, oil prices have actually risen, so that the company has made a loss on the contract.

The futures contract is a derivative and therefore should be remeasured to fair value under IFRS 9. The loss on the futures contract should be recognised in profit or loss:

DEBIT Profit or loss  $(80,000 \times [£18 - £15]) = £240,000$

CREDIT Financial liability = £240,000

There is an increase in the fair value of the inventories:

	<b>£</b>
Fair value at 31 December 20X5 $(80,000 \times £16)$	1,280,000
Fair value at 1 December 20X5 = cost	<u>(1,000,000)</u>
Gain	<u>280,000</u>

The gain should also be recognised in profit or loss and adjusted against the carrying amount of the inventories:

DEBIT Inventory = £280,000

CREDIT Profit or loss = £280,000

The net effect on profit or loss is a gain of £40,000.

**Note:** The hedge is highly effective:  $240,000/280,000 = 85\%$ , which is within the 80%-125% range, so hedge accounting can be used.



## Answer to Interactive question 19

Given that Okavango is hedging the volatility of the future cash outflow to purchase fuel, the forward contract is accounted for as a cash flow hedge, assuming all the criteria for hedge accounting are met (ie, the hedging relationship consists of eligible items, designation and documentation at inception as a cash flow hedge, and the hedge effectiveness criteria are met).

At inception, no entries are required as the fair value of a forward contract at inception is zero. However, the existence of the hedge is disclosed under IFRS 7, *Financial Instruments: Disclosures*.

At the year end the forward contract must be valued at its fair value of £0.1 million as follows. The gain is recognised in other comprehensive income (items that may subsequently be reclassified to profit or loss) in the current year as the hedged cash flow has not yet occurred. This will be reclassified to profit or loss in the next accounting period when the cost of the diesel purchase is recognised.

### WORKING

	£m
Market price of forward contract for delivery on 31 December (1m × £2.20)	2.20
Okavango's forward price (1m × £2.10)	(2.10)
<b>Cumulative gain</b>	<u>0.10</u>

The gain is recognised in other comprehensive income as the cash flow has not yet occurred: DEBIT Forward contract (Financial asset in SOFP) £0.10m

CREDIT Other comprehensive income £0.10m

## Answer to Interactive question 20

Bruntal is hedging the volatility of the future cash inflow from selling the gold jewellery. The futures contracts can be accounted for as a cash flow hedge in respect of those inflows, providing the criteria for hedge accounting are met.

The gain on the forward contract should be calculated as:	£
Forward value of contract at 31.10.X1 (24,000 × £388)	9,312,000
Forward value of contract at 30.9.X2 (24,000 × £352)	<u>8,448,000</u>
Gain on contract	<u>864,000</u>

The change in the fair value of the expected future cash flows on the hedged item (which is not recognised in the financial statements) should be calculated as:

At 31.10.X1	£
	9,938,000
At 30.9.X2	<u>9,186,000</u>
	<u>752,000</u>

As this change in fair value is less than the gain on the forward contract, the hedge is not fully effective and only £752,000 of the gain on the forward should be recognised in other comprehensive income. The remainder should be recognised in profit or loss:

DEBIT Financial asset (Forward a/c) £864,000  
 CREDIT Other comprehensive income £752,000  
 CREDIT Profit or loss £112,000

Note that the hedge is still highly effective (and hence hedge accounting should continue to be used):

$\text{£}752,000/\text{£}864,000 = 87\%$  which is within the 80%-125% range.

**Note:** Bruntal could also have accounted for this transaction as a fair value hedge if, at inception, its documented objective of the hedge had been to hedge the fair value of its inventories.

### Answer to Interactive question 21

Cash flow hedge	£'000	£'000
Value of contract:		
Price at 31 December 20X2 (3,000 × 1,400)	4,200	
Price at 1 November 20X2 (3,000 × 1,440)	<u>(4,320)</u>	
Loss	<u>(120)</u>	
DEBIT Other comprehensive income	120	
CREDIT Financial liability		120

The tax treatment follows the IFRS treatment. However, the current tax credit has not yet been recorded. This is credited to other comprehensive income rather than profit or loss, as the loss itself on the contract is recognised in other comprehensive income (IAS 12 paragraph 61A):

	£'000	£'000
DEBIT Current tax liability (SOFP) (120 × 30%)	36	
CREDIT Income tax credit (OCI)		36

### Answer to Interactive question 22

The credit default swap (CDS) is recognised as a derivative at fair value through profit or loss. IFRS 9 allows fair value option for a proportion of the loan commitment. If this option is elected, then

£500,000 of the loan commitment is accounted for at fair value through profit or loss and as a result provides an offset to the fair value through profit or loss on the CDS.

# Answers to Self-test questions

## 1 Octavo

### FRAs

Entering into an FRA with a bank will allow the treasurer of Octavo to **effectively lock in an interest rate** for the six months of the loan. This agreement is independent of the loan itself, on which the prevailing rate will be paid. If the FRA were negotiated to be at a rate of 6%, and the actual interest rate paid on the loan were higher than this, the bank would pay the difference between the rate paid and 6% to Octavo. Conversely, if the interest paid by Octavo turned out to be lower than 6%, it would have to pay the difference to the bank. Thus the cost to Octavo will be 6% regardless of movements in actual interest rates.

### Interest rate futures

Interest rate futures have the same effect as FRAs, in effectively **locking in an interest rate**, but they are standardised in terms of size, duration and terms. They can be **traded on an exchange** (such as LIFFE), and they will generally be **closed out before the maturity date**, yielding a profit or loss that is offset against the loss or profit on the money transaction that is being hedged. So, for example, as Octavo is concerned about rises in interest rates, the treasurer can sell future contracts now. If that rate does rise, their value will fall, and they can then be bought at a lower price, yielding a profit which will compensate for the increase in Octavo's loan interest cost. If interest rates fall, the lower interest cost of the loan will be offset by a loss on their futures contracts.

### Interest rate guarantees

Interest rate guarantees (another name for short-term interest rate options) give Octavo the opportunity to **benefit from favourable interest rate movements** as well as protecting it from the effects of adverse movements. They give the holder the **right** but not the **obligation** to deal at an agreed interest rate at a future maturity date. This means that if interest rates rise, the treasurer would exercise the option, and 'lock in' to the predetermined borrowing rate. However, if interest rates fall, then the option would simply lapse, and Octavo would feel the benefit of lower interest rates.

The main disadvantage of options is that a premium will be payable to the seller of the option, whether or not it is exercised. This will add to the interest cost. The treasurer of Octavo will need to consider whether this cost, which can be quite high, is justified by the potential benefits to be gained from favourable interest rate movements.

## 2 Zorr

### Exchange risks in Zorro Transactions exposure

This is the risk that the exchange rate **moves unfavourably** between the **date of agreement** of a contract price and the **date of cash settlement**.

### Economic exposure

This is the risk of an **adverse change in the present value** of the organisation's future cash flows as a result of longer-term exchange rate movements.

## Netting off

The Zorro postal and telecommunications company will receive **domestic income** in its local currency but will make **settlements** (net receipts or payments) with foreign operators in US dollars. It may appear that most of the **currency risk** is **hedged** because **dollar payments** are balanced against **dollar receipts** before settlement. However, although this is a good way of reducing currency transaction costs, it does not remove currency risk.

## Residual risk

Although the foreign transactions are denominated in dollars, the exchange risk involves all the **currencies of the countries** with which the company deals. For example, if money is owed to Germany and the euro has strengthened against the dollar, then the dollar cost of the transaction has increased. Also, although all these transactions are short term, their combined effect is to expose the company to **continuous exchange risk** on many currencies. The company needs a strategy to manage this form of **economic exposure**.

## Management of currency risk

One way to manage currency risk in this situation is to attempt to **match assets and liabilities** in each currency as follows.

1. The company needs to examine each country with which it deals and, having selected those with which it has a material volume of transactions, determine in each case whether there is a net receipt or net payment with that country and the average amount of this net receipt/payment.
2. If for a given country there is normally a net receipt, currency risk can be hedged by borrowing an amount in that currency equal to the expected net receipt for the period for which hedging is required, and converting this amount to the home currency.
3. For countries where there is normally a net payment, a deposit account in this currency should be maintained.

## Recommendation

This strategy will go some way towards hedging currency risk in the various countries involved, but will involve **increased currency transaction costs** and possibly **increased interest costs**. It is therefore probably only feasible for major currencies (eg, dollar, euro, yen) and for currencies of Asian countries with which there are major transaction volumes.

## 3 Prices (Premiums)

The target receipt is  $3,750,000 \times 1.5404^* = \$5,776,500$ .

\* The US company gets the lower number of dollars for selling sterling.

A receipt of £3.75 million will represent  $3,750,000/62,500 = 60$  futures contracts or  $3,750,000/31,250$

= 120 option contracts. If we make the assumption that the futures price moves by the same amount as the spot rate, there will be no basis risk and the future will give a perfect hedge. On 1 June, 60 sterling futures contracts are sold for \$1.5390 (a price which is \$0.0014 below the spot rate).

The results of this hedge are as follows.

Scenario	(1)	(2)	(3)
Spot rate, 30 Sept	1.4800	1.5700	1.6200
Sell 60 at	1.5390	1.5390	1.5390
Buy 60 at (spot - 0.0014)	1.4786	1.5686	1.6186
Gain/(loss)	0.0604	(0.0296)	(0.0796)
	\$	\$	\$
Value of gain/(loss)	226,500	(111,000)	(298,500)
£3.75m sold at spot for	<u>5,550,000</u>	<u>5,887,500</u>	<u>6,075,000</u>
Total net receipt	<u>5,776,500</u>	<u>5,776,500</u>	<u>5,776,500</u>

Using options, the treasurer will purchase 120 September **put** options. The premium cost will vary with the exercise price as follows.

Exercise price	Cost
	\$
1.5000	$120 \times 0.42/100 \times 31,250 = 15,750$
1.5500	$120 \times 4.15/100 \times 31,250 = 155,625$
1.6000	$120 \times 9.40/100 \times 31,250 = 352,500$

### Scenario 1

Spot rate moves to 1.4800.

In all cases, exercise the option and sell £3.75 million at the exercise price.

Exercise price	Cash received	Premium cost	Net
\$/£	\$	\$	\$
1.5000	5,625,000	(15,750)	5,609,250
1.5500	5,812,500	(155,625)	5,656,875 ( Best result
1.6000	6,000,000	(352,500)	5,647,500

### Scenario 2

Spot rate moves to 1.5700.

Exerciseprice	Exercise option	Exchange rate used	Cash recieved	Premium cost	Net
			\$	\$	\$
1.5000	No	1.57	5,887,500	(15,750)	5,871,750 ( Best result
1.5500	No	1.57	5,887,500	(155,625)	5,731,875
1.6000	Yes	1.60	6,000,000	(352,500)	5,647,500

### Scenario 3

Spot rate moves to 1.6200.

In all cases, abandon the option.

Cash received = \$6,075,000

Exercise price	Cash received	Premium cost	Net
\$/£	\$	\$	\$
1.5000	6,075,000	(15,750)	6,059,250 ( Best result
1.5500	6,075,000	(155,625)	5,919,375
1.6000	6,075,000	(352,500)	5,722,500

**Summary.** The futures hedge achieves the target exactly. The options give a range of possible results around the target. When the option is exercised, it does not give as good a result as the future.

However, when the option is allowed to lapse because of a favourable movement in the exchange rate, it allows the company to make a gain over target.

## 4 Futures contracts

### 4.1 Tailoring of contracts

The contracts cannot be **tailored to the user's exact requirements**. Futures are dealt with on currency exchanges using **standard contract sizes** and the amount to be hedged may not be an amount that can be hedged using a whole number of contracts. In addition, futures are only available for standard delivery dates that may not correspond to when the company is receiving or paying currency. This means that the company will have to eliminate its commitments under the futures contracts by closing out; undertaking a second futures transaction that reverses the effect of the first one.

#### Hedge inefficiencies

Having to deal in a whole number of contracts means that there may be an amount that is not hedged by futures, or the futures hedge a larger amount than required. The company can leave the difference **unhedged** and exposed to currency risk, or use a **forward contract** to hedge the difference at a different rate. Hedge inefficiencies are also caused by **basis risk**, the risk that the futures contract price will move by a different amount from the price of the underlying currency.

#### Limited availability

**Only a limited number of currencies** are the subject of futures contracts (although the number of currencies is growing).

#### Conversion between two currencies

The **procedure for converting** between two currencies, neither of which is the US dollar, is complex, as contracts are priced in dollars. The company has to sell contracts of one type and buy contracts of the other type.

#### Potential losses

Volatile trading conditions on the futures markets mean that the **potential loss** can be high.

### 4.2 Objectives and risk appetites

The strategic objectives and hence the risk appetites of small and large companies are likely to differ significantly. **Small companies** are likely to concentrate on fewer products and markets and hedging may only be appropriate in limited circumstances. The key aim is most likely to be using hedging instruments as a means of **minimising exchange**

**transaction risks.** However, the risks involved in using some hedging instruments may be considered excessive, for example futures and swaps with significant **counterparty risks**. Small companies may also wish to avoid the **accounting and tax complications** of more complex hedging instruments.

Larger companies by contrast are more likely to achieve their objects by **diversification**, and are likely to tolerate varying levels of risk and return from different activities. This may mean that they are more concerned with being able to take advantage of **possible profits** from derivative usage, for example by using an option so if rates move in a favourable direction the option is not exercised and the companies can take advantage of a favourable rate. Ultimately, large companies may choose to speculate in derivatives or deal in derivatives as a profit-making activity without any link to other underlying transactions.

### Incurring exchange risks

Small companies may incur **currency risk** on a limited number of significant transactions in a few currencies. Directors may therefore feel it is worthwhile to **hedge all significant transactions**. To minimise risk, **forward contracts** may well be used, as these guarantee the exchange rate at which the company will receive or pay monies.

For larger companies, hedging all significant transactions may be **unnecessarily expensive**. Directors will take account of the **currency portfolio** of their transactions. Currency losses through significant payments in a particular currency may be **offset** by significant receipts in the same currency. If the company is undertaking transactions in several major currencies, there is a greater chance that exchange losses on transactions in one currency will be balanced by exchange gains on transactions in another currency.

### Incurring interest rate risks

Small companies will be most concerned with the interest rate sensitivities of the debt they need to take out, and their gearing structure is unlikely to be complex. Again, they are most likely to be concerned with guaranteeing a borrowing rate on particular sums that they have to borrow and use **forward rate agreements** for that purpose. However, they may also want to use interest rate swaps as a means of obtaining finance on **better terms**.

Larger companies will be concerned with their overall portfolio, with the **interest rate sensitivities** and **term structure** of their debt and also their investments. This may mean that a variety of instruments are used to hedge different types of finance.

### Risk management methods

Smaller companies may not be able to use all the risk management methods available to larger companies. They may not **be able to match receipts and payments** in the same currency for example, or **match investments and borrowings**. The commitment required may be excessive; over the counter contracts are often of a **minimum size** that may be too large. The costs of certain techniques, for example option premiums, may be considered too high.

Large companies may be able to employ **specialist treasury personnel** who have a greater level of expertise in using derivatives than would be found in a smaller general finance function. They are also more likely to have directors or senior managers with sufficient expertise to be able to **monitor** treasury activity effectively.

## 5 Edgington

5.1 Using the forward contract, the value of the transaction is:

$$\text{\$7m}/1.5758 = \text{\pounds}4,442,188$$

Assuming that exchange rates move as specified in the assumptions, then if the transaction is not hedged the cost will be:

$$\text{\$7m}/1.3763 = \text{\pounds}5,086,100$$

An additional cost of  $\text{\pounds}643,912$  has been incurred as a consequence of exchange rate movement between the contract date and the date of settlement. If the assumptions are assumed to be reliable, Edgington should hedge the contract.

### 5.2 No hedging

In the absence of hedging there is no recognition of the transaction in the financial statements for the year ending 30 June 20X5 as there has been no physical delivery of the equipment, so it is unlikely that risk and rewards would have passed from the seller to Edgington.

On 31 October 20X5 the sale takes place and the transaction would be recognised at the exchange rate on that day at a value of  $\text{\pounds}5,086,100$  as follows:

DEBIT Inventory	5,086,100
CREDIT Cash	5,086,100

This cost of inventory (which is  $\text{\pounds}643,912$  greater than at the time the contract was made) would then be recognised in cost of sales and impact on profit in the year ending 30 June 20X6.

#### Hedging-but no hedge accounting

##### 30 June 20X5

DEBIT Forward contract - financial asset	273,056
CREDIT Profit or loss	273,056

To recognise the increase in the fair value of the forward contract (ie, a derivative financial asset) and to recognise the gain on the forward contract in profit or loss.

##### 31 October 20X5

DEBIT Forward contract - financial asset	371,229
CREDIT Profit or loss	371,229

To recognise the increase in the fair value of the forward contract (ie, a derivative financial asset) and to recognise the gain on the forward contract in profit or loss.

DEBIT Cash	644,285
CREDIT Forward contract	644,285

To recognise the settlement of the forward contract by receipt of cash from the counterparty.

DEBIT Inventory	5,086,100
DEBIT Cash	5,086,100

Being the settlement of the firm commitment (the purchase of computer equipment) at the contracted price of  $\text{\$7 million}$  at the spot rate on 31 October 20X5.



## Fair value hedge

If the hedged risk is identified as the forward exchange rate, rather than the spot rate, then it could be assumed to be perfectly effective.

The values of the transactions are:

At 31 May 20X5

$\$7\text{m}/1.5758 = \text{£}4,442,188$

At 30 June 20X5

$\$7\text{m}/1.4847 = \text{£}4,714,757$

Difference =  $\text{£}272,569$  is near the movement in the fair value of the forward at  $\text{£}273,056$  and is clearly highly effective.

Similarly, at 31 October 20X5

$\$7\text{m}/1.3763 = \text{£}5,086,100$

Difference =  $\text{£}371,343$  which is almost identical to the movement in the fair value of the forward at  $\text{£}371,229$  and therefore remains highly effective.

### 31 May 20X5

No entries are required at this date as the firm commitment is unrecognised.

The forward contract is potentially recognised, but it has a zero fair value and there is no related cash transaction to record.

However, the existence of the contract and associated risk would be disclosed from this date in accordance with IFRS 7.

### 30 June 20X5

DEBIT Forward contract - financial asset    273,056

CREDIT Profit or loss                    273,056

To recognise the increase in the fair value of the hedge instrument (which is the forward contract, being a derivative financial asset) and to recognise the gain on the forward contract in profit or loss.

DEBIT Profit or loss 272,569

CREDIT Firm commitment 272,569

To recognise the gain in fair value of the hedged item (ie, the previously unrecognised firm commitment) in relation to changes in forward exchange rates and to recognise a debit entry in profit or loss, which offsets the profit previously recognised in respect of the gain on the derivative financial asset.

### 31 October 20X5

DEBIT Forward contract - financial asset    371,229

CREDIT Profit or loss                    371,229

To recognise the increase in the fair value of the hedge instrument (which is the forward contract, being a derivative financial asset) and to recognise the gain on the forward contract in profit or loss.

DEBIT Profit or loss 371,343

CREDIT Firm commitment 371,343

To recognise the gain in the fair value of the of the hedged item (ie, the firm commitment) and to recognise a debit entry in profit or loss, which offsets the profit previously recognised in respect of the gain on the derivative financial asset.

DEBIT Cash            644,285  
CREDIT Forward contract   644,285

To recognise the settlement of the forward contract by receipt of cash from the counterparty.

DEBIT Inventory    5,086,100  
CREDIT Cash        5,086,100

Being the settlement of the firm commitment (the purchase of computer equipment) at the contracted price of \$7 million at the spot rate on 31 October 20X5.

DEBIT Firm commitment   643,912  
CREDIT Inventory   643,912

To remove the firm commitment from the statement of financial position and adjust the carrying amount of the inventory resulting from the firm commitment.

## 6 PRW

### Financial reporting issues

To be eligible for hedge accounting the hedge documentation must be in place at the inception of the hedge relationship. Until the necessary documentation is in place hedge accounting cannot be applied even if the underlying hedging activity is valid. There can be no retrospective designation of a hedge relationship.

If the hedge documentation is ultimately determined to be valid, then IFRS 9 permits a foreign currency hedge of a firm commitment to be treated either as a fair value hedge or a cash flow hedge. If the hedge is to be validly designated as a cash flow hedge, then the fair value loss can be recognised in other comprehensive income in accordance with the directors' wishes. It then needs to be reclassified into profit or loss in the year ending 28 February 20X9 when the underlying transaction takes place.

### Assurance risks

The key risk is that this is not a valid hedge because the hedge documentation was not in place at the date of inception of the hedge, but was only drawn up later when the hedge instrument made a loss.

Also, the forecast purchase after the year end needs to be 'highly probable' or hedge accounting is not permitted.

If it is not a valid cash flow hedge then the reduction in fair value would be recognised in profit or loss rather than in other comprehensive income. This would not affect overall comprehensive income, but it would affect profit for the period.

### Assurance procedures

- Examine documentation that evidences that the purchase transaction will take place with a high degree of probability, or has already taken place (eg, correspondence with suppliers, contracts).
- Review hedge documentation for evidence of completeness (describing hedge relationship, risk management objective, identification of hedge instrument and hedge item, nature of risk being hedged, assessment of effectiveness).

- Look for any evidence of a date on which the documentation was drawn up (eg, reference to events after October).
- Speak to the author of the documentation and question them about the hedge and when they prepared documentation. Question other personnel for consistency of responses.

## 7 Crude oil

The futures contract was entered into to protect the company from a fall in oil prices and hedge the value of the inventories. It is therefore a fair value hedge.

The inventories should be recorded at their cost of \$2,600,000 (100,000 barrels at \$26) on 1 July 20X2.

The futures contract has a zero value at the date it is entered into, so no entry is made in the financial statements.

### Tutorial Note

However, the existence of the contract and associated risk would be disclosed from that date in accordance with IFRS 7.

At the year end the inventories should be measured at the lower of cost and net realisable value. Hence they should be measured at \$2,250,000 (100,000 barrels at \$22.50) and a loss of \$350,000 recognised in profit or loss.

However, a gain has been made on the futures contract:

\$

The company has a contract to sell 100,000 barrels on 31 March 20X3 at \$27.50  
2,750,000

A contract entered into at the year end would sell these barrels at \$23.25 on 31 March 20X3  
2,325,000

Gain (= the value the contract could be sold on for to a third party) 425,000

The gain on the futures contract should also be recognised in profit or loss:

DEBIT Future contract asset \$425,000

CREDIT Profit or loss \$425,000

The net effect on profit or loss is a gain of \$75,000 (\$425,000 less \$350,000) whereas without the hedging contract there would have been a loss of \$350,000.

**Note:** If the fair value of the inventories had increased, the carrying amount of the inventories should have been increased by the same amount and this gain also recognised in profit or loss (normally gains on inventories are not recognised until the goods are sold). A loss would have occurred on the futures contract, which should also have been recognised in profit or loss.

## 8 The Macgorrie Company

Statement (1) is false.

Macgorrie has only attempted to protect itself against price increases relating to 90 tonnes of the silver it needs to purchase.

IFRS 9 permits the hedged item to be designated as the hedged amount of the exposure in determining effectiveness. The unhedged 20 tonnes can therefore be ignored.

Hedge effectiveness is reduced as the forward contract is not perfectly matched against the underlying commodity price.

Statement (2) is true.

The change in value of the derivative per tonne is  $\text{£}2,835/90 = \text{£}31.50$ .

The effective element is  $(\text{£}31.50 \text{ change in derivative value per tonne} / \text{£}35 \text{ change in spot price per tonne})\% = 90\%$ , which falls within the specified range.

## 9 Finney plc

Briefing note

**To:** Simone Hammond

**From:** Marina Bujnowicz

Re: Financial Statements for year ended 30 September 20X2

In this briefing note I will include the financial reporting consequences of each of the issues and discuss any further financial reporting consequences which may arise in respect of these issues in future financial reporting periods.

Copper inventories contract

This is potentially a fair value hedge as it relates to a change in the fair value of an existing asset. For hedging rules to apply, Finney must:

1. Ensure the hedge relationship is designated.
2. Ensure the hedge relationship is formally documented at inception.
3. Determine if the hedge is highly effective at both inception and throughout its life. For this to be the case the movement in the fair value hedged item must be between 80-125% of the movement in the hedge.

At the inception of the contract the hedge would be effective as it was designated by the compliance department as satisfying the rules.

At 30 September 20X2 the inventories (the hedged item) have fallen in value by £1 million (1,000 tonnes at (£9,200 - £8,200 a tonne) and the futures contract (the hedge instrument) has increased in value by £950,000. IFRS 9 does not specify specifically how hedge values should be determined but in this case the two alternatives give the same answer (this need not necessarily be the case due to transaction costs and market inefficiencies).

One way of considering the change in value of the hedge instrument is to consider changes in the value of copper per tonne in the futures market measured by a futures contract written at 30 September 20X2 for delivery of copper at 31 December 20X2. This is £8,250 a tonne. At 31 July 20X2 the same contract cost £9,200 per tonne so the change in value of copper on the futures market is £950 (ie, £9,200 - £8,250).

Another way of considering the change in value of the hedge instrument is to consider change in the value of the original futures contract itself (not the change in copper prices on the futures market). The future contract written on 31 July 20X2 requires the holder to sell copper on 31 December for £9,200, whereas to write a contract for delivery of copper on 30 September would now only give a selling price of £8,250. The original contract has increased in fair value from zero to £950 as the contract has value at 30 September by entitling the holder to sell at a higher price than prevailing market

conditions. (Note that had copper prices increased – rather than decreased – the futures contract would have negative value as it would have tied the holder into a sale at a price below the prevailing market price.)

Under either method of measurement, hedge effectiveness is therefore 95% (ie, the gain in the value of futures contract of £950,000 divided by loss in value of inventories of £1 million) (or 105.3%  $1,000/950$ ).

Once Finney invokes the hedge accounting rules then only the ineffective part of the hedge of £50,000 net impacts upon profit in the statement of profit or loss and other comprehensive income. A financial asset of £950,000 is recognised in the statement of financial position, and the copper inventories are reduced in value by £1 million.

The double entry is therefore:

DEBIT	Financial asset	£950,000	
DEBIT	Income statement (hedging loss)	£50,000	
CREDIT	Inventories		£1m

Had Finney not applied the hedging rules then the fall in the value of inventories of £1 million would have been taken to profit or loss via an increase in cost of sales. The increase in the fair value of the futures contract would also be recognised in profit or loss, as it is a derivative and should be classified at fair value through profit and loss. The net effect on profit would therefore be the same but the gross amounts of the gain and the loss would be disclosed separately.

The double entry would have been:

DEBIT	Income statement (cost of sales)	£1m	
CREDIT	Inventories		£1m
and			
DEBIT	Financial asset	£950,000	
CREDIT	Income statement (loss on financial asset)		£950,000

### UK investment - Coppery plc

These shares would be classified as available-for-sale because they were not being held for trading.

The acquisition of Coppery by Zoomla means that one financial asset should be derecognised (the shares in Coppery), and replaced by another financial asset (the shares in Zoomla).

As such, a gain on disposal in respect of the shares in Coppery should be recognised in profit or loss. This is calculated as:

	£'000
Fair value of shares in Zoomla ( $£1.10 \times 2 \times 2m$ )	4,400
Fair value of cash received ( $2m \times 0.15$ )/1.1	<u>272</u>
Net proceeds	4,672
Carrying amount at Coppery shares ( $3,200 + 300$ )	<u>(3,500)</u>
Gain on derecognition	1,172
Amount recycled from OCI	<u>300</u>
Gain taken to income statement	<u>1,472</u>

A receivable should be recognised in the statement of financial position for the cash due from Zoomla, after taking into consideration the change in the present value for six months.

Therefore a current asset receivable of £286,039 [ $£300,000/(1.1)^{0.5}$ ] is recognised in the statement of financial position at 30 September 20X2.

Finance income of £13,312 (£286,039 – £272,727) is credited to profit or loss.

Unless there is evidence to the contrary, the investment in Zoomla should be treated as available-for-sale, and restated to fair value at 30 September 20X2 of £4.8 million (4m × 120 pence).

The increase in fair value of £400,000 should be recognised in other comprehensive income.

### **Overseas investment - Bopara**

As the investment is classified as available-for-sale it should be measured at fair value at each reporting date using the closing rate of exchange.

Gains and losses should be recognised in an available-for-sale reserve in equity, and should be recognised in other comprehensive income.

At the acquisition date Bopara would have been measured at its cost of £10 million (\$15 million/1.5) and restated to £8 million (\$12.8m/1.60) at 30 September 20X1, with the decrease of £2 million being debited to other comprehensive income.

The mine explosion would be deemed to be an impairment, and so when restated to £7 million (\$11.34 million/1.62) at 30 September 20X2 the decrease in value of £1 million should be charged to profit or loss as an impairment.

<b>To:</b> Audit Manager
<b>From:</b> A. Senior
<b>Date:</b> 23 July 20X2
<b>Subject:</b> Yonti Metal Processor Ltd – Audit of Financial Assets

## **10 Yonti Metal Processors**

### **Aqua plc**

#### **Financial reporting**

As the shares in Aqua plc are being traded by YMP and are listed, they are held for trading and should be classified as at fair value through profit or loss (FVTPL).

On initial recognition the shares should be measured at fair value. The transaction costs should not be treated as at fair value but should be expensed when incurred per IFRS 9.

For financial assets treated as at FVTPL, IFRS 9 regards the bid price as the fair value. The bid-offer spread is considered as a transaction cost and, along with the other transaction costs, is recognised as an expense in profit or loss. So the asset should be initially measured at £695,000 (500,000 × 139p bid price) and the remaining £17,000 (£712,000 – £695,000) transaction costs recognised as an expense.

At the year end, no account should be taken of the potential disposal costs, so the Aqua shares should be remeasured at the 165p bid price, giving a fair value at 30 June 20X2 of £825,000. The £130,000 gain in fair value is recognised in profit or loss.

The draft financial statements should therefore be adjusted as follows (in £):

DEBIT	Transaction costs expense	17,000	
CREDIT	Financial asset		17,000

Being the correction of the transaction costs having been included in the cost of the financial asset, now expensed.

DEBIT	Financial asset	130,000	
CREDIT	FV gain in profit or loss		130,000

Being remeasurement of financial asset at FVTPL at the year end

### Nickel derivative

#### Financial reporting

The treatment of the derivative will depend on whether YMP intends to take physical delivery of the nickel.

#### Evidence of intention to take physical delivery

If YMP does intend to **take physical delivery** then it will not be treated as a normal derivative but as an available-for-sale (AFS) financial asset. In this case the fair value of the forward contract of £25,000 is recognised as:

DEBIT	Financial Asset (AFS)	£25,000	
CREDIT	FV gain (other comprehensive income)		£25,000

#### No evidence of intention to take physical delivery

If, however, there is no evidence of the intention to take physical delivery then consideration needs to be given as to whether this is part of a hedge arrangement. Given that it was not designated as such at inception, then hedge accounting does not apply and the derivative would be treated as at FVTPL.

There are no accounting entries at the inception of the forward contract as there is no initial cost, as the forward contract was struck at-the-money given the spot price of £9.

On 30 June 20X2 there is an increase in the fair value of forward contract of £25,000 and this would be recognised as a derivative financial asset and reflected in profit or loss as a gain.

DEBIT	Financial Asset (derivative)	£25,000	
CREDIT	FV gain (P/L)		£25,000

### Government bond and interest rate swap

#### Financial reporting

The government bond has been correctly treated in the opening statement of financial position as an available-for-sale asset by recognising the fair value change of £400,000 in the year ended 30 June 20X1.

If the hedge documentation, and other claims presented by YMP, are validated (see assurance procedures) then the swap may be designated as a hedge of the fair value exposure due to interest rates over the next five years of the government bond, commencing at the inception date of 4 July 20X1.

The government bond is classified as available-for-sale and, in the absence of hedging, changes in fair values would normally be recognised as 'other comprehensive income'. However, as it is part of a hedging arrangement (the hedged item) the effective proportion of the hedge is recognised in profit or loss in order to match the treatment of the swap which, as a derivative, is recognised AFVTPL.

Using the movements in fair values of the hedged item and the hedge instrument, the hedge is 105% effective (£210,000/£200,000). It therefore falls within the range 80% to 125% and is deemed to be highly effective.

The correcting entries are therefore to recognise the change in the fair value of the hedge item through profit or loss. The ineffective element of the fair value movement on the hedge instrument as a derivative is also treated through profit or loss. Thus:

DEBIT	Swap	£210,000	
CREDIT	P/L		£210,000

Being the recognition of the swap derivative financial instrument arising from the increase in the fair value from zero to £210,000.

DEBIT	P/L	£200,000	
CREDIT	7% government bond		£200,000

Being the recognition of the decrease in fair value of the government bond.

The use of hedge accounting in the financial statements is dependent on YMP satisfying the relevant IFRS 9 conditions.

YMP has provided hedge documentation at inception but:

- The adequacy of the documentation needs to be assessed. It is not permitted for YMP to go back and reconstruct this documentation if it was not adequate at that time.
- The extent to which it evidences hedge effectiveness needs to be considered.
- Subsequent documentation to demonstrate continued hedge effectiveness needs to be obtained.

At inception, YMP provided documentation relating to: identification of the hedge relationship; hedged item and hedge instrument; evidence of hedge effectiveness.

The documentation must be sufficiently detailed to show, at the inception of the hedge, that there is formal designation and documentation of the hedging relationship and the entity's risk management objective and strategy for undertaking the hedge. YMP's documentation should include identification of the hedging instrument, the hedged item or transaction, the nature of the risk being hedged and how the entity will assess the hedging instrument's effectiveness in offsetting the exposure to changes in the hedged item's fair value to the hedged risk.

The hedge documentation at inception should show prospectively that the swap is expected to be highly effective in achieving offsetting changes in fair value attributable to the hedged interest rate risk, consistently with the originally documented risk management strategy. Given the fixed-variable

matching this seems likely to be the case and is supported by the actual retrospective hedge effectiveness of 105%.

Aside from the initial documentation provided by YMP, the hedge needs to be assessed on an ongoing basis and determined actually to have been highly effective throughout all the financial reporting periods for which the hedge was designated over the next five years.



## Summary

Description	Carrying amount at			Carrying amount at 30 June 20X2
	1 July 20X1	Additions	FV changes	
Aqua plc (500,000 ordinary shares)	-	£695,000	£130,000	£825,000
Nickel derivative	-	Nil	£25,000	£25,000
Government bonds	£3,000,000	-	£(200,000)	£2,800,000
Swap	-	-	£210,000	£210,000

## 11 Fidden plc

### 11.1 Forward exchange market

The rates are:

\$/£

Spot 1.7106 – 1.7140

3 months' forward 1.7024 – 1.7063

6 months' forward 1.6967 – 1.7006

The net payment three months hence is £116,000 – \$197,000/1.7063 = £546.

The net payment six months hence is \$(447,000 – 154,000)/1.6967 = £172,688.

Note that the dollar receipts can be used in part settlement of the dollar payments, so only the net payment is hedged.

#### Money market

\$197,000 will be received 3 months hence, so \$197,000/(1 + 0.09 × 3/12) may be borrowed now and converted into sterling, the dollar loan to be repaid from the receipts.

The net sterling payment three months hence is:

$$£116,000 - \frac{\$197,000}{1.7140 \times \left(1 + (0.09 \times \frac{3}{12})\right)} = £924$$

The equation for the \$197,000 receipt in three months is to calculate the amount of dollars to borrow now (divide by the dollar borrowing rate) and then to find out how much that will give now in sterling (divide by the exchange rate). The final amount of sterling after three months is given by multiplying by the sterling lending rate.

\$293,000 (net) must be paid six months hence. We can borrow sterling now and convert it into dollars, such that the fund in six months will equal \$293,000.

The sterling payment in six months' time will be the principal and the interest thereon. A similar logic applies as for the equation above except that the situation is one of making a final payment rather than a receipt.

The sterling payment six months hence is therefore:

$$293,000 \times \frac{1}{1.7106} \times \left(1 + 0.125 \times \frac{6}{12}\right) = £176,690$$

11.2 Available put options (put, because sterling is to be sold) are at \$1.70 (cost 3.45 cents per £) and at \$1.80 (cost 9.32 cents per £).

Using options at \$1.70 gives the following results.

$$\frac{\$293,000}{1.70\$/\text{£}} = \text{£}172,353$$

$$\text{Contracts required} = \frac{\text{£}172,353}{\text{£}12,500} = 14 \text{ (to the next whole number)}$$

Cost of options =  $14 \times 12,500 \times 3.45 \text{ cents} = \$6,038$ .

14 contracts will provide, for  $\text{£}12,500 \times 14 = \text{£}175,000$ ,  $\$175,000 \times 1.70 = \$297,500$ .

$$\text{The overall cost is } \text{£}175,000 + \frac{\$293,000 + \$6,038 - \$297,500}{1.6967} = \text{£}175,906$$

As this figure exceeds the cost of hedging through the forward exchange market ( $\text{£}172,688$ ), use of \$1.70 options would have been disadvantageous.

Note: The rate of 1.6967 is used instead of 1.7006 because buying 14 contracts leaves the company slightly short of dollars (by  $\$293,000 + \$6,038 - \$297,500 = \$1,538$ ).

Using options at \$1.80:

$$\frac{\$293,000}{1.80\$/\text{£}} = \text{£}162,778$$

$$\text{Contracts required} = \text{£}162,778 / \text{£}12,500 = 14 \text{ (to the next whole number)}$$
$$\text{Cost of options} = 14 \times 12,500 \times 9.32 \text{ cents} = \$16,310$$

14 contracts will provide, for  $\text{£}12,500 \times 14 = \text{£}175,000$ ,  $\text{£}175,000 \times 1.80 = \$315,000$ . The overall cost in  $\text{£}175,000 + \$293,000 + \$16,310 - \$315,000 / 1.7006 = \text{£}171,654$

This figure is less than the cost of hedging through the forward exchange market, so use of \$1.80 options would have been preferable.

# Chapter 16

# International financial management

## Introduction

Learning outcomes

Syllabus links

Chapter study guidance

## Learning topics

1. International trading
2. Foreign investments
3. Financing foreign investments
4. Exchange controls
5. Dividend management
6. Transfer pricing

Summary

Further question practice

Technical reference

Self-test questions

Answers to Interactive questions

Answers to Self-test questions



# Introduction

## Learning outcomes

- Explain and appraise the various methods of financing available for foreign investments and evaluate the implications for disclosure, presentation, recognition and measurement of changes in foreign exchange rates in financial statements
- Appraise and evaluate the factors affecting the capital structure of a multinational company
- Explain and appraise the advantages and risks associated with international borrowing
- Demonstrate and explain the risks associated with international trade and the ways in which these risks can be managed, and assess the nature and role of assurance procedures in mitigating risk and the financial reporting consequences of currency hedging
- Appraise and evaluate the different methods open to multinationals wishing to set up foreign operations and the choices of finance available, identifying tax and corporate reporting consequences
- Assess and explain the impact of exchange controls and how companies can overcome the effects of these controls
- Appraise and evaluate the management of dividends in multinational organisations
- Appraise and evaluate the management of transfer prices in multinational organisations and the implications for reported profits and tax

## Syllabus links

The discussion of trading risks and financing in section 1 links to the discussion on establishing overseas trading in the chapter "Strategic choice". The focus in this chapter, however, is setting up and financing entities overseas. The international context of dividend management and transfer pricing, topics covered generally earlier, is stressed. International investment appraisal, which is included in this chapter, is also covered in the chapter "Investment appraisal".

## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>International trading</b></p> <p>Many companies have to consider the international aspects of their business, whether selling to customers in foreign countries, or setting up operations in other countries.</p>	<p><b>Approach</b></p> <p>Ensure you understand how financial management techniques can be applied to international scenarios and make sure you appreciate the issues that are unique to international trade, running international operations and</p>	<p>You may be asked to advise on whether to transfer business activities to foreign countries.</p>	
		<p>obtaining finance to invest internationally.</p> <p><b>Stop and think</b></p> <p>What are the most important additional risks facing a business that is investing in a foreign country as opposed to investing in its home market?</p>		
2	<p><b>Foreign investments</b></p> <p>Rather than exporting to foreign customers, many companies choose to set up operations in countries in which they carry out large amounts of business. Setting up operations in a foreign country can be a costly business and companies must undertake considerable research before deciding how their presence should be established.</p>	<p><b>Approach</b></p> <p>We discussed in the chapter “Strategic choice” the reasons why multinationals may wish to undertake investment in other countries. In this section we look at the wide choice of strategies available to companies when setting up foreign operations.</p> <p><b>Stop and think</b></p> <p>How does a business decide what form its foreign investment should take?</p>	<p>You may be asked to discuss the implications of different forms of foreign investment, evaluate the suitability of a proposed foreign investment and evaluate the risks that may affect the success of a foreign investment.</p>	<p><b>IQ1: International investment decisions</b></p> <p>This question looks at the factors to consider when making an international investment decision and how an entity can manage political risk.</p>

Topic	Practical significance	Study approach	Exam approach	Interactive questions
3	<p><b>Financing foreign investments</b> With international involvement comes problems such as dealing with exchange rate movements or deciding how to finance an operation in a foreign country. As with most areas of finance, making mistakes</p>	<p><b>Approach</b> In this section we cover the wide range of financing options available to fund foreign investments. As you work through this section, consider the costs and benefits of each source of finance.</p>	<p>In the exam you may be required to evaluate possible sources of funding for a foreign investment.</p>	<p><b>IQ2: Foreign investment</b> This question focusses on an overseas NPV. It is a revision of what you have covered in Financial Management. Investment appraisal is also covered in more detail in the chapter "Investment appraisal".</p>
	<p>can be very costly, both in monetary terms and in terms of reputation. It is therefore essential to understand the various issues surrounding international operations and trade and the numerous options available to finance them.</p>	<p><b>Stop and think</b> What additional factors must a company consider when deciding to finance an overseas investment.</p>		
4	<p><b>Exchange controls</b> Multinationals can take various measures to combat the risks of exchange controls, including different methods of remitting funds and local finance.</p>	<p><b>Approach</b> The worked example on remittance restrictions is important. Take your time working through this and familiar yourself with the approach detailed in section 4.2. <b>Stop and think</b> What strategies can a company adopt for dealing with exchange controls?</p>	<p>In the exam you may be required to explain the consequences of exchange controls and recommend methods for dealing with them.</p>	

Topic	Practical significance	Study approach	Exam approach	Interactive questions
5	<p><b>Dividend management</b> The choice of whether to repatriate earnings from a foreign subsidiary is one of the most important decisions in multinational financial management.</p>	<p><b>Approach</b> This section considers the interaction between investment, financing and dividend decisions of multinationals. <b>Stop and think</b> What additional factors must a multinational company consider when deciding on its dividend policy?</p>	<p>In the exam you may be asked to suggest an appropriate dividend strategy for a multinational company.</p>	
6	<p><b>Transfer pricing</b> In a working environment you may need to consider political issues - both those relating to the countries where your organisation operates, and internal political issues relating to the system of transfer pricing used.</p>	<p><b>Approach</b> We covered transfer pricing briefly in the chapter "Information strategy", but here we focus on transfer pricing in the context of a multinational company. <b>Stop and think</b> What factors will a multinational company need to consider when deciding on their transfer pricing policy.</p>	<p>In the exam you may be required to analyse the impacts of transfer pricing arrangements on an organisation's operations.</p>	<p><b>IQ3: Transfer pricing</b> This question looks at the tax effect of increasing the transfer price between foreign subsidiaries.</p>

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 International trading



## Section overview

- International trade exposes companies to various risks such as credit and liquidity risks.
- Companies can take steps to protect themselves from international trade risks using such means as insurance of goods in transit.

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The first three sections of this chapter cover general areas affecting multinational companies (MNCs): trading, establishing a business presence and finance. The last three sections cover more specific issues.

## 1.1 Trade risks

Any company involved in international trade must assess and plan for the different risks it will face. As well as physical loss or damage to goods, there are cash flow problems and the risk that the customer does not pay, either on time or at all.

### 1.1.1 Loss or damage in transit

The risks faced by international traders may be significant due to the distances and times involved.

Businesses face the risk of goods being lost or stolen in transit, or the documents accompanying the goods going astray.

Goods being exported should be insured from the time they leave the company till their arrival with the customer. Depending on the agreement, the exporter may bear the cost of insurance or responsibility for insurance may be passed on to the customer.

The danger of leaving the customer to arrange insurance is that the exporter may not receive full payment from the customer if a problem arises and it is not adequately insured. If there is inadequate insurance and the goods are rejected, either at the port of entry or when they reach the customer's premises, the responsibility will be bounced back to the exporter.

### 1.1.2 Faults with products

When supplying goods for export, companies must consider the risk that the product could cause damage to a third party, whether it is a person or property. Product liability insurance covers such risks.

However, product liability insurance does not provide cover for claims against poor-quality goods or services. Exporting companies must take responsibility for such risks themselves by sufficient quality control measures. By introducing such measures, companies may benefit from reduced insurance premiums.

## 1.2 Credit risks

Regardless of whether goods are sold at home or abroad, there is always the risk that customers will either not pay in full or not pay at all.



Where a company trades overseas, the risk of bad debts is potentially increased by the lack of direct contact with, and knowledge of, the business environment. Managing this credit risk is something that many companies overlook.

There are a number of methods of reducing the risks of bad debts in foreign trade.

<b>Export factoring</b>	Essentially the same as factoring domestic trade debts.
<b>Forfaiting</b>	Medium-term export finance by the <b>purchase of financial instruments</b> such as bills of exchange and letters of credit on a <b>non-recourse basis by a forfaiter</b> .
<b>Documentary credits</b>	<b>Risk-free method</b> of obtaining payment, also a method of obtaining short-term finance from a bank, for <b>working capital</b> , as a bank might agree to discount or negotiate a letter of credit.
<b>International credit unions</b>	Organisations or <b>associations of finance houses or banks</b> in different countries (in Europe). The finance houses or banks have reciprocal arrangements for providing <b>instalment credit finance</b> .
<b>Export credit insurance</b>	Insurance against the <b>risk of non-payment by foreign customers</b> for export debts.
<b>Acceptance credits</b>	<b>Short-term finance</b> by a bank agreeing to accept bills of exchange drawn on itself. The bills can be discounted to <b>provide immediate finance</b> .
<b>Export merchants</b>	Export merchants <b>buy goods from manufacturers</b> and then export them. The manufacturer <b>receives payment quickly</b> and the export merchant <b>bears the risk of bad debts</b> .
<b>Government departments</b>	Government departments supply <b>support for banks</b> that <b>provide finance</b> to exporters of <b>capital goods</b> .

### 1.3 Financing trading

When making decisions about financing international trade transactions, companies should consider:

- the **need for financing to make a sale**, as favourable credit terms often make a product more competitive
- the **length of time** over which the product is being financed, which will determine how long the exporter will have to wait to get paid
- the cost of different methods of financing
- the **risks associated with financing the transaction** - the greater the risk, the more difficult and costly it will be to finance
- the need for **pre-export finance and post-export working capital** - this will be a particular issue if the order is especially large

#### 1.3.1 Pre-export finance

Increased globalisation means that many companies rely heavily on export revenue. If large amounts of money have to be spent to allow the company to fulfil an export order, financing may be required to bridge the gap between fulfilling the order and being paid by the customer. For example, expensive capital equipment may be required.

Pre-export financing is often structured, meaning that banks will provide funding for the exporter but the funding will be tied to production and export activities.

**Export Credit Agencies (ECAs)** can also provide finance to exporters. These agencies are government departments whose main function is to assist exporters by providing State insurance against political and commercial risks. While ECAs initially provided finance mainly to manufacturers, their role has more recently changed to providing assistance to companies exporting services as well as manufactured goods. ECA-covered finance is a suitable way of exceeding the natural limits of pre-export financing – that is, the total value of proceeds under long-term export contracts.

### 1.3.2 Post-export finance

This type of finance covers the **period between the goods being shipped and payment being received**. As overseas customers often negotiate lengthy credit periods, this can be a considerable period of time.

Post-export finance protects against commercial and political risk. The cost of finance depends on various risk factors, such as length of credit period, payment method and the country to which the export was made.

## 1.4 Foreign exchange risk management

The following different types of foreign exchange risks may be significant.

### 1.5 Transaction risks



#### Definition

**Transaction risk:** The risk of adverse exchange rate movements occurring in the course of **normal international trading transactions**.

---

This arises when export prices are fixed in foreign currency terms, or imports are invoiced in foreign currencies.

We looked at the use of derivatives and other methods to hedge transaction risk in the chapter “Financial risk management”.

### 1.6 Economic risks



#### Definition

**Economic risk:** The risk that exchange rate movements might reduce the international competitiveness of a company. It is the risk that the present value of a company's future cash flows might be reduced by adverse exchange rate movements.

---

Economic risk refers to the effect of exchange rate movements on the **international competitiveness** of a company. For example, a UK company might use raw materials which are priced in US dollars, but export its products mainly within the European Union (EU). A depreciation of sterling against the dollar or an appreciation of sterling against other EU currencies will both erode the competitiveness of the company.

Economic exposure is difficult to measure, but often it is determined by the impact of foreign exchange rate changes on **costs and sales prices** and the consequences for a business and its competitors. It will therefore be influenced by the policies of suppliers

(will they absorb price rises in raw materials themselves or pass the increase on to the business?) and customers' reaction to price increases and differentials (whether there will be a significant adverse effect on demand).

The impact of economic risk on financial statements may also be very difficult to assess. If a business's home currency strengthens, it may generate less revenue and profits from the export trade, but this may not be clearly disclosed in the financial statements.

Various actions can reduce economic exposure, including:

**a) Matching assets and liabilities**

A foreign subsidiary can be financed, so far as possible, with a loan in the currency of the country in which the subsidiary operates. A depreciating currency results in reduced income but also reduced loan service costs.

**b) Diversifying the supplier and customer base**

For example, if the currency of one of the supplier countries strengthens, purchasing can be switched to a cheaper source.

**c) Diversifying operations worldwide**

On the principle that countries which confine themselves to one country suffer from economic exposure, international diversification of production and sales is a method of reducing economic exposure.

**d) Change its prices**

How much scope a company has to change its prices in response to exchange movements will depend on its competitive position. If there are a lot of home and foreign competitors, an increase in prices may lead to a significant fall in demand.

## 1.7 Translation risks



### Definition

**Translation risk:** The risk that the organisation will make **exchange losses** when the **assets and liabilities** of its foreign branches or subsidiaries are **translated** into the **home currency**.

Following the requirements of IAS 21, *The Effects of Changes in Foreign Exchange Rates*, at the year end monetary assets and liabilities on the statement of financial position (cash, receivables, payables and loans) are retranslated at the closing rate on the accounting date. Non-monetary items (non-current assets, inventory and investments) are not retranslated.

Translation losses can result, for example, from restating the book value of a foreign subsidiary's assets at the exchange rate on the **date** of the **statement of financial position**. However, such losses will **not have an impact on the organisation's cash flow unless the assets are sold**. In addition, a non-current asset purchase in a foreign currency may be financed by a loan but the loan will be retranslated every year whereas the non-current asset will not be and the two will no longer match.

Apparent losses on translation could influence **investors' and lenders' attitudes** to the financial worth and creditworthiness of the company, even though they do not impact on cash flows. Such risk can be reduced if monetary assets and liabilities, and non-monetary assets and liabilities, denominated in particular currencies can be **held in balanced amounts**. However, if managers believe that investors and lenders will not react adversely, they should **not normally hedge translation risk**.

## 2 Foreign investments



### Section overview

- Rather than exporting to foreign customers, many companies choose to set up operations in countries in which they carry out large amounts of business.
- Setting up operations in a foreign country can be a costly business and companies must undertake considerable research before deciding how their presence should be established.

---

We discussed in the chapter “Strategic choice” the reasons why MNCs may wish to undertake investment in other countries. Companies have a wide choice of strategies when it comes to setting up foreign operations. Each strategy fulfils a different purpose, depending on the type of presence that is required.

### 2.1 Takeover of, or merger with, established firms overseas

If speed of entry into the overseas market is a high priority then acquisition may be preferable than starting from scratch. The main problem is that the better acquisitions may only be available at a premium.

The methods for evaluating international investments are dealt with in the chapter “Investment appraisal”, section 2.

#### 2.1.1 Advantages of takeovers/mergers

- a) Merging with **established firms abroad** can be a means of **purchasing market information, market share, distribution channels** and **reputation**.
- b) **Other synergies** include **acquisition of management skills** and **knowledge, intangibles** such as brands and trademarks, and **additional cash** and **debt capacity**.
- c) Acquiring a subsidiary may be a means of **removing trade barriers**.
- d) Acquisition can be a means of **removing a competitor**.
- e) **Start-up costs** will not be incurred.

#### 2.1.2 Disadvantages of takeovers/mergers

- a) **Cultural issues** may make it difficult to integrate the subsidiary into the Group.
- b) Growing organically may be cheaper. In the long run it is more likely to **be financed by retained cash flows** than new sources with issue costs, and it will not involve paying a premium for a desirable subsidiary.
- c) There may be **duplication of resources/operations** with the acquiring company.

### 2.2 Foreign subsidiaries

The basic structure of many MNCs consists of a parent (holding) company with subsidiaries in several countries. The subsidiaries may be wholly or partly owned, and some may be owned through other subsidiaries.

### 2.2.1 Advantages of subsidiaries

- a) A local subsidiary may have a **significant profile for sales and marketing purposes**.
- b) As a separate legal entity, a subsidiary should be able to **claim legal privileges, reliefs and grants**.

### 2.2.2 Disadvantages of subsidiaries

- a) As a separate entity, a subsidiary may be subject to **significant legal and accounting formalities**, including minimum capital requirements.
- b) In some regimes, the activities of the subsidiary may be **limited to the objects set out in its constitution** and it may not be able to draft these objects too widely.
- c) Dissolution of a subsidiary may be **fairly complex**.

## 2.3 Branches

Firms that want to establish a presence in a foreign country may choose to establish a **branch** rather than a subsidiary.

### 2.3.1 Advantages of branches

- a) **Establishment of a branch** is likely to be simpler than establishment of a subsidiary.
- b) In many countries, the remitted profits of a subsidiary will be **taxed at a higher rate** than those of a branch, as profits paid in the form of dividends are likely to be subject to a withholding tax. However, how much impact the withholding tax has is questionable, particularly as a double tax treaty can reduce its effect.

### 2.3.2 Disadvantages of branches

- a) The parent company is **fully liable** for the liabilities of the branch. A parent company may have to appoint an individual or company to, for example, represent it in dealing with the tax authorities and the individual or company chosen may be liable as well.
- b) The **obligations of the branch** will be the **same** as those of the parent.
- c) Banks and clients may **prefer dealing with a local company** rather than the branch of a foreign company.
- d) The board of the parent company **may need to ratify acts of the branch**.
- e) A branch may **not be ideal for substantial projects** because the parent company runs the entire risk.

In many instances an MNC will establish a branch and utilise its initial losses against other profits, and then turn the branch into a subsidiary when it starts making profits.

## 2.4 Joint ventures



### Definition

**Joint venture:** is the commitment, for more than a very short duration, of funds, facilities and services by two or more legally separate interests to an enterprise for their mutual benefit.

A **contractual joint venture** is for a fixed period. The duties and responsibility of the parties are contractually defined. A **joint-equity venture** involves investment, is of no fixed duration and continually evolves.

We discussed joint ventures generally in the chapter “Strategic choice” and here we focus on joint ventures as a means of international expansion.

#### 2.4.1 Advantages of international joint venture

- a) It gives relatively **low cost access** to markets in new countries.
- b) **Easier access to local capital markets** may be available, possibly with accompanying tax incentives or grants.
- c) **The joint venture partner’s existing** local knowledge, cultural awareness, distribution network and marketing or other skills can be used.
- d) Depending on government regulations, a joint venture may be the **only** means of access to a particular overseas market.

#### 2.4.2 Disadvantages of international joint venture

- a) **Managerial freedom** may be **restricted** by the need to take account of the views of all the joint venture partners, particularly if cultural differences arise. The joint venture may be difficult to control or amend, especially if the investing company only has a limited presence in the country.
- b) There may be **problems in agreeing on partners’ percentage ownership**, transfer prices, remittance arrangements, nationality of key personnel, remuneration and sourcing of raw materials and components.
- c) Finding a **reliable joint venture partner** may take a long time, because of lack of local knowledge. Potential partners may not have the adequate skills.

### 2.5 Political and cultural risks

#### 2.5.1 Political risks

As soon as an MNC decides to operate in another country, it is exposing itself to political risk. Host countries’ governments, in an attempt to protect domestic industries or to protect their countries from exploitation, may impose such measures as **quotas, tariffs or legal safety and quality standards**, which can affect the efficient and effective operation of the MNC’s activities.

MNCs can assess the extent of political risk by considering such factors as **government stability, level of import restrictions and economic stability** in the country in which they propose to invest.

#### 2.5.2 Cultural risks

Businesses should take cultural risks into account when deciding the extent to which activities should be centralised, which will influence how overseas operations are established.

The balance between local and expatriate staff must be managed. There are a number of influences.

- the availability of technical skills such as financial management
- the need for control

- the importance of product and company experience
- the need to provide promotion opportunities
- costs associated with expatriates such as travel and higher salaries
- cultural factors

For an international company, which has to think globally as well as act locally, there are a number of problems.

- Do you employ mainly **expatriate staff** to control local operations?
- Do you employ **local managers**, with the possible loss of central control?
- Is there such a thing as the **global manager**, equally at home in different cultures?

## 2.6 Accounting for foreign investments and IAS 21

The most significant requirements that relate to accounting for foreign investments are covered by IAS 21. The main requirements of IAS 21 are summarised below.

### 2.6.1 Translation of foreign operations

A reporting entity with foreign operations (such as a foreign subsidiary) needs to translate the financial statements of those operations into its own reporting currency before consolidation (or inclusion through the equity method).

- Statement of comprehensive income:** translate using actual rates. An average for a period may be used, but not where there is significant fluctuation and the average is therefore unreliable.
- Statement of financial position:** translate all assets and liabilities (both monetary and non-monetary) using closing rates. This includes any purchased goodwill on the acquisition of a foreign operation. Any fair value adjustments to the carrying amounts of the assets and liabilities arising on the acquisition of the foreign operation should be treated as part of the assets and liabilities of the foreign operation.
- Exchange differences** are reported in other comprehensive income.
- When a foreign operation is disposed of, the cumulative amount of exchange differences that have been reported in other comprehensive income and credited to an equity reserve account should be recognised in profit or loss for the period when the disposal occurs.

(Any accumulated gains or losses in the equity reserve will therefore be reversed in other comprehensive income.)

### 2.6.2 Exchange differences

Exchange differences comprise:

- differences arising from the translation of the statement of comprehensive income at exchange rates at the transaction dates or at average rates, and the translation of assets and liabilities at the closing rate
- differences arising on the opening net assets' retranslation at a closing rate that differs from the previous closing rate

Resulting exchange differences are **reported as other comprehensive income** and classified as a separate component of equity, because such amounts have not resulted from exchange risks to which the entity is exposed through its trading operations, but purely through changing the currency in which the financial statements are presented.

### 2.6.3 Intragroup loans

When a monetary item is part of the net investment in a foreign operation, ie, there is an intragroup loan outstanding, then the following rules apply on consolidation.

- a) If the loan is **denominated in the functional currency of the parent entity** the exchange difference will be recognised in the **profit or loss of the foreign subsidiary**.
- b) If the loan is **denominated in the functional currency of the subsidiary**, exchange differences will be recognised in the **profit or loss of the parent entity**.
- c) When the loan is **denominated in the functional currency of either entity**, on consolidation, the exchange difference will be **removed from the consolidated profit or loss** and it will be recognised as other comprehensive income and recorded in equity in the combined statement of financial position.
- d) If, however, the loan is **denominated in a third currency** which is different from either entity's functional currency, then the translation difference should be **recognised as part of profit or loss**. For example, the parent may have a functional currency of US dollars, the foreign operation a functional currency of euros, and the loan made by the foreign operation may have been denominated in UK sterling. In this scenario, the exchange difference results in a cash flow difference and should be recognised as part of the profit or loss of the Group.
- e) A separate foreign currency reserve reported as part of equity may have a **positive or negative carrying amount** at the reporting date. Negative reserves are permitted under IFRS.
- f) If the foreign operation is subsequently disposed of, the cumulative exchange differences previously reported as other comprehensive income and recognised in equity should be **reclassified and included in the profit or loss on disposal** recognised in profit or loss.



### Interactive question 1: International investment decisions

Tiger Electronics – a specialist manufacturer of electronic spare parts of a major car manufacturer – is considering direct investments in several African countries. Business is currently booming and Tiger is very keen to take advantage of the low cost resources in Africa. However, Tiger's board of directors is concerned about the potential effects of political and economic volatility in various African countries on production of spare parts and supply of necessary resources.

#### Requirements

- 1.1 Discuss factors that Tiger should take into consideration when deciding which, if any, African countries it should invest in.
- 1.2 How might Tiger handle political risk if it invested in Africa?
- 1.3 What ethical issues might have to be taken into consideration as part of Tiger's overall overseas investment strategy?

See **Answer** at the end of this chapter.

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### 2.6.4 IAS 21 and foreign currency transactions

You may also need to remember the rules in IAS 21 for reporting individual foreign currency transactions.

Foreign currency transactions should be recorded and reported at the rate of exchange at the date of the transaction.



At each subsequent reporting date:

- Foreign currency monetary amounts should be reported using the closing rate.
- Non-monetary items carried at historical cost should be reported using the exchange rate at the date of the transaction.
- Non-monetary items carried at fair value should be reported at the rate in existence when the fair value was determined.

Exchange differences that arise when monetary amounts are settled or when monetary items are retranslated at a rate different from that when it was first recognised should be reported in profit or loss in the period. (An exception to this rule is when the exchange differences relate to monetary items that form part of a net investment in a foreign operation, when the rules described above will apply.)

## 3 Financing foreign investments



### Section overview

- MNCs have a wide choice of financing options to fund foreign investments.
- In order to determine which financing options to choose, MNCs must weigh up the costs and benefits of each, bearing in mind the potential impact on capital structure and company risk.

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MNCs fund their investments from cash flow generated from operations, from the issue of new equity and new debt. Equity and debt funding can be secured by accessing both domestic and overseas capital markets. Thus MNCs have to make decisions not only about their capital structure, as measured by the debt: equity ratio, but also about the source of funding, whether the funds should be drawn from the domestic or the international markets.

### 3.1 Factors affecting the capital structure of an MNC

The source of funding for an MNC will be influenced by a number of factors.

#### 3.1.1 Taxation

Global taxation is an important factor in determining the capital structure of an MNC. **Tax deductibility** in any country in which it operates will be important but, because an MNC operates in several tax jurisdictions, it will have to consider other issues, such as **double taxation, withholding taxes and investment tax allowances**.

An MNC may choose the **level of debt and the type of debt** in a way that minimises its global tax liabilities. Tax-saving opportunities may also be maximised by **structuring the Group and its subsidiaries** in such a way as to take advantage of the different local tax systems.

#### 3.1.2 Exchange rate risk

Exchange rate risk may also influence the capital structure of an MNC. When a UK company wishes to finance operations overseas, there may be a currency (foreign exchange) risk arising from the **method of financing used**. For example, if a UK company decides on an investment in the US, to be financed with a sterling loan, the investment will provide returns

in US dollars, while the investors (the lenders) will want returns paid in sterling. If the US dollar falls in value against sterling, the sterling value of the project's returns will also fall.

To reduce or eliminate the currency risk of an overseas investment, a company might finance it with **funds in the same currency** as the investment. The advantages of borrowing in the same currency as an investment are that:

- a) Assets and liabilities in the same currency can be **matched**, thus avoiding exchange losses on conversion in the Group's annual accounts.
- b) Revenues in the foreign currency can be used to **repay borrowings** in the same currency, thus eliminating losses due to fluctuating exchange rates.

### 3.1.3 Political risk

Political risk to which companies may be exposed when investing overseas may also be reduced by the choice of an appropriate financing strategy. For example, an MNC may fund an international project by **borrowing from banks in the country** in which the project will be set up. In this way, the loss in the case of nationalisation will be borne by the local banks rather than by the parent company.

### 3.1.4 Business risk

Business risk is also a determinant of capital structure. Business risk is normally proxied by the **volatility of earnings**. As MNCs are able to diversify and reduce the volatility of earnings, they should be able to take on more borrowing.

### 3.1.5 Finance risk

The choice of the source of funds will also depend on the **local finance costs and any available subsidies**.

As subsidiaries may be operating with a **guarantee from the parent company**, different gearing structures may be possible. Thus a subsidiary may be able to operate with a higher level of debt than would be acceptable for the Group as a whole.

### 3.1.6 Other issues

Parent companies should also consider the following factors.

- a) **Reduced systematic risk.** There may be a small incremental reduction in systematic risk from investing overseas due to the segmentation of capital markets.
- b) **Access to capital.** Obtaining capital from overseas markets may increase liquidity, reduce costs and make it easier to maintain optimal gearing.
- c) **Agency costs.** These may be higher owing to political risk, market imperfections and complexity, which will lead to a higher cost of capital.

## 3.2 Borrowing internationally

There are several advantages and risks when borrowing from international capital markets, as opposed to domestic capital markets.

### 3.2.1 The advantages of borrowing internationally

- a) **Availability.** Domestic financial markets, with the exception of the large countries and the Eurozone, lack the depth and liquidity to accommodate either large debt issues or issues with long maturities.

- b) **Lower cost of borrowing.** In Eurobond markets interest rates are normally lower than borrowing rates in national markets.
- c) **Lower issue costs.** The cost of issuing debt is normally lower than in domestic markets.

### 3.2.2 The risks of borrowing internationally

An MNC has three options when financing an overseas project by borrowing in:

- a) the **same currency** as the inflows from the project
- b) a currency other than the currency of the inflows but with a hedge in place
- c) a **currency other than the currency of the inflows but without hedging** the currency risk; this exposes the company to exchange rate risk that can substantially change the profitability of a project

### 3.3 Equity finance

The issue of financing overseas subsidiaries using equity raises the following questions.

- a) How much **equity capital** should the parent put into the subsidiary?
- b) Should the subsidiary be allowed to **retain a large proportion of its profits** to allow it to build up its own equity reserves or to finance further investment programmes, or will the majority of the profits be repatriated to the parent? What other issues may affect dividend policy? (We cover dividend policy in more detail in section 5.)
- c) Should the parent company hold **100% of the equity of the subsidiary** or should it try to create a minority shareholding, perhaps by floating the subsidiary on the country's domestic stock exchange?
- d) Should the subsidiary be **encouraged to borrow as much long-term debt** as it can? If so, should the debt be in the subsidiary's home currency or in a foreign currency?
- e) Should the subsidiary be **encouraged to minimise its working capital investment** by relying heavily on trade credit?

The way in which a subsidiary is financed will give some indication of the nature and the length of time of the investment that the parent company is prepared to make. A sizeable equity investment (or long-term loans from the parent company to the subsidiary) would suggest a long-term investment by the parent.

### 3.4 Finance in developing markets

Although companies in developed markets take the availability of a wide choice of finance options for granted, those operating in developing markets may not be quite so fortunate. **Lack of regulation and a limited understanding of such markets** make the funding of overseas acquisitions by, for example, stock swaps (ie, a share for share exchange) less likely. The target firms may be reluctant to accept payment in the form of risky equity. As a result, companies in developing markets tend to finance overseas acquisitions using cash.

#### Professional skills focus: Concluding, recommending and communicating

You may be asked to consider a number of different sources of finance to support a foreign investment, concluding with a recommendation. It is important that you apply your technical knowledge to support your reasoning and formulate your conclusion based on valid information presented in the scenario, and your analysis of this.

## 3.5 Hedging of net investment



### Definition

**Hedge of a net investment in a foreign operation:** The hedged item is the amount of the reporting organisation's interest in the net assets of that operation.

A **non-derivative financial asset or liability** can only be designated as a hedging instrument for **hedges of foreign currency risk**. So a foreign currency borrowing can be designated as a hedge of a net investment in a foreign operation, with the result that any translation gain or loss on the borrowing should be recognised in other comprehensive income to offset the translation loss or gain on the investment. (Normally gains or losses on such financial liabilities are recognised in profit or loss.)

A net investment can be hedged with a derivative instrument such as a currency forward contract. In this case, however, it would be necessary to **designate at inception** that effectiveness can be measured by reference to changes in spot exchange rates or changes in forward exchange rates.

The amount that an entity may designate as a hedge of a net investment may be **all or a proportion of its net investment** at the commencement of the reporting period. This is because the exchange rate differences reported in equity on consolidation, which form part of a hedging relationship, relate only to the retranslation of the opening net assets. Profits or losses arising during the period cannot be hedged in the current period. However, they can be hedged in the following periods, because they will then form part of the net assets which are subject to translation risk (discussed below).

### 3.5.1 Accounting for hedging of net investments

Hedges of a net investment in a foreign operation should be accounted in a **similar way to cash flow hedges**; that is:

- a) the **portion** of gain or loss on the hedging instrument that is determined to be an **effective hedge** should be **recognised** in other comprehensive income; and
- b) the **ineffective portion** should be **recognised in profit or loss**.

The gain or loss on the hedging instrument that has been recognised in other comprehensive income should be **reclassified to profit or loss on disposal of the foreign operation**. If only part of an interest in a foreign operation is disposed of, only the relevant proportion of this gain or loss should be reclassified to profit or loss.

## 3.6 Assurance work on overseas finance and investment risks

The assurance adviser will be concerned with the issues of changing exchange and interest rates, where material, in the relevant accounting period, as well as issues over regulatory and tax compliance and whether there were any problems with remittance of income (covered later in this chapter).

The assurance adviser will carry out the following work.

- a) examination of the loan capital terms and contractual liabilities of the company
- b) checking the remittance of proceeds between the country of origin and the parent company by reference to bank and cash records
- c) reviewing the movement of exchange and interest rates, and discussing their possible impact with the directors

- d) obtaining details of any hedging transactions and ensuring that exchange rate movements on the finance have been offset
- e) examining the financial statements to determine accurate disclosure of accounting policy and accounting treatment conforming to UK requirements

### 3.6.1 Use of foreign auditors in UK

Some operations may be in countries which do not have accounting, auditing and assurance standards developed to the same extent as those in the UK. As a result, the work carried out on them by local practitioners may not conform to UK standards.

In this situation the parent auditor may need to request:

- adjustments to be made to the financial statements of the overseas investment
- additional audit and assurance procedures to be performed

### 3.6.2 Transnational audits



#### Definition

**Transnational audit:** means an audit of financial statements which are or may be relied on outside the audited entity's home jurisdiction for purposes of significant lending, investment or regulatory decisions. This will include audits of all financial statements of companies with listed equity or debt and other public interest entities which attract particular public attention because of their size, products or services provided.

The international networks linked to a number of major firms have set up an international grouping, the Forum of Firms. Membership is open to firms and networks that have transnational audit appointments or are interested in accepting such appointments.

These firms have a voluntary agreement to meet certain requirements that are set out in their constitution. These relate mainly to:

- a) **promoting the use of high-quality audit practices worldwide**, including the use of ISAs
- b) **maintaining quality control standards** in accordance with International Standards on Quality Control issued by the IAASB, and conducting globally coordinated internal quality assurance reviews

## 3.7 Global treasury management

Important issues which the treasury department of a large company with significant international trading and operations will have to consider include:

- management of cash flows from and to suppliers, customers and subsidiaries
- dealing with political constraints affecting the flow of funds
- compliance with multiple legal and taxation requirements
- dealing with foreign exchange exposure
- maintaining relations with banks in different countries



## Professional skills focus: Assimilating and using information

Global treasury management is discussed in more detail when the role of the treasury function generally is covered in the chapter “Treasury and working capital management”.

In the exam you could be asked to evaluate different strategies for setting up a foreign operation and may be required to use NPV analysis to complete your evaluation. You will therefore need to identify the information that is relevant to each strategy and use a clear and professional layout for your workings.

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## Interactive question 2: Foreign investment

Watson plc is considering an investment in Buzzland, a country with a population of 80 million that has experienced 8 changes of government in the last 15 years. The investment would cost 580 million Buzzland francs for machinery and other equipment, and an additional 170 million francs would be necessary for working capital.

While Buzzland has a wealth of resources, including skilled labour and excellent communications networks, the country has suffered from the relatively high price of its resources compared with countries with similar infrastructure and skills. Its main export product, a special type of exotic fruit, has been significantly damaged in the last few years due to extremely high temperatures and lack of rain.

Buzzland has been ‘bailed out’ several times by the International Monetary Fund (IMF) and such is the severity of the economic and financial situation that there have been several temporary restrictions imposed on the remittance of funds from Buzzland in the last five years. The Buzzland Government has taken on huge amounts of debt from overseas countries – the interest on the debt alone is crippling the economy.

Watson plc’s proposed investment would be in the production of a new type of mobile phone, which is currently manufactured in Watson’s home country, Eardisland. If the Buzzlandian investment project was undertaken, the existing Eardisland factory would either be closed down or downsized. Watson hopes to become more competitive by shifting production from Eardisland.

### 2.1 Additional information

1. Corporate tax in Eardisland is at the rate of 24% per year, and Buzzlandian corporate tax at the rate of 20% per year, both payable in the year that the tax charge arises. Tax-allowable depreciation in Buzzland is 25% per year on a reducing balance basis. A bilateral tax treaty exists between Buzzland and Eardisland.
2. The after-tax realisable value of the machinery and other equipment after 4 years is estimated to be 150 million Buzzland francs.
3. \$140,000 has recently been spent on a feasibility study into the logistics of the proposed investment. The study reported favourably on this issue.
4. The Buzzland Government has offered to allow Watson to use an existing factory rent free for a period of 4 years on the condition that Watson employs at least 300 local workers. Watson has estimated that the investment would need 250 local workers. Rental of the factory would normally cost 75 million Buzzland francs per year before tax.

5. Almost all sales from Buzzland production will be to the EU priced in euros.
6. Production and sales are expected to be 50,000 units per year. The expected Year 1 selling price is 480 euros per unit.
7. Unit costs throughout Year 1 are expected to be:
  - a) labour: 3,800 Buzzland (B) francs based on using 250 workers
  - b) local components: 1,800 B francs
  - c) component from Germany: 30 euros
  - d) sales and distribution: 400 B francs
8. Fixed costs in Year 1 are 50 million B francs.
9. Local costs and the cost of the German component are expected to increase each year in line with Buzzland and EU inflation respectively. Owing to competition, the selling price (in euros) is expected to remain constant for at least four years.
10. All net cash flows arising from the proposed investment in Buzzland would be remitted at the end of each year back to Eardisland.
11. If the Eardisland factory is closed Watson will face tax-allowable redundancy and other closure costs of \$35 million. Approximately \$20 million after tax is expected to be raised from the disposal of land and buildings.
12. If Watson decides to downsize rather than close its home country operations then tax-allowable closure costs will amount to \$20 million, and after-tax asset sales to \$10 million. Pre-tax net cash flows from the downsized operation are expected to be \$4 million per year, at current values. Manufacturing capacity in Buzzland would not be large enough to supply the market previously supplied from Eardisland if downsizing does not occur.
13. The estimated beta of the Buzzland investment is 1.5 and of the existing Eardisland investment 1.1.
14. The relevant risk-free rate is 4.5% and market return 11.5%.
15. Money market investment in Buzzland is available to Watson paying a rate of interest equivalent to the Buzzlandian inflation rate.

(16) Forecast % inflation levels:	<b>Eardisland and the EU</b>	<b>Buzzland</b>
Year 1	2%	20%
Year 2	3%	15%
Year 3	3%	10%
Year 4	3%	10%
Year 5	3%	10%

(17) Spot exchange rates:  
 Buzzland francs/\$ 36.85  
 Buzzland francs/euros 23.32

### Requirements

Should Watson plc undertake the proposed investment in Buzzland and consequently close or downsize its Eardisland operation? Show all relevant workings and clearly state all assumptions.

2.2 What other issues, in addition to the appraisal above, should Watson plc consider before making the final decision as to whether to invest in Buzzland?

See **Answer** at the end of this chapter.



### Professional skills focus: Structuring problems and solutions

From the information provided in a question it may not be initially obvious which source of finance is most appropriate to use to fund an overseas investment. Look for information in the scenario on areas such as access to particular capital markets, political risks, taxation issues, currency volatility, economic stability, shareholder reaction, and issue and servicing costs. This will help you to identify a solution for the directors of the company on the most appropriate source of finance to use.

## 4 Exchange controls



### Section overview

Multinationals can take various measures to combat the risks of **exchange controls**, including different methods of remitting funds and local finance.

### 4.1 Introduction

Exchange controls restrict the flow of foreign exchange into and out of a country, usually to defend the local currency or to protect reserves of foreign currencies. Exchange controls are generally more restrictive in developing and less developed countries, although some still exist in developed countries. Controls may take the following forms.

- a) **Rationing the supply of foreign exchange.** Anyone wishing to make payments abroad in a foreign currency will be restricted by the limited supply, which stops them from buying as much as they want from abroad.
- b) **Restricting the types of transaction** for which payments abroad are allowed, for example by suspending or banning the payment of dividends to foreign shareholders, such as parent companies in multinationals, which will then have the problem of blocked funds.

### 4.2 Impact of exchange controls on investment decisions

Assuming that **no repatriation** is possible until period N, when the life of the project will have been completed, then the net present value (NPV) will be calculated as follows.

Step 1 Add all net cash flows together and then add the terminal value.

Step 2 Convert the value from Step 1 to home currency.

Step 3 Discount the value from Step 2 at weighted average cost of capital (WACC).

Step 4 Convert initial investment to home currency.



Step 5 Deduct the value from Step 4 from the value in Step 3 to obtain NPV.

The above formula assumes that non-repatriated funds are not invested. If we assume that the cash flow is invested each period and earns a return equal to  $i$ , then the NPV will be calculated as follows.

Step 1 Convert terminal value to home currency and discount at WACC.

Step 2 Convert net cash flows to home currency, gross up for interest and add together, before discounting the total using WACC.

Step 3 Convert initial investment to home currency and deduct from the sum of the values in Steps 1 and 2.

The impact will depend on the interest rate earned and the cost of capital. An example will illustrate how this may be calculated.



### Worked example: Remittance restrictions

Flagwaver Inc, a US company, is considering whether to establish a subsidiary in Aspavia, where the currency is the E, at a cost of E20,000,000. The subsidiary will run for four years and the net cash flows from the project are shown below.

	Net cash flow E
Project 1	3,600,000
Project 2	4,560,000
Project 3	8,400,000
Project 4	8,480,000

There is a withholding tax of 10% on remitted profits and the exchange rate is expected to remain constant at \$1 = E1.50. At the end of the four-year period the Aspavian Government will buy the plant for E12,000,000. The latter amount can be repatriated free of withholding taxes.

### Requirements

- If the required rate of return is 15% calculate the present value of the project.  
Now assume that no funds can be repatriated for the first three years, but all the funds are allowed to be remitted to the home market in Year 4. The funds can be invested at a rate of 5% per year.
- Assess whether the project is still financially viable.

### Solution

1

C7 =NPV(0.15,C3:C6)			
	A	B	C
1	Year		Remittance
2		E	\$
3	1	3,240,000 Remittance net of withholding tax	2,160,000

4	2	4,104,000	2,736,000
5	3	7,560,000	5,040,000
6	4	19,632,000	13,088,000
7		NPV	14,744,058

The NPV is  $\$14,744,058 - \frac{\text{E}20,000,000}{1.50} = \$1,410,725$

## 2 Step 1

Salvage value =  $\text{E}12,000,000 / 1.50 = \$8,000,000$

## Step 2

Year	1st payment	2nd payment	3rd payment	4th payment
1	E3,600,000			
2		E4,560,000		
3			E8,400,000	
4*	4,167,450	5,027,400	8,820,000	E8,480,000
Withholding tax	(416,745)	(502,740)	(882,000)	(848,000)
Net cash flow	3,750,705	4,524,660	7,938,000	7,632,000
Exchange rate (\$/E)	1.50	1.50	1.50	1.50
Cash flow (\$)	2,500,470	3,016,440	5,292,000	5,088,000

\*The first payment represents the initial profit of E3,600,000 + 3 years' investment interest of 5% - that is:

$$\text{E}3,600,000 \times 1.05^3 = \text{E}4,167,450$$

The second payment includes two years' investment interest and the third payment one year's investment interest.

Total net cash flow receivable in Year 4 is \$15,896,910. When the salvage value of \$8,000,000 is included, total cash receivable is \$23,896,910. Discounted at 15% (discount factor at Year 4 = 0.572), the present value is \$13,669,033.

## Step 3

$$\text{NPV} = \$13,669,033 - (\text{E}20,000,000 / 1.5) = \$335,700$$

Note that the exchange controls have reduced the NPV of the project by 76% (original NPV = \$1,416,939) but the project is still financially viable.

## 4.3 Strategies for dealing with exchange controls

MNCs have used many different strategies to overcome exchange controls, the most common of which are listed below.

- Transfer pricing** where the parent company sells goods or services to the subsidiary and obtains payment. The amount of this payment will depend on the volume of sales and also on the transfer price for the sales.

- b) **Royalty payments** when a parent company grants a subsidiary the right to make goods protected by patents. The size of any royalty can be adjusted to suit the wishes of the parent company's management.
- c) **Loans** by the parent company to the subsidiary. If the parent company makes a loan to a subsidiary, it can set the interest rate high or low, thus affecting the profits of both companies. A high rate of interest on a loan, for example, would improve the parent company's profits to the detriment of the subsidiary's profits.
- d) **Management charges** may be levied by the parent company for costs incurred in the management of international operations.

## 5 Dividend management



### Section overview

The amount of dividends foreign subsidiaries pay to the parent company depend on the parent company's dividend policy, financing needs, taxation and managerial control.

The choice of whether to repatriate earnings from a foreign subsidiary is one of the most important decisions in multinational financial management. Receipts from subsidiaries help parent companies meet their financing needs as larger dividends to external shareholders are associated with larger dividend payments inside the Group.

Significant factors that shape dividend policy within the multinational firm are the **interaction between the level of investment** planned by the parent company and its **financing**, the **payment of dividends to external shareholders, taxation issues and management control**.

### 5.1 Investment and financing

Dividends from foreign affiliates may offer an attractive source of finance for **domestic investment** expenditures, despite possible associated tax costs, especially when alternative forms of finance are costly. This applies to parent companies with profitable domestic investment opportunities that already maintain large amounts of external debt and do not wish to increase the level of borrowing even further. Another case is when companies need to expand fast into areas and home country profitability is not sufficient to finance the expansion.

### 5.2 Dividend policy

Dividends from foreign affiliates may also offer an attractive source of finance for **payments of dividends to home country shareholders**, especially when the parent company prefers a **smooth dividend payment pattern** and domestic profitability is in decline. The dividend payments of a subsidiary may also be affected by the **dividend policy** of the parent company. For example, if the parent company operates a constant payout ratio policy, then the subsidiary will have to adopt a constant payout ratio policy too.

Empirical evidence shows that dividend payments to parent companies tend to be regular. Multinational firms behave as though they select **target payouts** for their foreign affiliates, gradually adjusting payouts over time in response to changes in earnings.

### 5.3 Tax regime and dividend payments in UK

Tax considerations are thought to be the primary reason for the dividend policies of multinational firms. For example, the parent company may **reduce its overall tax liability** by, for example, receiving larger amounts of dividends from subsidiaries in countries where undistributed earnings are taxed.

For subsidiaries of UK companies, all foreign profits, whether repatriated or not, are liable to **UK corporation tax**, with a credit for the tax that has already been paid to the host country.

Similarly, the US Government does not distinguish between **income earned abroad and income earned at home** and gives credit to MNCs headquartered in the US for the amount of tax paid to foreign governments. One of the strong implications of the US tax treatment of foreign income is that US multinational corporations should not simultaneously remit dividends from low-tax foreign locations and transfer equity funds into the same foreign locations. Doing so generates a home-country tax liability that could easily be avoided simply by reducing both dividends and equity transfers.

### 5.4 Managerial control

Another influence on dividend policies is the **need to control foreign managers**. Regular dividend payments restrict the financial discretion of foreign managers and limit their ability to misallocate funds, thereby reducing associated agency problems. An MNC's central management can use financial flows within the firm to evaluate the financial prospects and needs of far-flung foreign affiliates.

### 5.5 Timing of dividend payments

Timing of dividends may be equally important as the size of payments. For example, a subsidiary may adjust its dividend payments to a parent company in order to **benefit from expected movements in exchange rates**. A company would like to collect early (lead) payments from currencies vulnerable to depreciation and to collect late (lag) from currencies which are expected to appreciate.

Also, given that tax liabilities are triggered by remittance of dividends, these tax liabilities can be deferred by **reinvesting earnings abroad** rather than remitting dividends to parent companies. The incentive to defer repatriation is much stronger for affiliates in low-tax countries, whose dividends trigger significant parent tax obligations, than it is for affiliates in high-tax countries – particularly since taxpayers receive net credits for repatriations from affiliates in countries with tax rates that exceed the parent country tax rate.

## 6 Transfer pricing



### Section overview

We covered transfer pricing briefly in the chapter “Information strategy”, but here we focus on transfer pricing in the context of an MNC. Transfer prices are set by the MNC not only to recover the cost of services and goods provided, but also to achieve objectives such as tax liability minimisation and offset of host country policies.

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## Definition

**Transfer price:** is the price at which goods or services are transferred from one process or department to another or from one member of a Group to another.

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Multinational corporations supply their affiliates with capital, technology and managerial skills, for which the parent firm receives streams of dividend and interest payments, royalties and licence fees. Significant **intra firm transfers of goods and services** also occur. For example, one subsidiary may provide another with raw materials, whereas the parent company may provide both subsidiaries with final goods for distribution to consumers. For intrafirm trade, both the parent company and the subsidiaries need to charge prices. These prices for goods, technology, or services between wholly or partly owned affiliates of the multinational are called transfer prices.

### 6.1 Determining transfer prices

The size of the transfer price will **affect the costs of one profit centre and the revenues of another**. Since profit centre managers are held accountable for their costs, revenues and profits, they may dispute the size of transfer prices with each other, or disagree about whether one profit centre should do work for another or not. Transfer prices affect **behaviour and decisions by profit centre managers**.

If managers of individual profit centres are tempted to take decisions that are harmful to other divisions and are not congruent with the goals of the organisation as a whole, the problem is likely to emerge in disputes about the transfer price.

Disagreements about **output levels** tend to focus on the transfer price. There is presumably a profit maximising level of output and sales for the organisation as a whole. However, unless each profit centre also maximises its own profit at the corresponding level of output, there will be interdivisional disagreements about output levels and the profit maximising output will not be achieved.

### 6.2 Bases of transfer prices

The extent to which costs and profit are covered by the transfer price is a matter of company policy. A transfer price may be based on any of the following.

- standard cost
- marginal cost: at marginal cost or with a gross profit margin added
- opportunity cost
- full cost: at full cost, or at a full cost plus price
- market price
- market price less a discount
- negotiated price, which could be based on any of the other bases

A transfer price based on cost might be at **marginal cost or full cost**, with no profit or contribution margin. However, in a profit centre system it is more likely to be a price based on marginal cost or full cost plus a **margin for contribution or profit**. This is to allow profit centres to make a profit on work they do for other profit centres, and so earn a reward for their effort and use of resources on the work.

## 6.3 Market value transfer prices

Transfers based on market price might be any of the following.

- a) The **actual market price** at which the transferred goods or services could be sold on an external market
- b) The **actual external market price**, minus an amount that reflects the savings in costs (for example, selling costs and bad debts) when goods are transferred internally
- c) The **market prices of similar goods** that are sold on an external market, although the transferred goods are not exactly the same and do not themselves have an external market
- d) A **price** sufficient to give an appropriate share of profit to each party

### 6.3.1 Advantages of market value transfer prices

Giving profit centre managers the freedom to negotiate prices with other profit centres as though they were independent companies will tend to result in market based transfer prices.

- a) In most cases where the transfer price is at market price, internal transfers should be expected, because the buying division is likely to **benefit from a better quality of service, greater flexibility and dependability of supply.**
- b) Both divisions may **benefit from lower costs of administration, selling and transport.**

A market price as the transfer price would therefore result in decisions which would be in the best interests of the company or Group as a whole.

### 6.3.2 Disadvantages of market value transfer prices

Market value as a transfer price does have certain disadvantages.

- a) The market price may be **temporary, induced by adverse economic conditions or dumping**, or the market price might **depend on the volume of output supplied** to the external market by the profit centre.
- b) A transfer price at market value might, under some circumstances, act as a **disincentive to use up spare capacity** in the divisions. A price based on **incremental cost**, in contrast, might provide an incentive to use up the spare resources in order to provide a marginal contribution to profit.
- c) Many products **do not have an equivalent market price**, so that the price of a similar product might be chosen. In such circumstances, the option to sell or buy on the open market does not exist.
- d) There might be an **imperfect external market** for the transferred item, so that if the transferring division tried to sell more externally, it would have to reduce its selling price.
- e) Internal transfers are often **cheaper than external sales**, with savings in selling costs, bad debt risks and possibly transport costs. The buying division should thus expect a discount on the external market price, and to negotiate for such a discount.

## 6.4 Factors affecting transfer pricing

When deciding on their transfer pricing policies, MNCs take into account many internal and external factors.

#### 6.4.1 Performance evaluation

When different affiliates within a multinational are treated as **standalone profit centres**, transfer prices are needed internally by the multinational to determine profitability of the individual divisions.

Transfer prices which deviate too much from the actual prices will make it difficult to **monitor properly the performance** of an affiliated unit.

#### 6.4.2 Management incentives

If transfer prices that are used for internal measures of performance by individual affiliates deviate from the true economic prices, and managers are evaluated and rewarded on the basis of the distorted profitability, then it may result in corporate managers **behaving in an irresponsible way**.

#### 6.4.3 Cost allocation

When units within the multinational are run as **cost centres**, subsidiaries are charged a share of the costs of providing the Group service function so that the service provider covers its costs plus a small mark-up. Lower or higher transfer prices may result in a subsidiary **bearing less or more of the overheads**.

#### 6.4.4 Financing considerations

Transfer pricing may be used in order to **boost the profitability of a subsidiary**, with the parent company undercharging the subsidiary. Such a boost in the profitability and its credit rating may be needed by the subsidiary in order to succeed in obtaining funds from the host country.

Transfer pricing can also be used to **disguise the profitability of the subsidiary** in order to justify high prices for its products in the host country and to be able to resist demands for higher wages.

Because multinationals operate in two or more jurisdictions, transfer prices must be assigned for intrafirm trade that crosses national borders.

#### 6.4.5 Taxes

MNCs use transfer pricing to **channel profits out of high tax rate countries into lower ones**. A parent company may sell goods at lower than normal prices to its subsidiaries in lower tax rate countries and buy from them at higher than normal prices. The resultant loss in the parent's high tax country adds significantly to the profits of the subsidiaries. An MNC will report most of its profits in a low-tax country, even though the actual profits are earned in a high-tax country.

#### 6.4.6 Tariffs

**Border taxes such as tariffs and export taxes** are often levied on cross-border trade. Where the tax is levied on an ad valorem basis, the higher the transfer price, the larger the tax paid per unit. Whether an MNC will follow high transfer price strategy or not may depend on its impact on the tax burden. When border taxes are levied on a per-unit basis (ie, specific taxes), the transfer price is irrelevant for tax purposes.

#### 6.4.7 Rule of origin

Another external factor is the need to meet the **rule of origin** that applies to cross-border flows within a free trade area. Since border taxes are eliminated within the area, rules of

origin must be used to determine eligibility for duty-free status. Over- or under-invoicing inputs is one way to avoid customs duties levied on products that do not meet the rule of origin test.

#### 6.4.8 Exchange control and quotas

Transfer pricing can be used to **avoid currency controls** in the host country. For example, a constraint in profit repatriation could be avoided by the parent company charging higher prices for raw materials, or higher fees for services provided to the subsidiary. The parent company will have higher profits and a higher tax liability and the subsidiary will have lower profitability and a lower tax liability.

When the host country restricts the amount of foreign exchange that can be used to import goods, then a lower transfer price allows a greater quantity of goods to be imported.

### 6.5 Transfer price manipulation

Firms set prices on intrafirm transactions for a variety of perfectly legal and rational internal reasons. Even where pricing is not required for internal reasons, governments may require it in order to determine how much tax revenues and customs duties are owed by the multinational corporation.

Transfer price manipulation, on the other hand, exists when MNCs use transfer prices to **evade or avoid payment of taxes and tariffs**, or other controls that the Government of the host country has put in place. Overall MNC profits after taxes may be raised by either **under- or over-invoicing the transfer price**. Such manipulation for tax purposes, however, comes at the expense of distorting other goals of the firm; in particular, evaluating management performance. Tax avoidance also has implications for public perception of good corporate governance, as was discussed in the chapter "Corporate governance".

### 6.6 Government action

Governments are concerned about transfer price manipulation and try to take action against it.



#### Definition

**Arm's length standard:** Intrafirm trade of multinationals should be priced as if they took place between unrelated parties acting at arm's length in competitive industries.

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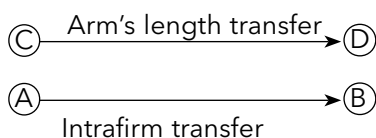
The most common solution that tax authorities have adopted to reduce the probability of transfer price manipulation is to **develop transfer pricing regulations as part of the corporate income tax code**. These regulations are generally based on the concept of the arm's length standard, which says that all MNC intrafirm activities should be priced as if they took place between unrelated parties acting at arm's length in competitive markets. The 1979 OECD Report defines the arm's length standard as:

"Prices which would have been agreed upon between unrelated parties engaged in the same or similar transactions under the same or similar conditions in the open market".  
(OECD, 1979)

The arm's length standard has two methods. The method used will depend on the **available data**.

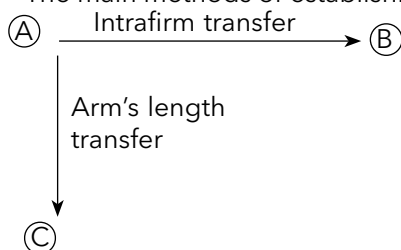
Method 1: Use the price negotiated between two unrelated parties C and D to proxy for the transfer between A and B.





Method 2: Use the price at which A sells to unrelated party C to proxy for the transfer price between A and B.

The main methods of establishing 'arm's length' transfer prices of tangible goods include:



- comparable uncontrolled price (CUP)
- resale price method (RPM)
- cost plus (C+)
- comparable profit method (CPM)
- profit split method (PSM)

The first three are transactions-based approaches, while the latter two are profit-based.

### 6.6.1 The comparable uncontrolled price (CUP) method

The CUP method looks for a comparable product to the transaction in question (known as a product comparable). Tax authorities prefer the CUP method over all other pricing methods for at least two reasons.

- It **incorporates more information** about the specific transaction than does any other method; ie, it is transaction and product specific.
- CUP takes **the interests of both the buyer and seller** into account since it looks at the price as determined by the intersection of demand and supply.

### 6.6.2 The resale price method (RPM)

Where a product comparable is not available, and the CUP method cannot be used, an alternative method is to **focus on one side of the transaction**, either the manufacturer or the distributor, and to estimate the transfer price using a **functional approach**.

Under the RPM, the tax auditor looks for firms at similar trade levels that perform similar distribution functions. The RPM is best used when the **distributor adds relatively little value to the product**, so that the value of its functions is easier to estimate. The assumption behind the RPM is that competition among distributors means that similar margins (returns) on sales are earned for similar functions.

The RPM backs into the transfer price by **subtracting a profit margin**, derived from margins earned by comparable distributors engaged in comparable functions, from the known retail price to determine the transfer price. As a result, the RPM evaluates the transaction only in terms of the buyer. The method ensures that the buyer receives an arm's length return consistent with returns earned by similar firms engaged in similar transactions. Thus the RPM tends to **overestimate the transfer price** since it gives all unallocated profits on the transaction to the manufacturer.

### 6.6.3 The cost plus (C+) method

The C+ method starts with the costs of production, measured using recognised accounting principles, and then adds an **appropriate mark-up over costs**. The appropriate mark-up is estimated from those earned by similar manufacturers. The assumption is that in a competitive market the percentage mark-ups over cost that could be earned by other arm's length manufacturers would be roughly the same. The C+ method works best when the producer is a **simple manufacturer without complicated activities**, so that its costs and returns can be easily estimated.

In order to use the C+ method, the tax authority or MNC must know the accounting approach adopted by the unrelated parties.

- a) What costs are included in the cost base before the mark-up over costs is calculated? Are they actual costs or standard costs?
- b) Are only manufacturing costs included or is the cost base the sum of manufacturing costs plus some portion of operating costs? The larger the cost base, the smaller should be the profit mark- up, or gross margin, over costs.

### 6.6.4 The comparable profit method (CPM)

The CPM is based on the premise that companies in similar industries will tend to have **similar financial performance and characteristics**. This similarity in performance will be indicated by the similarity in financial ratios. For instance, if the return on assets (ROA) is the profit level indicator, then knowledge of the rate of ROAs for comparable companies or the industry coupled with knowledge of the assets of the company would determine the taxable profits of the company.

The CPM has the following shortcomings.

- It is not a transactions-based method.
- It does not take the contractual obligations of the parties into account.
- It does not reflect the facts and circumstances of the case.
- It could lead to substantial double taxation of income if other governments did not accept the method.

### 6.6.5 The profit split method (PSM)

When there are no suitable product comparables (the CUP method) or functional comparables (the RPM and C+ method), the most common alternative method is the PSM, whereby the profits on a transaction earned by two related parties are **split between the parties**.

The PSM allocates the consolidated profit from a transaction, or group of transactions, between the related parties. Where there are no comparables that can be used to estimate the transfer price, this method provides an alternative way to calculate or 'back into' the transfer price. The most commonly recommended ratio to split the profits on the transaction between the related parties is return on operating assets (the ratio of operating profits to operating assets).

The PSM ensures that both related parties earn the **same ROA**.



#### Professional skills focus: Applying judgement

Transfer prices affect behaviours and decision making and they can also be used to evade or avoid payment of taxes and tariffs. When analysing transfer pricing policies, it is important to apply professional scepticism and critical thinking to evaluate the impact of the transfer price on different stakeholder groups.



### Interactive question 3: Transfer pricing

An MNC based in Beeland has subsidiary companies in Ceeland and the UK. The UK subsidiary manufactures machinery parts which are sold to the Ceeland subsidiary for a unit price of B\$420 (420 Beeland dollars), where the parts are assembled. The UK subsidiary shows a profit of B\$80 per unit; 200,000 units are sold annually.

The Ceeland subsidiary incurs further costs of B\$400 per unit and sells the finished goods on for an equivalent of B\$1,050.

All the profits from the foreign subsidiaries are remitted to the parent company as dividends. Double taxation treaties between Beeland, Ceeland and the UK allow companies to set foreign tax liabilities against their domestic tax liability.

The following rates of taxation apply.

	UK	Beeland	Ceeland
Tax on company profits	25%	35%	40%
Withholding tax on dividends	-	12%	10%

#### Requirement

Show the tax effect of increasing the transfer price between the UK and Ceeland subsidiaries by 25%.

See **Answer** at the end of this chapter.

## Summary

Tick off

International trade exposes companies to risks such as credit risk and liquidity risk.

Overseas expansion is an alternative to exporting - companies may choose to set up operations in countries with which they do a lot of business.

International investment exposes companies to financing challenges, including overseas taxation and pre-export financing. IAS 21 determines how investments are accounted for and parent company auditors have to consider how they use the work of local auditors.

If a company wishes to borrow from international capital markets, it may benefit from lower costs of borrowing and lower issue costs. However, international borrowing may expose the company to exchange rate risk if the loan is not in the same currency as the cash inflows and no suitable hedging arrangements are in place.

There are a number of ways of dealing with government-imposed exchange controls, including transfer pricing arrangements, loans, royalty payments and management charges.

The dividend policy of overseas subsidiaries may be determined by parent company needs.

Transfer prices between different Group members can be established on various bases, but taxation authorities may dispute arrangements if they do not appear to be at arm's length.

## Further question practice

### 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	Can you explain some of the additional risks faced by a multinational company? (Topic 1)
2.	Can you explain the advantages and disadvantages of the different strategies a company can use to set up a foreign operation? (Topic 2)
3.	Can you explain the costs and benefits of the different financing options for foreign investments? (Topic 3)
4.	Can you recommend strategies for dealing with exchange controls? (Topic 4)
5.	Do you know the factors to consider when deciding on the transfer pricing policy for a multinational company? (Topic 6)

### 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed.

Question	Learning benefit from attempting this question
1 Upowerit Ltd	This written question looks at the strategic and operational issues to be considered before investment overseas. It is a good introductory question so work through it carefully before attempting exam standard questions.
2 Snazzy	You are asked to evaluate if the company should establish a subsidiary overseas. You will need to use NPV in an international context to make your recommendation. International NPV was covered in your Financial Management studies and will also be revisited in the chapter "Investment appraisal". Make sure you are comfortable with international NPV before attempting this question.
3 Gordon plc	This question looks at financing overseas investments. You are asked to compare four possible sources of finance, supporting your discussion with calculations. This question is a good test of the knowledge covered in section 3 of this chapter.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development before you start the next chapter.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.

# Technical reference

## 1 IAS 21, *The Effects of Changes in Foreign Exchange Rates*

- IAS 21 prescribes how to include foreign currency transactions and foreign operations in the financial statements of an entity, and how to translate financial statements into a presentation currency. The principal issues are which exchange rate(s) to use, and how to report the effects of changes in exchange rates.

# Self-test questions

Answer the following questions.

## 1 Unpowerit Ltd

Unpowerit Ltd is a UK-based company that has been trading for some years, selling self-powered equipment. The directors are looking to expand beyond the UK, and have focused on Africa. Self-powered products have been popular in Africa because they have been seen as more economical than disposable battery-powered products, and because they do not require mains-supplied electricity that may be unreliable or unavailable.

The board of Unpowerit is considering establishing an operational presence in an African country, to enhance its sales operations in the continent, and eventually to establish a manufacturing base there to reduce costs of production and distribution. The board is considering what form the operations should take and various financing issues. The board's current preferred option is a joint venture with a local African partner.

### Requirements

- 1.1 Discuss the strategic and operational issues that the directors of Unpowerit should consider before making a decision on whether to implement an overseas expansion strategy.
- 1.2 Explain the main advantages of establishing a joint venture.
- 1.3 Describe the assurance services that could be carried out with respect to the initial set-up of the joint venture and continuing assurance over the period that the joint venture lasts.

## 2 Snazzy

Snazzy is a manufacturer of low-cost bedroom furniture for children in Dinoville (whose currency is the Dinoville £ - the D£). However, the Dinoville market is becoming saturated and Snazzy is considering setting up a manufacturing operation in either Lexland or Jibrovia to take advantage of the high demand for such products in these countries. Owing to the high cost and limited availability of suitable transportation, it would not be financially viable to export from Dinoville.

The Lexland subsidiary would involve the construction of completely new state of the art manufacturing plant. The projected costs are shown below.

### Lexland subsidiary (currency: Lexland franc)

	Now	Year 1
Land	2,300	-
Building	1,600	6,200
Machinery	-	6,400
Working capital	-	11,500

Production and sales in Year 2 are estimated to be 2,000 sets of bedroom furniture at an average price of LFr20,000 (at current prices). Production in each of Years 3-6 is forecast at 2,500 sets of furniture. Total local variable costs in Lexland in Year 2 are expected to be LFr11,000 per unit (at current prices). In addition, a fixed royalty fee of D£750,000 per year would be payable to the Dinoville parent company. Tax-allowable depreciation in Lexland on machines is at 25% per year on a reducing balance basis. No tax-allowable depreciation exists on other non-current assets.

The Jibrovia investment (currency Jibrovia \$ - the J\$) would involve the purchase, via a takeover bid, of an existing kitchen furniture manufacturer based in its second city of Nicktown. The cost is not precisely known but Snazzy's managers are confident that a bid within the range J\$8-10 million will be successful. Additional investment of J\$2 million in new plant and J\$4 million in working capital would immediately be required, resulting in forecast pre-tax net cash flows (after tax savings from depreciation) in Year 1 of J\$2 million (at current prices) rising to J\$3 million (at current prices) in Year 2 and subsequent years.

All prices and costs in Lexland and Jibrovia are expected to increase annually by the current rate of inflation. The after-tax realisable value of the investments in six years' time is expected to be approximately LFr16.2 million and J\$14.5 million at price levels of six years in the future, excluding working capital.

Inflation rates for each of the next six years are expected to be:

Jibrovia		<b>6%</b>
Dinoville		<b>3%</b>
Lexland		<b>5%</b>
Exchange rates		
	<b>LFr/D£</b>	<b>J\$/D£</b>
Spot	2.3140 - 2.3210	1.5160 - 1.5210

Snazzy can borrow funds for the investment at 10% per year in Dinoville. The company's cost of equity capital is estimated to be 17%. After either proposed investment Snazzy's gearing will be approximately 50% debt, 50% equity by book value, and 30% debt, 70% equity by market value.

Corporate tax in Lexland is at 40%, in Dinoville 33% and Jibrovia 30%. Full bilateral tax treaties exist between Dinoville and both Lexland and Jibrovia. Taxation is payable, and allowances are available, one year in arrears.

### Requirement

Evaluate which, if either, of the two subsidiaries should be established by Snazzy. Include discussion of the limitations of your evaluation. State clearly any assumptions that you make.

## 3 Gordon plc

Gordon plc is a health club chain based in Northern Ireland. The company has decided to purchase an existing health club chain in New Jersey, US. The purchase will cost an agreed \$72 million for non-current assets and equipment, and in addition \$8 million of working capital will be needed. No additional external funding for the proposed US subsidiary is expected to be needed for at least five years, and sales from the subsidiary would be exclusively to the US market. Gordon has no other foreign subsidiaries, and the company's managers are considering how to finance the US investment. Gordon's bank has advised that, taking into account Gordon's credit rating, the following alternatives might be possible, with finance available up to the amount shown.



1. A 1 for 4 rights issue, at a price of 280 pence per share. Underwriting and other costs are expected to be 5% of the gross amount raised.
2. Five-year sterling 7% fixed-rate secured bank term loan of up to £50 million, initial arrangement fee 1%.
3. \$15 million one-year commercial paper, issued at US\$ SONIA plus 1.5%. This could be renewed on an annual basis. An additional 0.5% per year would be payable to a US bank for a backup line of credit.
4. 80 million Swiss franc five-year fixed rate secured bank loan at 2.5%. This may be swapped into fixed rate \$ at an **additional** annual interest rate of 2.3%. An upfront fee of 3.0% is also payable.

No currency swaps are available other than those shown. Currency swaps would involve swapping the principal at the current spot exchange rate, with the reversal of the swap at the same rate at the swap maturity date.

US\$ SONIA is currently 3%. Exchange rates

	Spot	One-year forward
\$/£	1.7985 - 1.8008	1.7726 - 1.7746
SF/£	2.256 - 2.298	2.189 - 2.205

Gordon's current statement of financial position is summarised below.

	£m
Non-current assets	117.8
Investments	8.1
Current assets	98.1
Current payables	
Loans and other borrowings	(38.0)
Other payables	<u>(48.6)</u>
	<u>137.4</u>
Non-current payables	
Medium- and long-term bank loans	30.0
8% bond 20X9 (par value £100)	<u>18.0</u>
	48.0
Capital and reserves	
Ordinary shares (25 pence par value)	20.0
Reserves	<u>69.4</u>
	<u>137.4</u>

A covenant exists that prevents the book value of Gordon's debt finance from exceeding 50% of total assets. Gordon's current dividend per share is 22.2 pence and dividend growth is approximately 4% per year. The company's current share price is 302 pence.

Interest payments on debt financing may be assumed to be made annually at the end of the year. Corporate tax in the UK, US and Switzerland is at a rate of 28%. Issue costs and fees such as swap fees are not tax allowable.

## Requirements

- 3.1 Discuss the factors that Gordon should consider before deciding how to finance the proposed US subsidiary.
- 3.2 Prepare a report discussing and evaluating each of the four possible sources of finance, and provide a reasoned recommendation of which source, or combination of sources, Gordon should use. Supporting calculations, including costs, should be provided wherever relevant.

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

## Answer to Interactive question 1

### 1.1 Tiger should consider such issues as:

#### Convertibility of currency

If the host country's currency is **not easily converted** in the foreign exchange markets – or no market exists for this particular currency – Tiger might have problems trying to get money out of the country should it ever wish to withdraw its investment.

#### Availability of suitable resources

While Tiger appears to be confident that resources are available at a low price, will these resources be **suitable for purpose** (for example, raw materials) and able to perform the necessary specialist tasks that characterise the manufacture of electronic products (human resources)? While it is possible to send personnel from the home country, expatriate packages are expensive and may cancel out the advantage of paying less for other resources. The host country will obviously be looking for some economic benefit for its own inhabitants in the form of jobs. Therefore it is important to determine whether local employees have the necessary skills. If there are insufficient raw materials available, Tiger may still be **restricted on how much it can import from elsewhere** due to local import controls. Tariffs and taxes may cancel out any cost advantage of operating in the host country.

#### Inflation and economic stability

These are crucial factors. Does the country have a history of high inflation which suggests economic volatility? Are costs likely to **spiral out of control**, resulting in **loss of cost advantage** for Tiger? Will economic volatility lead to increasing interest rates and/or local currency collapse?

#### Cultural compatibility

Do locals have the same approach to business as the UK – for example, profit seeking, quality, striving for customer satisfaction? Will the importance of **quality of product be appreciated**? Are **shareholder-owned companies encouraged or are nationalised industries the norm**? Is it likely that the operation could be nationalised in the future? Are there likely to be problems with training the local workforce? Are there problems relating to the employment of women or certain classes of society?

### 1.2 Minimisation of political risks

Tiger can take the following steps to minimise the effects of political risk.

#### Negotiations with host government

Tiger might be able to obtain a **concession agreement**, covering matters such as the transfer of capital, remittances and products, access to local finance, government intervention and taxation and transfer pricing. However, if there is a change in government, the new Government may not feel bound to honour the agreement with the previous Government.

#### Insurance

Insurance might be available against **nationalisation** and **currency conversion problems**. **Production strategies**

Tiger could locate **key parts** of the **production process** abroad. If governments take action, it will not be able to produce the product without investment in new facilities. Alternatively, risk could be reduced by local sourcing of **factors of production** or **components**.

### Distribution channels

Control by Tiger of distribution channels might limit the risk of government interference because of the **disruption to distribution arrangements** that interference might cause.

### Patents

Tiger might protect its investment by **patents or use of trademark legislation**. However, these might be **difficult to enforce** in local courts.

### Financial management

If Tiger obtains funds **in local markets**, governments might be deterred from intervening by the risks posed to local lenders.

### Ownership structure

Instead of having a direct ownership interest, Tiger might establish a presence by a **joint venture**, or ceding control to local investors and obtaining profits by a **management contract**.

### Overcoming blocked funds

Funds can be obtained by 'legitimate' charges such as **royalty and management charges**, or making a loan and charging **high interest rates**. Tiger might also engage in **countertrade** (reciprocal or barter arrangements) rather than trade for cash.

## 1.3 Duty of care

All companies have to balance the need to compete against their ethical duty of care to stakeholders. The laws of developed countries have progressively reflected voters' concerns on **ethical issues** by banning activities considered harmful to society (eg, drug dealing) or to the economy (eg, corruption) and by developing numerous constraints on the behaviour by companies towards employees, the local community and the environment. These are intended to give companies a level playing field on which they can compete vigorously.

### Adverse publicity

Where potentially unethical activities are not banned by law, companies need to make difficult decisions, weighing up **increased profitability** against the **harmful effects of bad publicity**, organisational ill-health and the knowledge that some activities are clearly wrong. Whereas in developed countries such decisions might relate to experimentation on animals or sale of arms, the laws of developing countries are far less advanced, forcing companies to make their own decisions on major issues such as:

- 1) provision of proper safety equipment and working conditions for employees
- 2) use of child labour
- 3) wage rates below subsistence level
- 4) discrimination against women, ethnic minorities, and so on
- 5) pollution of the environment
- 6) 'inducement' payments to local officials to facilitate investment

### Unethical investment

In addition, multinational companies must decide whether it is right to invest at all in some countries which are regarded as **unethical**, for example because of violation of human rights.

## Answer to Interactive question 2

### 2.1 Eardisland investment

Cost of closing Eardisland factory =  $35(1 - 0.24) - 20 = \$6.6\text{m}$

Cost of downsizing =  $20(1 - 0.24) - 10 = \$5.2\text{m}$

Downsizing is the cheaper option, even before cash flows from the downsized factory and the fact that closure would mean markets couldn't be fully supplied is taken into account.

Using the capital asset pricing model, discount rate =  $4.5 + 1.1(11.5 - 4.5) = 12.2\%$ , say 12% Present value for post-tax cash flows  $4(1 - 0.24) \times$  Inflation factor (1.02 Year 1,  $1.02 \times 1.03$  Year 2 etc)

B6 =NPV(0.12,C5:F5)						
	A	B	C	D	E	F
1		0	1	2	3	4
2		\$m	\$m	\$m	\$m	\$m
3	Net downsizing costs	(5.2)				
4	Post-tax cash flows	-	3.1	3.2	3.3	3.4
5		(5.2)	3.1	3.2	3.3	3.4
6	PV@12%T1-4	9.83				
7	Less initialoutlay	(5.2)	2.8	2.6	2.3	2.2
8	NPV	4.63				

Net present value = \$4.63m

### Buzzland investment

C21 =NPV(0.15,D20:G20)							
	A	B	C	D	E	F	G
1			0	1	2	3	4
2	WORKIN G		Fm	Fm	Fm	Fm	Fm
3	Sales	(2)		659	735	785	839
4	German comp.	(3)		(41)	(47)	(52)	(57)
5	Labour	(4)		(228)	(262)	(288)	(317)
6	Local comp.	(5)		(90)	(104)	(114)	(125)
7	Sales and distrib.	(6)		(20)	(23)	(25)	(28)
8	Fixed costs	(7)		(50)	(58)	(63)	(70)
9	Tax allow. deprec.	(8)		(145)	(109)	(82)	(94)
10	Taxable profit			85	132	161	148
11	Tax at 20%			(17)	(26)	(32)	(30)
12	Tax allow. deprec.			145	109	82	94

C21 =NPV(0.15,D20:G20)							
	A	B	C	D	E	F	G
13	Investment		(580)				150
14	Working capital	(9)	(170)	(34)	(31)	(23)	258
15	Remittable cash flows Fm		(750)	179	184	188	620
16	Exch. rate	(1)	36.85	43.35	48.40	51.69	55.20
17							
18	Remittable cash flows \$m		(20.4)	4.1	3.8	3.6	11.2
19	Add Eardislan tax	(10)	-	(0.1)	(0.1)	(0.1)	(0.1)
20	Net cash flows		(20.4)	4.0	3.7	3.5	11.1
21	PV@15% T1-4	(11)	14.9				
22	Less investment @T0		(20.4)				
23	NPV		(5.5)				

Net present value = \$(5.5)m. Present value overall = 4.63 - 5.5 = \$(0.87)m On these figures, the reorganisation does not appear to be worthwhile.

#### WORKINGS

##### (1) Exchange rates

Year	PP factor	Buzzland francs/\$	Buzzland francs/euro
0		36.85	23.32
1	1.20/1.02	43.35	27.44
2	1.15/1.03	48.40	30.64
3	1.10/1.03	51.69	32.7×
4	1.10/1.03	55.20	34.94

##### (2) Sales

$50,000 \times 480 \times \text{Exchange rate}$

##### (3) German component

$50,000 \times 30 \times \text{Exchange rate} \times \text{Inflation factor}$

Inflation factor = 1.03 Yr 2,  $1.03 \times 1.03$  Yr 3, etc

##### (4) Labour

Incremental cost of employing 50 extra workers

$50,000 \times 3,800 \times (50/250) = \text{F}38\text{m}$

This is less than the F75 million a year factory rental, so the extra workers are employed.

Costs

$50,000 \times 3,800 \times (300/250) \times \text{Inflation factor}$

Inflation factor 1.15 Yr 2,  $1.15 \times 1.1$  Yr 3, etc

**(5) Local components**

$50,000 \times 1,800 \times \text{Inflation factor for labour}$

**(6) Sales and distribution**

$50,000 \times 400 \times \text{Inflation factor for labour}$

**(7) Fixed costs**

$50\text{m} \times \text{Inflation factor for labour}$

**(8) Tax-allowable depreciation**

Year	Writing-down allowance	Tax written-down value
	Fm	Fm
0		580
1	145	435
2	109	326
3	82	244
4	94	0

WDA = 25% previous year's tax written-down value Yr 1-3, (244 - 150) Yr 4

**(9) Working capital**

$(170\text{m} \times \text{Inflation factor}) - \text{Previous year's working capital balance}$

Inflation factor 1.2 Yr 1,  $1.2 \times 1.15$  Yr 2, etc

Assume working capital is repaid at end of Year 4.

**(10) Eardisland tax**

$\text{Taxable profits} \times (0.24 - 0.2) \times 1/\text{exchange rate}$

**(11) Discount factor**

$k = 4.5 + 1.5 (11.5 - 4.5)$

= 15%

**2.2 Strategic investments**

Watson should consider whether this decision is sensible from the point of view of **business strategy**. Is there a particularly good reason for becoming involved in Buzzland, potential future markets possibly? Might investing in other countries with greater market potential and/or lower costs be better? Watson should also take into account the **PEST** factors affecting the business environment, including the legal and regulatory position, enforcement mechanisms, cultural influences on demand and methods of doing business.

**Financial structure**

The **availability of finance** could be a significant issue.

**Limitations of analysis**

The financial analysis has a number of possible limitations.

1. If increases in costs are greater than expected, cash flows will be adversely affected, since Watson **cannot increase selling prices**.

2. Watson may wish to consider **prolonging the investment beyond Year 4**. If this is so, the analysis should consider the present value of cash flows after Year 4 rather than the realisable value of assets at that date, as well as the **rental** payable for the factory beyond Year 4.
3. Assuming production does cease in Buzzland in four years' time, the analysis fails to consider **what will happen afterwards** or what will happen if moving production does not prove successful because of, for example, **adverse effects on quality**.
4. **Purchasing power parity** may not be a **completely reliable predictor** of short-term exchange rates.

Therefore, to gain a better picture of the desirability of this investment, **sensitivity analysis** needs to be undertaken on **key variables**, the **analysis extended** beyond four years, and the effects of **changing assumptions** investigated.

### Bad publicity

Relocating to a market where labour is cheaper may lead to bad publicity for Watson and **potential boycotts** of its goods.

### Political risk

The investment is subject to political risk from action by the Buzzland Government. Given the uncertainty, it may be worth **postponing the analysis** until a year's time, and awaiting developments in the situation (for example, whether the IMF will lend more money or whether further restrictions on remittances have been imposed).

## Answer to Interactive question 3

The current position is as follows.

	UK company B\$'000	Ceeland company B\$'000	Total B\$'000
<b>Revenues and taxes in the local country</b>			
Sales	84,000	210,000	294,000
Production expenses	(68,000)	(164,000)	(232,000)
Taxable profit	16,000	46,000	62,000
Tax (1)	(4,000)	(18,400)	(22,400)
Dividends to Beeland	12,000	27,600	39,600
Withholding tax (2)	0	2,760	2,760
<b>Revenues and taxes in Beeland</b>			
Dividend	12,000	27,600	39,600
Add back foreign tax paid	4,000	18,400	22,400
Taxable income	16,000	46,000	62,000
	5,600	16,100	21,700
Foreign tax credit	(4,000)	(16,100)	(20,100)
Tax paid in Beeland (3)	1,600	-	1,600



	UK company B\$'000	Ceeland company B\$'000	Total B\$'000
Total tax (1) + (2) + (3)	5,600	21,160	26,760

An increase of 25% in the transfer price would have the following effect.

	UK company B\$'000	Ceeland company B\$'000	Total B\$'000
<b>Revenues and taxes in the local country</b>			
Sales	105,000	210,000	315,000
Production expenses	(68,000)	(185,000)	(253,000)
Taxable profit	37,000	25,000	62,000
Tax (1)	(9,250)	(10,000)	(19,250)
Dividends to Beeland	27,750	15,000	42,750
Withholding tax (2)	0	1,500	1,500
<b>Revenues and taxes in Beeland</b>			
Dividend	27,750	15,000	42,750
Add back foreign tax paid	9,250	10,000	19,250
Taxable income	37,000	25,000	62,000
Beeland tax due	12,950	8,750	21,700
Foreign tax credit	(9,250)	(8,750)	(18,000)
Tax paid in Beeland (3)	3,700	-	3,700
Total tax (1) + (2) + (3)	12,950	11,500	24,450

The total tax payable by the company is therefore reduced by B\$2,310,000 to B\$24,450,000.

# Answers to Self-test questions

## 1 Unpowerit Ltd

- 1.1 Before getting involved overseas, Unpowerit must consider both strategic and operational issues.

### Strategic Mission

Most importantly, does overseas expansion 'fit' with the overall **mission and objectives** of the company?

### Internal resources

Unpowerit needs to make sure that it has the internal **resources** to expand overseas. These will be chiefly financial, but it will also require a lot of time and staff effort. Marketing the services to an overseas country will be a significant project, and one which the company has not undertaken before.

### Market entry

Unpowerit needs to decide what African markets to enter, and what its **level of involvement** will be. It is advisable to start off with only a few markets at the most, to limit not only the costs of entry and market communications, but also the likely number of competitors. The choice of market is obviously very important. Not only must there be an **accessible demand** to make the market attractive, but Unpowerit must assess its **comparative advantage** in that market. The **risk** associated with the market must also be assessed. This will include political stability, economic infrastructure and other external influences.

### Long-term objectives

The **longer-term objectives** for the overseas venture need to be established. Is it merely a way of getting through what could be a temporary domestic slowdown, or is there going to be a full commitment to overseas expansion? This will necessitate some organisational changes for Unpowerit, both in structure and management.

### Method of investment

The **form of involvement** needs to be considered. Unless the subsidiary route is chosen, Unpowerit will have to relinquish some control, which it may not be prepared to do.

### Operational

These are more short-term needs than the strategic issues presented above. Sales levels, profitability, cash flows, market share and capital expenditure requirements need to be forecast and planned in detail. In order to be able to do this, the following issues need to be considered.

### Features of market

The **needs and preferences** of the foreign target market need to be established. This can only be achieved via an extensive programme of **market research** to forecast likely demand and establish levels of competition. Dealing with likely foreign **competitor responses** to the presence of Unpowerit must be planned in advance.

### Local culture

The **cultural implications** of doing business in a foreign country must never be underestimated. Upowerit has no experience of conducting business overseas and this often requires sensitive handling and staffing. Market share will suffer if local preferences are not taken into account.

### Local regulations

Regulations overseas are almost certain to be different in some respects, and it is imperative that local knowledge and expertise is employed to make sure that the rules are complied with.

### Cost issues

The **costs** of doing business overseas will be affected by factors such as foreign tax regimes, access to technology and availability of physical resources.

### Management skills

**Management skills** will be vital, both for staffing and the level of control over the operation. This will have implications for the organisation structure. For example, expatriate staff from the home country may need to be seconded to the overseas market to help local staff.

## 1.2 Exploit opportunities

Joint ventures (JVs) are often used to enable companies to exploit an opportunity which it would be difficult for any one of them to take advantage of individually.

JVs are often used as a means of entering markets which are either closed to foreign companies or difficult for them to enter. Therefore, Upowerit might see a JV as a good way of entering a specific foreign country.

### Pooling skills and competences

A JV can allow the partners to bring together different skills and competences. For example, one partner might have extensive technical expertise, while another may have local market knowledge.

### Risks and rewards

Because the JV involves two or more partners, the risks and rewards involved are shared between the various partners. JVs allow risks and capital commitment to be shared between the venture partners, so they can be a very useful way of undertaking expensive technology projects.

## 1.3 Initial investigations

- Review JV agreement (in combination with legal advisers) for onerous, ambiguous or omitted clauses.
- Ensure that the purpose of the JV is clear and the respective rights of partners are established in the initial contractual arrangements.
- Ensure that the scope of the JV is clear so there is separation of the other operations of each company from those falling within the JV.
- Review tax status of JV entity including remittance of funds.
- Review governance procedures including shared management, control, rights over assets and key decision-making processes to ensure that Upowerit's management has an appropriate level of control over key decisions that may damage its interests.

- Establish that initial capital has been contributed in accordance with the agreement.
- Establish the creditworthiness, going concern and reputation of JV partner, based on local enquiries from stakeholders and a review of internal documentation as well as that in the public domain.
- Ensure the terms of the disengagement and residual rights are clear in the initial agreement so there is a transparent and legitimate exit route.
- Where assets that are to be used in the JV are already held by either partner, then they would normally be transferred nominally at fair value. This needs to be established.
- Clarify revenue-sharing agreement with respect to existing sales in progress.
- Health and safety responsibility needs to be established and liability sharing agreed.

### Continuing assurance

- Audit rights and access to information need to be established in the contract, as this will affect the scope of the audit.
- Ensure that the operations of the JV are within the terms of the JV agreement.
- Ensure that internal controls and accounting systems are being applied and are effective.
- Assess whether the accounting systems for a JV entity will be capable of recording accurately and completely the costs being incurred and the assets held by the entity.
- If permitted within the terms of the contract, audit access to the accounting records of the partner would provide additional assurance.
- Dissolution of the agreement creates additional assurance problems in terms of disengagement, return/sale of assets, intellectual property rights, rights to future customer access.
- The level of assurance needs to be determined (reasonable or limited).
- There may be a requirement for a separate audit for a JV entity.

## 2 Snazzy

### Contribution to organisational objectives

The evaluation of each of the two alternatives is made in terms of how well each one contributes to the **achievement of organisational objectives** and strategies. The information given enables a financial appraisal of each alternative to be made. This will only be part of the input to the final decision, albeit an important part. Many non-financial factors will also have to be taken into account.

### Approach used

The financial appraisal is shown below. The basic approach is to estimate cash flows in the foreign currency, convert them to the home currency and discount them at a rate based on home country cost of capital.

### Financial appraisal of the two alternative investments

The time horizon for appraisal of both investments is seven years: six years of operation plus one further year to allow for the tax delay.

## Appraisal of Lexland investment

	A	B	C	D	E	F	G	H	I
1	Year	0	1	2	3	4	5	6	7
2	Production/sales units			2,000	2,500	2,500	2,500	2,500	2,500
3	Cntbn. per unit, LFr (W1)			9,923	10,419	10,940	11,487	12,061	
4		LFr'000	LFr'000	LFr'000	LFr'000	LFr'000	LFr'000	LFr'000	LFr'000
5	Total contribution			19,846	26,048	27,350	28,718	30,153	
6	Royalty (£750,000 × exch. rate)			(1,806)	(1,841)	(1,877)	(1,914)	(1,951)	
7	Operating cash flow			18,040	24,207	25,473	26,804	28,202	
8	Tax at 40%				(7,216)	(9,683)	(10,189)	(10,722)	(11,281)
9	Tax saved by dep'n all (W2)				1,120	360	270	202	152
10	Land	(2,300)							
11	Building	(1,600)	(6,200)						
12	Machinery		(6,400)						
13	After-tax realisable value							16,200	
14	Working capital (W3)	-	(11,500)	(575)	(604)	(634)	(666)	(699)	14,678
15	Cash remitted to Dinoville	(3,900)	(24,100)	17,465	17,507	15,516	16,219	33,183	3,549

	A	B	C	D	E	F	G	H	I
16	Exchange rate LFr/D£ (W4)	2.3175	2.3625	2.4084	2.4551	2.5028	2.5514	2.6010	2.6515
17	Cash remitted from Lexland	(1,683)	(10,201)	7,252	7,131	6,199	6,357	12,758	1,338
18	Royalty received			750	750	750	750	750	
19	Tax at 33% on royalty	-	-	-	(248)	(248)	(248)	(248)	(248)
20	Net cash	(1,683)	(10,201)	8,002	7,633	6,701	6,859	13,260	1,090
21	PV@14% (W5) T1-7	116,368							
22	Less outlay@ T0	(1,683)							
23	NPV	14,685							

The Lexland investment has a positive net present value of **D£14.69 million**. **Appraisal of Jibrovia investment**

	A	B	C	D	E	F	G	H	I
1	Year	0	1	2	3	4	5	6	7
2		J\$'000	J\$'000	J\$'000	J\$'000	J\$'000	J\$'000	J\$'000	J\$'000
3	Pre-tax cash flow		2,120	3,371	3,573	3,787	4,014	4,255	
4	Tax at 30%			(636)	(1,011)	(1,072)	(1,136)	(1,204)	(1,277)
5	Cost of acquisition (assume maximum)	(10,000)							
6	Machinery	(2,000)							

	A	B	C	D	E	F	G	H	I
7	After-tax realisable value							14,500	
8	Working capital (W6)	(4,000)	(240)	(254)	(270)	(286)	(303)	(321)	5,674
9	Cash remitted to/ from Jibrovia	(16,000)	1,880	2,481	2,292	2,429	2,575	17,230	4,397
10	Exchange rate (W4)	1.5185	1.5627	1.6082	1.6551	1.7033	1.7529	1.8040	1.8565
11	Cash remitted to/from Jibrovia (D£'000)	(10,537)	1,203	1,543	1,385	1,426	1,469	9,551	2,368
12	Additional Dinoville tax (3%) (W7) (See Note below)	-	-	(41)	(63)	(65)	(67)	(69)	(71)
13	Net cash	(10,537)	1,203	1,502	1,322	1,361	1,402	9,482	2,297
14	PV@14 % (W5) T1 -7	9,875 <sup>1</sup>							
15	Less initial outlay	(10,537)							
16	NPV	(662)							

<sup>1</sup> The formula used in cell B14 is =NPV(0.14,C13:I13). Net present value of (**D£662,000**)

#### WORKINGS

### (1) Contribution per unit - Lexland

At current prices (Year 0): LFr

Sales price	20,000
Variable costs	11,000
Contribution	9,000

This will increase by 5% per year. Contribution per unit in Year 2 will be  $9,000 \times 1.05^2$  = LFr 9,923.

### (2) Tax saved by tax-allowable depreciation (machinery only) in Lexland

(Figures in LFr'000)

Year	1	2	3	4	5	6	7
Asset value at start of year	6,400	4,800	3,600	2,700	2,025	1,519	
25% depreciation	1,600	1,200	900	675	506	380	
Tax saved at 40%			1,120	360	270	202	152

It is assumed that, because the Lexland subsidiary earns no profits in Year 1, the tax depreciation in Year 1 cannot be claimed until Year 2. The allowance in Year 2 will therefore be 2,800, giving rise to a tax saving of 1,120 in Year 3.

No **balancing allowance** has been shown, as the asset will still be in use after Year 6 and its value is included in the after-tax realisable value of the investment, LFr16.2 million.

### (3) Investment in working capital - Lexland

It is assumed that total working capital requirement increases with inflation at 5% per year and is returned at the end of Year 7. It is assumed that the amount of working capital at Year 6 is not included in the value of the investment at that stage.

(Figures in LFr'000) Year

Year	1	2	3	4	5	6	7
Total working capital	11,500	12,075	12,679	13,313	13,979	14,678	
Investment in WC	(11,500)	(575)	(604)	(634)	(666)	(699)	14,678

### (4) Computation of exchange rates for the next seven years

For ease of computation, the spot rate will be taken as the mid-market exchange rate. Spot rate for LFr =  $(2.3140 + 2.3210)/2 = 2.3175$

Spot rate for J\$ =  $(1.5160 + 1.5210)/2 = 1.5185$

Using purchasing power parity theory, each year the LFr/D£ exchange rate is multiplied by 1.05/1.03 and the J\$/D£ rate is multiplied by 1.06/1.03.



Year	LFr/D£	J\$/D£
0	2.3175	1.5185
1	2.3625	1.5627
2	2.4084	1.6082
3	2.4551	1.6551
4	2.5028	1.7033
5	2.5514	1.7529
6	2.6010	1.8040
7	2.6515	1.8565

#### (5) Discount rate for the investments

Because both investment alternatives represent an expansion of the existing business, the company's existing weighted average cost of capital can be used as a discount rate.

The debt is borrowed in Dinoville where interest will save tax at the rate of 33%. Its after-tax cost is  $10\% (1 - 0.33) = 6.7\%$ .

**Market values** should be used as weights.

$WACC = 0.7 \times 17\% + 0.3 \times 6.7\% = 13.91\%$ , say 14%

#### (6) Working capital - Jibrovia investment Year

Year	0	1	2	3	4	5	6	7
	J\$'000	J\$'000	J\$'000	J\$'000	J\$'000	J\$'000	J\$'000	J\$'000
Total working capital	4,000	4,240	4,494	4,764	5,050	5,353	5,674	
Investment in WC	(4,000)	(240)	(254)	(270)	(286)	(303)	(321)	5,674

#### (7) Additional tax - Jibrovia investment

Additional tax of 3% (33% - 30%) is suffered in Dinoville on Jibrovia taxable profits. This is computed by converting the pre-tax cash flow at the exchange rate for the year and then multiplying by 3%, eg, Year 1:  $2,120 \div 1.5627 \times 3\% = 40.69$ , rounded to 41.

The net present value of the Jibrovia investment is **negative D£658,000** if the investment cost is the maximum J\$10 million.

If the cost is only J\$8 million, the NPV is increased by  $J\$2m/1.5185 = D£1.317m$ , giving a

#### positive NPV of D£659,000. Conclusion

From the financial appraisal, the Lexland investment is the better alternative. If the Jibrovia investment is thought to have a positive NPV, then both investments could be undertaken (they are not mutually exclusive) provided adequate funds and management resources were available.

#### Assumptions

The financial appraisals are based on several assumptions, which are stated during the course of the computation.

## Uncertainties

Most of the estimates are subject to considerable uncertainty, for example:

- Estimates of future exchange rates are based on forecast inflation levels and purchasing power parity theory.
- Inflation is unlikely to remain at the levels given and may affect different types of costs and revenues in different ways.
- Tax rates may change.
- As in most financial appraisals, the most difficult figure to estimate is the residual value at the end of the time horizon of six years.
- Estimates for the Lexland sales figures are more difficult to make than for the Jibrovia investment, because it is a start-up business.
- The systematic risk of both investments is assumed to be the same as Snazzy's existing business. If this is not the case then project-specific discount rates should be used.
- Sensitivity analysis could be used to provide more information on which of the above uncertainties cause the most problems.

## 3 Gordon plc

### 3.1 Foreign exchange risk

It is possible to reduce foreign exchange risk by **matching**; using one of the dollar finance options to set against the dollar receipts.

#### Cost of finance

This covers not only any **annual interest payment costs**, but also arrangement fees, issue costs and so on.

#### Availability

If the purchase is to take place rapidly, the finance should be **available quickly**, or (expensive?) **short-term bridging finance** will be required.

#### Flexibility

If the directors are expecting to use **different sources of finance**, they will prefer to use sources that can be changed without significant cost.

#### Period of investment

The length of time the finance is available should **match** the length of the investment period.

#### Tax

The **tax consequences** of the different sources of finance must be considered, as these may significantly affect costs.

#### Desired debt-equity finance mix

The maximum amount of debt is limited by a covenant in any event, but the directors may have their own views about the **desired balance** and hence the **desired level of finance risk**. It will be determined by whether they believe that there is an **optimal level of gearing**, at which the company's **weighted average cost of capital** will be at its lowest.

### Signalling

By issuing the maximum amount of debt, the directors may wish to demonstrate to the stock market their **confidence in the future**.

### Interest rate expectations

The directors will **prefer floating rate finance** if interest rates are expected to **go down**, **fixed rate finance** if interest rates are expected to **increase**.

### Maturity of debt

Directors will be concerned about when the debt is **due to mature**, and Gordon's **likely cash position** around that date.

### Security

Directors will be concerned about the **amount** of security required, also how any **restrictions over assets secured** might limit business decisions, including the ability to raise loan finance in the future.

### Other sources

Other sources of finance such as **convertible** and **deep-discount bonds** may be appropriate.

## 3.2 REPORT

**To:** Directors, Gordon  
**From:** Accountant  
**Date:** 15 December 20X5  
**Subject:** Sources of finance

### Finance required

Amount required = \$80m = £80/1.7985m = £44.48m

If all raised by debt, gearing =  $\frac{38 + 30 + 18 + 44.48}{117.8 + 8.1 + 98.1 + 44.48} = 48.6\%$

This would still be within the terms of the covenant, although it would not allow much scope for further investments to be financed solely by debt. There is also no indication that this is the optimal mix of gearing and hence cost of capital is at its lowest.

### Rights issue

Amount raised =  $(80 \times \frac{1}{4} \times 2.80) 0.95 = £53.2m$

Cost of equity =  $\frac{22.2(1.04)}{302} + 0.04 = 11.6\%$

### Advantages

1. The proposed rights issue would comfortably **exceed the amount required**.
2. The company's **gearing**, and thus **financial risk**, would decrease.
3. There would be **no change in control** if the current shareholders took up the rights issue.

- Gordon would not have a commitment to make **interest payments**.
- Gordon would not face **exchange risk** on payments to providers of finance.

#### Disadvantages

- The **arrangement costs** are **higher** than for some of the other alternatives.
- A **rights issue** is likely to take **longer to arrange** than the other alternatives.
- The **cost of equity** is **higher** than the cost of debt because of the greater risk to equity shareholders and the company does not obtain the benefit of **tax relief**.
- The **exchange risk** on the **income from the US investment** remains, as it cannot be matched against the payments to finance providers.

#### Fixed rate sterling loan

Amount issued =  $44.48 \times 100/99 = \text{£}44.93\text{m}$

#### Cost of debt

B5 = RATE(B1,B2,B3,B4)		
	A	B
1	Nper = the number of periods	5
2	Pmt = the amount (of interest) paid in any single period	3.15
3	Pval = the present value of the asset (its market price net of issue costs)	-44.48
4	Fval = the future value (the amount paid at maturity).	44.93
5	Yield to maturity	0.073

Post-tax cost of loan =  $7.3\% (1 - 0.28) = 5.3\%$

#### Advantages

- Cost is **lower** than some of the other options.
- There is a **further facility** available which has not been drawn.

#### Disadvantages

- Because the loan is in sterling, there will be **foreign exchange risk** as the finance is not matched with the dollar income.
- Conditions may be attached to the security that impose **restrictions** over and above the debt limit.

#### Commercial paper

Amount issued = \$15m

Cost =  $0.72 (3.0 + 1.5 + 0.5) = 3.6\%$

#### Advantages

- Gordon will be able to take advantage of **short-term falls in interest rates**.
- The cost looks **low** compared with other sources.

#### Disadvantages

- The commercial paper provides **less than 20%** of the finance required.

- The **maturity** is wrong for the majority of the requirement; commercial paper is a short-term source to finance a long-term requirement of \$72 million.
- There are likely to be some **issuing costs**.
- The **floating rate** is not attractive if interest rates are **expected to rise**.

#### Swiss franc loan

Amount raised =  $80 (1 - 0.03)/2.298 = \text{£}33.77\text{m}$

#### Cost of loan

B5 =RATE(B1,B2,B3,B4)		
	A	B
1	Nper = the number of periods	5
2	Pmt= the amount (of interest) paid in any single period	3.84
3	Pval= the present value of the asset (its market price net of issue costs)	-77.60
4	Fval = the future value (the amount paid at maturity).	80.0
5	Yield to maturity	0.055

Post-tax cost of loan =  $5.5\% (1 - 0.28) = 4.0\%$

#### Advantages

- The **cost of finance** is still **low** even after the swap fees.
- Gordon can pay interest in the currency in which it is obtaining returns, and thus **reduce exchange risk** by gearing.

#### Disadvantages

- The loan will not be enough to cover the **whole US investment**; approximately £10 million further finance will be required.
- Gordon would still be exposed to **foreign exchange risk** on the Swiss franc loan itself as against sterling.
- Gordon may be subject to **counterparty risk**, although this will be minimal if it uses an intermediary such as a bank.

#### Recommendation

If there are concerns about gearing levels and directors are prepared to accept a much higher cost of finance than is likely for any of the loan finance, then the rights issue should be used.

Of the longer-term sources of finance, the Swiss franc loan offers the lowest rate. However, the loan is insufficient to cover the entire US investment, which would mean seeking extra finance from elsewhere. The fixed rate sterling loan covers the entire US investment with funds to spare. Both loans will expose Gordon to foreign exchange risk.



# Chapter 17

# Investment appraisal

## Introduction

Learning outcomes

Knowledge brought forward

Syllabus links and examination context

Chapter study guidance

## Learning topics

1. Investment appraisal
2. International investment appraisal
3. Real options
4. Externalities and social responsibilities

Summary

Further question practice

Technical reference

Self-test questions

Answers to Interactive questions

Answers to Self-test questions



# Introduction

## Learning outcomes

- Select and advise on investment appraisal techniques which are appropriate to the objectives and circumstances of a given business
- Appraise and advise on appropriate measures of return and risk for assessing business projects using appropriate statistical tools, data analysis and spreadsheets
- Demonstrate and evaluate investment appraisal techniques for international projects, identifying the impact of tax and the effects on corporate reporting
- Explain and appraise real options and determine the impact of options to abandon, expand, delay and redeploy
- Appraise and evaluate the quantitative and qualitative issues surrounding international investment appraisal
- Evaluate the impact of externalities when making investment appraisal decisions
- Identify social responsibility, sustainability and environmental consequences of investment decisions, explaining corporate reporting issues in relation to such policies

## Knowledge brought forward

The first section reviews investment appraisal techniques that were covered in detail at earlier stages, mostly by means of practice of these techniques.

## Syllabus links and examination context

You may find an international net present value (NPV) calculation as part of a question where the business is deciding whether to invest abroad, considering the issues discussed in the chapters Strategic choice and International financial management. Any discussion about real options will also not take place in isolation, but will be seen in the context of the organisation's wider strategy (can it afford to delay?). Questions about externalities will also not simply be about assigning numbers, but the wider issues associated with corporate social responsibility and mission discussed earlier.

## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.



Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>Investment appraisal</b></p> <p>Investment is the lifeblood of any organisation's growth. With so many opportunities available – and limited resources to spend on them – organisations must know how to evaluate projects to decide which ones</p>	<p><b>Approach</b></p> <p>This section is revision from your Professional level studies. Make sure you review the investment appraisal techniques in this section and attempt the interactive questions to test your knowledge.</p>	<p>In the exam, you may be asked to select and advise on investment appraisal techniques which are appropriate to the objectives and circumstances of a given business and to appraise and advise on appropriate measures of return and risk for</p>	<p><b>IQ1: Investment appraisal techniques</b> This is revision of the techniques covered at Professional level.</p> <p><b>IQ3: APV valuation</b></p> <p>A good reminder of how to calculate APV.</p>
	<p>will increase shareholders' wealth and also complement overall business strategy.</p>	<p><b>Stop and think</b></p> <p>Is an expected value calculation ever a useful measure?</p>	<p>assessing business projects.</p>	
2	<p><b>International investment appraisal</b></p> <p>With increased globalisation, companies need to evaluate international investment opportunities.</p> <p>International investment appraisal involves not just the evaluation of revenues and operating costs, but also consideration of the various risks involved in undertaking foreign investments.</p> <p>Without analysing these, multi-million pound investments can quickly go wrong, resulting in monetary loss and potential damage to reputation.</p>	<p><b>Approach</b></p> <p>International investment appraisal was covered briefly at the Professional Level but is analysed in more depth here. Make sure you are familiar with the two alternative methods for calculating NPV from an overseas project.</p> <p><b>Stop and think</b></p> <p>What additional issues will you need to consider when appraising a project overseas?</p>	<p>In the exam, you may be required to demonstrate and evaluate investment appraisal techniques for international projects, identifying the impact of tax and the effects on corporate reporting.</p>	<p><b>IQ6 and IQ7: International investment appraisal.</b> This technique is key so take your time working through both questions.</p>

Topic	Practical significance	Study approach	Exam approach	Interactive questions
3	<p><b>Real options</b></p> <p>In a working environment you are likely to have to assess the feasibility of domestic and international projects. Real options are closely linked to this task and you may be required to value options to expand, abandon, delay or redeploy.</p>	<p><b>Approach</b></p> <p>When working through this section, make sure you understand the four real options that can be attached to an investment decision.</p> <p><b>Stop and think</b></p> <p>How can you value an option to delay if this delay gives competitors the chance to exploit a business opportunity first?</p>	<p>In the exam, you may be asked to analyse the impact of real options upon investment decisions.</p>	
4	<p><b>Externalities and social responsibilities</b></p> <p>In advising on investments, you may also need to consider their social and environmental consequences and how your organisation should respond to these.</p>	<p><b>Approach</b></p> <p>The section on corporate reporting issues is important. Make sure you can apply the provisions of IAS 37, Provisions, Contingent Liabilities and Contingent Assets.</p> <p><b>Stop and think</b></p> <p>Do you know how to account for a decommissioning provision?</p>	<p>In the exam, you may be asked to identify social responsibility, sustainability and environmental consequences of investment decisions, explaining corporate reporting issues in relation to such policies.</p>	

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 Investment appraisal



## Section overview

Detailed knowledge of payback, accounting rate of return (ARR), net present value (NPV), internal rate of return (IRR) and adjusted present value (APV) are still expected at Advanced Level and you should refer to earlier materials for an in-depth analysis of each of these techniques

## 1.1 Summary of techniques

### 1.1.1 Payback period

Payback is the amount of time it takes to recover the cash paid for the initial investment - that is, the time it takes for cash inflows = cash outflows. The project will be feasible if actual payback period is less than (<) predetermined acceptable payback period.

### 1.1.2 Discounted payback

The discounted payback period is the time it will take before a project's cumulative NPV turns from being negative to being positive. A company can set a target discounted payback period (say, five years) and choose not to undertake any projects with a period in excess of this target.

### 1.1.3 Accounting rate of return (ARR)

This can be calculated in two ways.

$$\text{ARR} = \frac{\text{Average annual profit from investment}}{\text{Initial investment}} \times 100$$

$$\text{or} = \frac{\text{Average annual profit from investment}}{\text{Average investment}} \times 100$$

$$\text{Where average investment} = \frac{\text{Initial outlay} + \text{Scrap value}}{2}$$

**Note:** Profit is **after** depreciation.

Project will be feasible if project ARR is greater than (>) predetermined minimum acceptable ARR.

### 1.1.4 Net present value (NPV)

The NPV of a prospective project with a life of n years is defined as:

$$\text{NPV} = \frac{\sum_{t=1}^n \text{NCF}_t - i}{(1+k)^t}$$

Where:  $NCF_t$  = the net cash flow that is received in period t  
k = cost of capital for the project  
 $i_0$  = initial investment

Firms should invest in projects whose  $NPV > 0$  and should not invest in those projects whose  $NPV \leq 0$ .

NPV can be calculated using the NPV spreadsheet function, this is covered in chapter Spreadsheet formulae.

### 1.1.5 Internal rate of return (IRR)

The IRR in any investment is the discount rate that equates the present value of its expected net revenue stream to its initial outlay. For normal projects (that is, initial investment followed by a series of cash inflows), the project is feasible if  $IRR > \text{cost of capital}$ . IRR can be calculated using the IRR spreadsheet function, this is covered in the chapter Spreadsheet formulae.

Two main problems with the IRR are:

- a) It assumes that cash flows will be reinvested at the IRR rather than at the cost of capital. This can be overcome by calculating the modified internal rate of return (MIRR) which is covered later in this chapter.
- b) It doesn't take into account when the actual cash flow takes place, it rolls them up into annual periods. This can be overcome by calculating the extended internal rate of return (XIRR) which considers the dates when the cash flows actually happen.

### 1.1.6 Extended internal rate of return (XIRR)

XIRR is used to calculate the internal rate of return (IRR) for a series of cash flows that may not be periodic. It does this by assigning specific dates to each individual cash flow. XIRR is therefore useful in determining the value of an investment or understanding the feasibility of a project that does not have regular period cash flows. XIRR can be calculated using the XIRR spreadsheet function, this is covered in chapter Spreadsheet formulae.

## 1.2 Other issues - inflation and taxation

### 1.2.1 Inflation

The relationship between money rate of return, real rate of return and inflation rate is:

$$(1 + m) = (1 + r)(1 + i)$$

Where: m = money rate of return  
r = real rate of return  
i = inflation rate

If cash flows are stated in money terms, they should be discounted at the money rate; if cash flows are stated in real terms, they should be discounted at the real rate.

### 1.2.2 Taxation

Tax writing-down allowances (WDA) are available on non-current assets which allows a company's tax bill to be reduced.



## Interactive question 1: Investment appraisal techniques

Robbie plc is considering investing in a new piece of machinery which will cost £500,000. The company has already spent £15,000 on exploratory work on the new machine.

Net cash inflows from the machine are expected to be £200,000 per annum. The machine has a useful life of four years after which it will be sold for £50,000. Depreciation is charged on the straight-line basis and Robbie plc's cost of capital is 10%.

### Requirements

Calculate the following.

- 1.1 Payback period
- 1.2 Accounting rate of return
- 1.3 Net present value
- 1.4 Internal rate of return

See **Answer** at the end of this chapter.

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## Interactive question 2: NPV with inflation and taxation

Bazza is considering the purchase of some new equipment on 31 December 20X0 which will cost \$350,000. The equipment has a useful life of five years and a scrap value on 31 December 20X5 of \$60,000.

Annual cash inflows generated from the equipment are expected to be \$110,000, with operating cash outflows of \$15,000 per annum.

Inflation is running at 4% per annum over the life of the project and tax allowances are available on a 20% reducing balance basis. Tax is paid in the same year as the profits on which the tax is charged. Corporate tax rate is 24% per annum and there is no writing-down allowance in the year of sale. Bazza's cost of capital is 12%.

### Requirement

Calculate the NPV of the project based on the above information and advise Bazza on whether the project should be undertaken.

See **Answer** at the end of this chapter.

---

## 1.3 Adjusted present value (APV)

The APV calculation starts with the valuation of a company without debt then, as debt is added to the firm, considers the net effect on firm value by looking at the benefits and costs of borrowing. The primary benefit of borrowing is assumed to be the tax benefit (interest is tax deductible) while the main cost of borrowing is the added risk of bankruptcy.

The decision rule is to accept the project as long as its total worth is greater than the outlay required.

The value of the firm is estimated in three steps. The first step is to estimate the value of the firm with no gearing. The present value of the interest tax savings generated by borrowing a given amount of money is then considered. Finally, an evaluation of the effect of borrowing the said amount on the probability of the firm going bankrupt is carried out, together with the expected cost of bankruptcy.



### Worked example: APV valuation

A company has a current annual cash flow to the firm of \$10 million which is expected to grow at 3% in perpetuity.

The equity beta of the company is 1.2; market debt to equity ratio is 80%; and the tax rate is 24%. The company has \$120 million debt. The risk premium for the market portfolio is 8% and the risk-free interest rate is 6%.

#### Requirement

What is the value of the firm using the APV method?

#### Solution

Value of the firm:

Calculate the ungeared beta using the following formula:

$$\beta_e = \beta_a \left( 1 + \frac{D(1-T)}{E} \right)$$

Where:  $\beta_e$  = beta of equity in the geared firm

$\beta_a$  = ungeared (asset) beta

D = market value of debt

E = market value of equity

T = corporate tax rate

$$1.2 = \beta_a [1 + (0.8)(1 - 0.24)]$$

$$1.2 = 1.608 \beta_a$$

$$\beta_a = 0.75$$

Estimate ungeared cost of equity using the capital asset pricing model (CAPM):

$$\text{Ungeared cost of equity} = 6\% + 0.75(8\%) = 12\%$$

Calculate value of ungeared firm:

$$V_u = \frac{\text{FCFF}_0(1+g)}{k_{e,u}-g} = \frac{(1-T)\text{NOI}(1+g)}{k_{e,u}-g}$$

Where: FCFF = free cash flow of the firm

$k_{e,u}$  = cost of capital of the ungeared firm

NOI = net operating income before interest and tax

g = growth rate

T = corporate tax rate

Using the free cash flow to the firm that we have been given as \$10 million and the growth rate of 3%, the ungeared firm value is estimated as:

$$\text{Ungeared firm value} = (1 - 0.24) \times 10 \times 1.03 / (0.12 - 0.03) = \$87.0\text{m}$$

**Tax benefits from debt:**

The tax benefits from debt are computed based on the company's existing debt of \$120 million and the tax rate of 24%:

Expected tax benefits in perpetuity = Tax rate (Debt) =  $0.24(120) = \$28.8\text{m}$

**Estimate the value of the firm:**

Value of geared firm = Ungeared firm value + PV of tax benefits =  $\$87.0\text{m} + \$28.8\text{m} = \$115.8\text{m}$  What should be remembered is that the true worth of the tax shield may be zero (Miller's conclusion in his 1977 paper 'Debt and Taxes', in the *Journal of Finance*). Although this is still subject to empirical testing in the real world, the value of the tax shield, while maybe not zero, may be substantially less than that suggested by Modigliani and Miller's with-tax analysis. Where this is the case, the APV method may have little benefit over the NPV method.

**Interactive question 3: APV valuation**

Mega Millions Inc is considering investing in a project with annual after-tax cash flows of \$2.5 million per annum for five years. Initial investment cost is \$8 million.

The debt capacity of the company will increase by \$10 million over the life of the project, with issue costs of debt of \$300,000. Interest rates are expected to remain at 8% for the duration of the project.

The existing cost of equity for the company is 14% and the current ratio of market value of debt: market value of equity is 1:3. Corporate tax is 24% and the company's current equity beta is 1.178. The risk-free rate of interest is 7% and the market risk premium is 6%.

**Requirement**

Calculate the APV of the project and recommend whether Mega Millions should undertake the investment with the proposed method of financing.

See **Answer** at the end of this chapter.

**1.4 Modified internal rate of return**

The internal rate of return (IRR) assumes that the cash flows after the investment phase are reinvested at the project's IRR. If the project's IRR is high this may be unrealistic. In addition, if there are changes in the direction of the project cash flows there may be more than one IRR, which can cause confusion. MIRR removes some of the drawbacks of IRR by modifying the reinvestment assumption so that it is assumed that cash inflows are reinvested at the company's cost of capital.

Calculating MIRR using the spreadsheet function is covered in more detail in chapter Spreadsheet formulae.

**Worked example: MIRR**

Consider a project requiring an initial investment of \$24,500, with cash inflows of \$15,000 in Years 1 and 2 and cash inflows of \$3,000 in Years 3 and 4. The cost of capital is 10%.

## Solution

If we calculate the IRR:

B3 =IRR(B2:F2)						
	A	B	C	D	E	F
1		Year 0	Year 1	Year 2	Year 3	Year 4
2	Cash flow £	(24,500)	15,000	15,000	3,000	3,000
3	IRR	24.6%				

The MIRR is calculated on the basis of **investing the inflows** at the **cost of capital**.

B3=MIRR(B2:F2,0.1,0.1)						
	A	B	C	D	E	F
1		Year 0	Year 1	Year 2	Year 3	Year 4
2	Cash flow £	(24,500)	15,000	15,000	3,000	3,000
3	MIRR	16%				

In theory, the MIRR of 16% will be a **better measure** than the IRR of 24.6%. The decision criterion of the MIRR is the same as the IRR - that is:

- if MIRR is larger than the required rate of return: **accept**
- if MIRR is lower than the required rate of return: **reject**



### Interactive question 4: MIRR

The following cash flows are relevant for a project:

	Year 0	Year 1	Year 2	Year 3
Cash outflows (£)	-10,000	0	0	0
Cash inflows (£)	0	3,000	5,000	7,000

#### Requirement

If the discount rate is 10% what is the internal rate of return and the modified internal rate of return? See **Answer** at the end of this chapter.

#### 1.4.1 Advantages of MIRR

There are two main technical advantages to the MIRR. First, it avoids any potential problems with multiple IRRs, and additionally, it will not provide decision-making advice concerning mutually exclusive projects that conflicts with the NPV decision. The second advantage arises as a result of the IRR decision being incorrectly based on the assumption that cash flows would be reinvested at the IRR. With MIRR, it is assumed that cash flows are reinvested at the project's opportunity cost of capital, which is consistent with NPV calculations.

MIRR could be seen as being the best of both worlds, as it is underpinned by NPV, but at the same time presents results in the more understandable percentage format.



### 1.4.2 Disadvantages of MIRR

However, MIRR, like all rate of return methods, suffers from the problem that it may lead an investor to reject a project which has a lower rate of return but, because of its size, generates a larger increase in wealth.

In the same way, a high-return project with a short life may be preferred over a lower-return project with a longer life.

## 1.5 Investment appraisal and risk

In general, risky projects are those whose future cash flows, and hence the project returns, are likely to be variable. The greater the variability is, the greater the risk. The problem of risk may be more acute with capital investment decisions than other decisions for the following reasons.

- a) **Estimates of capital expenditure** might be for **several years ahead**, such as for major construction projects. Actual costs may escalate well above budget as the work progresses.
- b) **Estimates of benefits** will be for **several years ahead**, sometimes 10, 15 or 20 years ahead or even longer, and such long-term estimates can at best be approximations.
- c) An investment decision may be **significant in scale** compared to most operating decisions.
- d) A major investment may be **part of a new business strategy**, or new venture, which may be more uncertain than operating decisions which are part of an ongoing strategy.

## 1.6 Sensitivity analysis

Sensitivity analysis assesses how responsive the project's NPV is to changes in the variables used to calculate the NPV. One particular approach to sensitivity analysis - the certainty-equivalent approach - involves the conversion of the expected cash flows of the project to riskless equivalent amounts.

The basic approach of sensitivity analysis in the context of an investment decision is to calculate the project's NPV under alternative assumptions to determine how sensitive it is to changing conditions. An indication is thus provided of those variables to which the NPV is most sensitive and the extent to which those variables would need to change before the investment results in a negative NPV.

The NPV could depend on a number of uncertain independent variables.

- selling price
- sales volume
- cost of capital
- initial cost
- operating costs
- benefits
- cost savings
- residual value

Sensitivity analysis therefore provides an indication of why a project might fail. Management should review critical variables to assess whether or not there is a strong possibility of events occurring which will lead to a negative NPV. Management should also pay particular attention to controlling those variables to which the NPV is particularly sensitive, once the decision has been taken to accept the investment.

A simple approach to deciding which variables the NPV is particularly sensitive to is to calculate the sensitivity of each variable.

$$\text{Sensitivity} = \frac{\text{NPV}}{\text{Present value of project variable}} \%$$

The lower the percentage, the more sensitive the NPV is to that project variable, as the variable would need to change by a smaller amount to make the project non-viable.



### Worked example: Sensitivity analysis

Kenney Co is considering a project with the following cash flows.

Year	Initial investment £'000	Variable costs £'000	Cash inflows £'000	Net cash flows £'000
0	7,000			
1		(2,000)	6,500	4,500
2		(2,000)	6,500	4,500

Cash flows arise from selling 650,000 units at £10 per unit. Kenney Co has a cost of capital of 8%.

#### Requirement

Measure the sensitivity of the project to change in variables.

#### Solution

The PVs of the cash flow are as follows.

E6=E4+E5					
	A	B	C	D	E
1		Time 0	Time 1	Time 2	PV@ 8%
2	Cash inflows		6,500	6,500	11,591 <sup>1</sup>
3	Variable costs		(2,000)	(2,000)	(3,566) <sup>2</sup>
4	Net cash flow		4,500	4,500	8,025
5	Initial investment	(7,000)			(7,000)
6	NPV				1,025

<sup>1</sup> The formula used is =NPV(0.08,C2:D2)

<sup>2</sup> The formula used is =NPV(0.08,C3:D3)

The project has a positive NPV and would appear to be worthwhile. The sensitivity of each project variable is as follows.

#### Initial investment

$$\text{Sensitivity} = \frac{1,025}{7,000} \times 100 = 14.6\%$$

**Sales volume**

$$\text{Sensitivity} = \frac{1,025}{11,591 - 3,566} \times 100 = 12.8\%$$

**Selling price**

$$\text{Sensitivity} = \frac{1,025}{11,591} \times 100 = 8.8\%$$

**Variable costs**

$$\text{Sensitivity} = \frac{1,025}{3,566} \times 100 = 28.7\%$$

**Cost of capital.** We need to calculate the IRR of the project.

B3 =IRR(B2:D2)				
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
1		Time 0	Time 1	Time 2
2	Net cash flow	(7,000)	4,500	4,500
3	IRR	18.52%		

The cost of capital can therefore increase by 132%  $((18.52-8)/8)$  before the NPV becomes negative.

The elements to which the NPV appears to be most sensitive are the selling price followed by the sales volume. Management should thus pay particular attention to these factors so that they can be carefully monitored.

### 1.6.1 Weakness of this approach to sensitivity analysis

These are:

- The method requires that changes in each key variable are isolated. However, management is more interested in the combination of the effects of changes in two or more key variables.
- Looking at factors in isolation is unrealistic since they are often interdependent.
- Sensitivity analysis does not examine the probability that any particular variation in costs or revenues might occur.
- Critical factors may be those over which managers have no control.
- In itself it does not provide a decision rule. Parameters defining acceptability must be laid down by the managers.



### Interactive question 5: Sensitivity analysis

Nevers Ure Co has a cost of capital of 8% and is considering a project with the following 'most likely' cash flows.

Year	Purchase of plant £	Running costs £	Cost savings £
0	(7,000)		
1		2,000	6,000
2		2,500	7,000

## Requirement

Measure the sensitivity (in percentages) of the project to changes in the levels of expected costs and savings.

See **Answer** at the end of this chapter.

## 1.7 Certainty-equivalent approach



### Worked example: Certainty-equivalent approach

Dark Ages Co, whose cost of capital is 10%, is considering a project with the following expected cash flows.

B3=NPV(0.10,C2:E2)					
	A	B	C	D	E
1					
2	Net cash flow	(9,000)	7,000	5,000	5,000
3	PV @10% T1-3	14,252			
4	Less outlay@T0	(9,000)			
5	NPV	5,252			

The project clearly seems to be worthwhile. However, because of the uncertainty about the future cash receipts, the management decides to reduce them to 'certainty-equivalents' by taking only 70%, 60% and 50% of the Years 1, 2 and 3 cash flows respectively. (Note that this method of risk adjustment allows for different risk factors in each year of the project.) These 'certainty-equivalents' should then be discounted at a risk-free rate.

## Requirement

On the basis of the information set out above, assess whether the project is worthwhile. Assume that the risk-free rate is 5%.

## Solution

The risk-adjusted NPV of the project is:

B3=NPV(0.05,C2:E2)					
	A	B	C	D	E
1		Time 0	Time 1	Time 2	Time 3
2	Net cash flow	(9,000)	4,900	3,000	2,500
3	PV @5% T1-3	9,547			
4	Less outlay@T0	(9,000)			
5	NPV	547			

The project appears to be worthwhile after adjusting for uncertainty and should be accepted.

## 2 International investment appraisal



### Section overview

- International investment appraisal was covered briefly at the Professional Level but is analysed in more depth here.
- Many of the projects that companies appraise may have an international dimension. As we have already seen, companies that undertake overseas projects are exposed to such risks as exchange rate movements, political, cultural, litigation and taxation risks.
- Investment appraisal techniques for multinational companies must therefore incorporate these additional complexities into the decision-making process.

With international investment appraisal, multinational companies must take into account factors that affect the behaviour of the economies of those countries which have an impact on their projects. For example, in appraising a tourist development, a company may be making assumptions about the number of tourists from abroad who may be visiting. This will be affected by such factors as interest rates, tax rates and inflation in the countries from which tourists may visit. If interest and tax rates rise, potential tourists will have less money to spend and spending on such luxuries as foreign holidays may decline. Exchange rates will also have an impact on the number of foreign visitors – for example, there would be an increase in the number of UK visitors to the US if the pound strengthened significantly against the US dollar.

### 2.1 Discounted cash flow (DCF) appraisal of foreign investment projects: the basic rules

Discounted cash flow (DCF) appraisal of foreign investment projects is affected by several issues that do not apply to domestic investments in the home country:

- a) Exchange rate risk: future cash flows in the foreign currency, when converted into domestic currency, will be affected by changes in the exchange rate over time.
- b) The cash flows for discounting: when DCF analysis is applied to cash flows in the investing company's own currency, assumptions should be made about the timing of remittances (cash returns) to the company.
- c) The net cash inflows from the project will be in the foreign currency of the investment, but some cash payments may be in the investing company's own currency. For example, the initial investment may be paid for in the company's domestic currency, and there may be some tax payments too in the investing company's own currency.

These issues could be restated in the following terms:

- a) Which currency of cash flows should be discounted (and at what discount rate)?
- b) How should foreign currency cash flows be converted into the investing company's own currency? What is an appropriate rate of exchange?

### 2.2 Effects of exchange rate assumptions on project values

Changes in exchange rates are as important as the underlying profitability in selecting an overseas project.

In a domestic project the NPV was calculated using the formula:

$$NPV = \frac{\sum_{t=1}^n \frac{NCF_t}{(1+WACC)^t} + \frac{TV_n}{(1+WACC)^n} - I_0$$

Where: NCF = net cash flow  
WACC = weighted average cost of capital  
TV = terminal value  
I = initial investment

When a project in a foreign country is assessed we must take into account some specific considerations such as local taxes, double taxation agreements and political risk that affect the present value of the project. The main consideration in an international project is the exchange rate risk; that is, the risk that arises from the fact that the cash flows are denominated in a foreign currency. An appraisal of an international project requires estimates of the exchange rate.

### 2.2.1 Calculating NPV for international projects

There are two alternative methods for calculating the NPV from an overseas project. For a UK company investing overseas, the two options are as follows.

- a) **Method 1.** Discount the expected cash flows that will occur in the investing company's domestic currency. This approach is appropriate when the investing company will pay for the investment in its own currency and when additional tax payments or other expenditures may occur in its own currency.

It may be assumed that all the after-tax cash inflows from the foreign investment will be remitted to the investing company in the year that the cash inflows occur. With this assumption, the net cash inflows in each year should be translated into the domestic currency at a rate of exchange that will be expected at the end of that year.

However, the amount of remittances each year can be adjusted to allow for any retentions of cash in the investment; for example if the foreign Government imposes exchange controls over payments of dividends out of the country to foreign investors.

These cash flows should then be discounted at an appropriate cost of capital. This may be the company's weighted average cost of capital, but a different rate may be appropriate where the investment will significantly affect financial gearing or business risk for the investing company.

A problem with this approach is the need to estimate what the exchange rate will be in each year. An estimated exchange rate can be calculated using purchasing power parity (PPP) theory and estimates of rates of inflation in the two countries.

- b) **Method 2.** Discount the cash flows in the host country's currency from the project at an adjusted discount rate for that currency, and then translate the resulting NPV at the spot exchange rate in Year 0.

This approach is appropriate when the initial investment is made in the foreign currency of the project. For example, if a UK company borrows in euros to make an investment in the Eurozone, the project cash flows in euros can be discounted at an appropriate cost of capital to establish a value for the project in euros. This value can then be translated into a sterling equivalent at the spot rate of exchange.



## Worked example: Foreign investment appraisal

Bromwich plc, a UK company, is considering undertaking a new project in Portugal. This will require initial capital expenditure of €1,250 million, with no scrap value envisaged at the end of the five-year lifespan. There will also be an initial working capital requirement of €500 million, which will be recovered at the end of the project. The initial capital will therefore be €1,750 million, and the company will pay for this investment by purchasing the euros required in exchange for sterling. Pre-tax net cash inflows of €800 million are expected to be generated each year from the project. It is assumed that all after-tax cash flows from the investment will be remitted to the UK in the year that they occur.

Company tax will be charged in Portugal at a rate of 40%, with depreciation on a straight-line basis being an allowable deduction for tax purposes. Portuguese tax is paid at the end of the year following that in which the taxable profits arise.

There is a double taxation agreement between the UK and Portugal, which means that no UK tax will be payable on the project profits.

The current €/£ spot rate is 1.6, and the euro is expected to appreciate against the £ by 5% per year.

A project of similar risk recently undertaken by Bromwich plc in the UK had a required post-tax rate of return of 10%.

### Requirement

Calculate the present value of the project.

### Solution



#### Concluding, recommending and communicating

It is good practice to clearly state your workings for each calculation together with any assumptions you have made, and reservations you have regarding the reliability of the outcome determined. This will provide depth to your conclusion which demonstrates the ability to communicate the overall outcome to key stakeholders. Don't forget to clearly conclude whether the investment should be accepted or not.

### Method 1 - conversion of flows into sterling and discounting at the sterling discount rate

B10 =NPV(0.10,C9:H9)								
	A	B	C	D	E	F	G	H
1		0	1	2	3	4	5	6
2	Sterling investm ent (£m)							
3	Capital (1,750/1 .60)	(1,093.7 5)						
4	<b>Euroflows (€m)</b>							

B10 =NPV(0.10,C9:H9)								
	A	B	C	D	E	F	G	H
5	Net pre-tax cash flows		800	800	800	800	800	
6	Tax (see note)	-	-	220	220	220	220	220
7			800	580	580	580	1,080	-220
8	Exchange rate €/£		1.52	1.44	1.37	1.30	1.24	1.18
9	Cash flows in sterling	(1,093.75)	526.32	401.66	422.80	445.05	872.34	(187.05)
10	PV @10% T1-6	1,868.12						
11	Less initial investment @T0	(1,093.75)						
12	NPV in sterling	774.37						

Tax = 40% of (800 - 250) = 220, payable one year in arrears



### Interactive question 6: International investment appraisal

A UK company is considering an investment in a foreign country, Marshland. The investment would last for four years and would cost £500,000. At the end of the four years, the investment would have no residual value. Annual cash flows in Marshland dollars (M\$) are expected to be:

- revenue M\$2 million
- operating costs: M\$1 million
- tax on net operating cash flows: 25%. Tax is payable in the same year as the operating profit to which it relates.

However, revenues are expected to increase with inflation by 5% in each year and operating costs are expected to increase by 8% per year. The general rate of inflation is expected to be 4% each year in the UK and 6% each year in Marshland.

Assume that all after-tax cash flows are remitted to the UK in the year that they arise. No further tax will be payable in the UK. Ignore capital allowances. Use PPP theory to estimate the exchange rate for each year. The current spot exchange rate is M\$4 to the £.

The company will apply a cost of capital of 10% to the project.



**Requirement**

Calculate an NPV for this project.  
See **Answer** at the end of this chapter.

**Interactive question 7: International investment appraisal**

Donegal, a company based in the country of Earland which has the Franc (F) as its currency, is considering whether to establish a subsidiary in Ruritania (where the currency is the \$), at a cost of \$2,400,000. This would be represented by non-current assets of \$2,000,000 and working capital of \$400,000. The subsidiary would produce a product which would achieve annual sales of \$1,600,000 and incur cash expenditures of \$1,000,000 a year.

The company has a planning horizon of four years, at the end of which it expects the realisable value of the subsidiary's non-current assets to be \$800,000. It also expects to be able to sell the rights to make the product for \$500,000 at the end of four years.

It is the company's policy to remit the maximum funds possible to the parent company at the end of each year.

Tax is payable at the rate of 35% in Ruritania and is payable one year in arrears.

Tax-allowable depreciation is at a rate of 20% on a straight-line basis on all non-current assets.

Administration costs of F100,000 per annum will be incurred each year in Earland over the expected life of the project.

The Earland taxation rate on Earland income and expenditure is 24%, payable one year in arrears. Assume there is full double taxation relief in operation between Earland and Ruritania.

The Ruritanian \$:F exchange rate is 5:1.

The company's cost of capital for the project is 10%.

**Requirement**

Calculate the NPV of the project.  
See **Answer** at the end of this chapter.

**Method 2 - discounting foreign cash flows at an adjusted discount rate**

When we use the second method we need to find the cost of capital for the project in the host country. If we are to keep the cash flows in euros, then they need to be discounted at a rate that takes account of both the UK discount rate (10%) and the rate at which the exchange rate is expected to decrease (5%).

We can use the International Fisher effect to find the cost of capital in the host country that takes account of the UK discount rate and the rate at which the exchange rate is expected to decrease. We can then use this rate to discount the euro cash flows.

The required return in euros can be calculated as:

$$1+r = \frac{e_1}{e_0} (1 + r_f)$$

$$\text{Or } 1+r = \frac{1.52}{1.6} \times 1.10 = 1.045$$

Thus, the euro discount rate is 4.5% and discounting the euro flows at this rate produces an NPV in euros of NPV = €1,238.78 million (as shown in the workings below).

B8=NPV(0.045,C7:H7)								
	A	B	C	D	E	F	G	H
1		0	1	2	3	4	5	6
2	<b>Euroflows (€m)</b>							
3	Capital	-1,750					500	
4	Net cash flows		800	800	800	800	800	
5	Depreciation		250	250	250	250	250	
6	Tax			220	220	220	220	220
7	Net cash flows	-1,750	800	580	580	580	1,080	-220
8	PV @4.5% T1-6	2,989						
9	Less investm ent@T0	-1,750.00						
10	NPV in euros	1,239						

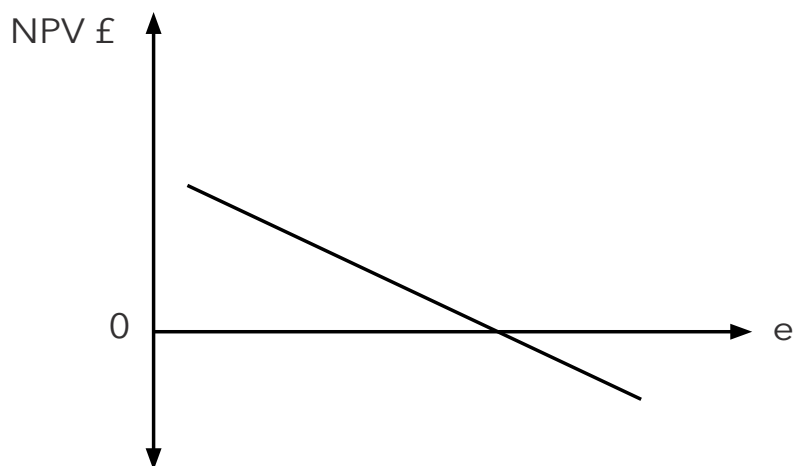
Translating this present value at the spot rate gives:

$$\text{NPV} = \text{€}1,239\text{m}/1.6 = \text{£}774.38\text{m}$$

### 2.2.2 The effect of exchange rates on NPV

Now that we have created a framework for the analysis of the effects of exchange rate changes on the NPV from an overseas project we can calculate the impact of exchange rate changes on the sterling denominated NPV of a project.

When there is a devaluation of sterling relative to a foreign currency, the sterling value of the cash flows increases and the NPV increases. The opposite happens when the domestic currency appreciates. In this case the sterling value of the cash flows declines and the NPV of the project in sterling declines. The relationship between NPV in sterling and the exchange rate is shown in the diagram below (where 'e' is the exchange rate):



### Worked example: Effect of changes in the exchange rate

Calculate the NPV for the Portugal project of Bromwich plc (see previous worked example on overseas investment appraisal for details) under three different scenarios.

- 1) The exchange rate remains constant at €1.60 for the duration of the project.
- 2) Sterling appreciates 5% every year.
- 3) Sterling depreciates 5% every year.

#### Solution

The NPV under the three scenarios is given in the table below.

Period	Cash flows in €m	Constant exchange rate	Cash flows in £m	
			Sterling depreciates 5% per year	Sterling appreciates 5% per year
0	-1,750	-1,093.75	-1,093.75	-1,093.75
1	800	500	526.32	476.19
2	580	362.5	401.66	328.80
3	580	362.5	422.80	313.14
4	580	362.5	445.05	298.23
5	1,080	675	872.34	528.88
6	-220	-137.5	-187.05	-102.60
Present value in sterling		521.83	774.38	320.32

## 2.3 Forecasting cash flows from foreign projects

### 2.3.1 Effect on exports

When a multinational company sets up a subsidiary in another country, to which it already exports, the relevant cash flows for the evaluation of the project should take into account the loss of export earnings in the particular country. The NPV of the project should take explicit account of this potential loss by deducting the loss of export earnings from the relevant net cash flows.

### 2.3.2 Taxes

Taxes play an important role in the investment appraisal, as they can affect the viability of a project. The main aspects of taxation in an international context are:

- corporate taxes in the host country
- investment allowances in the host country
- withholding taxes in the host country
- double taxation relief in the home country (discussed below)
- foreign tax credits in the home country

The importance of taxation in corporate decision making is demonstrated by the use of **tax havens** by some multinationals as a means of deferring tax on funds prior to their repatriation or reinvestment.

A tax haven is likely to have the following characteristics.

- a) Tax on foreign investment or sales income earned by resident companies, and withholding tax on dividends paid to the parent, should be low.
- b) There should be a stable Government and a stable currency.
- c) There should be adequate financial services support facilities.

### 2.3.3 Subsidies

Many countries offer concessionary loans to multinational companies in order to entice them to invest in the country. The benefit from such concessionary loans should be included in the NPV calculation. The benefit of a concessionary loan is the difference between the repayment when borrowing under market conditions and the repayment under the concessionary loan.

### 2.3.4 Exchange restrictions

In calculating the NPV of an overseas project, only the proportion of cash flows that are expected to be repatriated should be included in the calculation of the NPV.

### 2.3.5 Impact of transaction costs on NPV for international projects

Transaction costs are incurred when companies invest abroad due to currency conversion or other administrative expenses. These should also be taken into account.

## 2.4 Double taxation relief (DTR)



### Definition

**Double taxation agreement:** An agreement between two countries intended to avoid the double taxation of income which would otherwise be subject to taxation in both.

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Typical provisions of double taxation agreements based on the OECD Model Agreement are as follows.

- a) Double taxation relief (DTR) is given to taxpayers in their **country of residence** by way of a credit for tax suffered in the country where income arises. This may be in the form of relief for withholding tax only or, given a holding of specified size in a foreign company, for the underlying tax on the profits out of which dividends are paid.
- b) **Total exemption from tax** is given in the country where income arises in the hands of, for example, visiting diplomats and teachers on exchange programmes.

- c) **Preferential rates of withholding tax** are applied to, for example, payments of rent, interest and dividends. The usual rate is frequently replaced by 15% or less.
- d) There are **exchange of information** clauses so that tax evaders can be pursued internationally.
- e) There are **rules to determine** a person's residence and to prevent dual residence (tiebreaker clauses).
- f) There are **clauses** which render certain profits taxable in only one rather than both of the contracting states.
- g) There is a **non-discrimination clause** so that a country does not tax foreigners more heavily than its own nationals.



### Context example: DTR

Suppose the tax rate on profits in the Federal West Asian Republic is 20%, the UK company tax is 30%, and there is a double taxation agreement between the two countries.

A subsidiary of a UK firm operating in the Federal West Asian Republic earns the equivalent of £1m in profit, and therefore pays £200,000 in tax on profits. When the profits are remitted to the UK, the UK parent can claim a credit of £200,000 against the full UK tax charge of £300,000, and hence will only pay £100,000.

## 2.5 Corporate reporting consequences

We have discussed the impact of IAS 21, *The Effects of Changes in Foreign Exchange Rates* on how overseas investments are accounted for in earlier chapters. Assets and transactions associated with investments will be reported at the exchange rate at the date the transactions occurred or the assets were purchased. If assets are subsequently revalued they will be carried at the exchange rate at the date the revaluation took place.

# 3 Real options



## Section overview

- Real options give the right to make decisions when it is profitable for the company. Real options were covered at Professional Level. However, the topic is taken further at Advanced Level by providing greater detail of the types of options available and also considering the process of how to value such options.
- Real options are not derivative instruments in the way that traded options such as those for interest rate and foreign currency hedging are. Real options are very useful in the context of selecting strategies.
- A product option is where the firm has the ability to sell a product in the future but does not have the obligation to do so.

A real option is the right, but not the obligation, to undertake a business decision, such as capital investment – for example, the option to open a new branch is a real option. Unlike financial options, real options are not tradable – for example, the company cannot sell the right to open another branch to a third party. While the term 'real option' is relatively new, businesses have been making such decisions for a long time.

This type of option is not a derivative instrument in the same way as are foreign currency and interest rate options. Real options pertain to physical or tangible options (that is, choice) - hence the name. For example, with research and development, firms have the option (choice) to expand, contract or abandon activities in a particular area in the future.

Real options can have a significant effect on the valuation of potential investments, but are typically ignored in standard DCF analysis, where a single expected NPV is computed.

In this section we review the various options embedded in projects and provide examples.

### 3.1 Option to delay

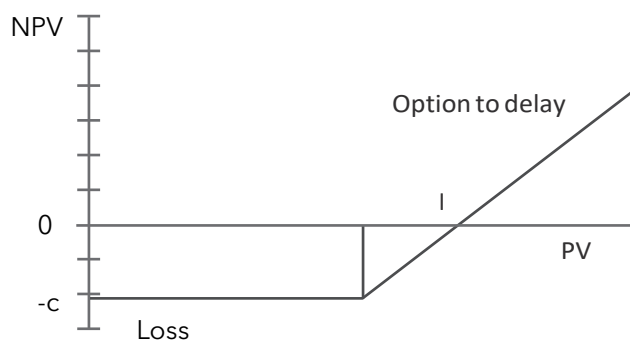
When a firm has exclusive rights to a project or product for a specific period, it can delay starting this project or product until a later date. A traditional investment analysis just answers the question of whether the project is a 'good' one if taken at a particular point in time, eg, today. Thus, the fact that a project is not selected today either because its NPV is negative, or because its IRR is less than the cost of capital, does not mean that the rights to this project are not valuable.

Take a situation where a company is considering paying an amount  $C$  to acquire a licence to mine copper. The company needs to invest an extra amount in order to start operations. The company has three years over which to develop the mine, otherwise it will lose the licence. Suppose that today copper prices are low and the NPV from developing the mine is negative. The company may decide not to start the operation today, but it has the option to start any time over the next three years provided that the NPV is positive. Thus the company has paid a premium  $C$  to acquire an American-style option on the present value of the cash flows from operation, with an exercise price equal to the additional investment ( $I$ ). The value of the option to delay is therefore:

$$\text{NPV} = (\text{PV} - I), \text{ if } \text{PV} > I$$

$$\text{NPV} = 0 \text{ otherwise}$$

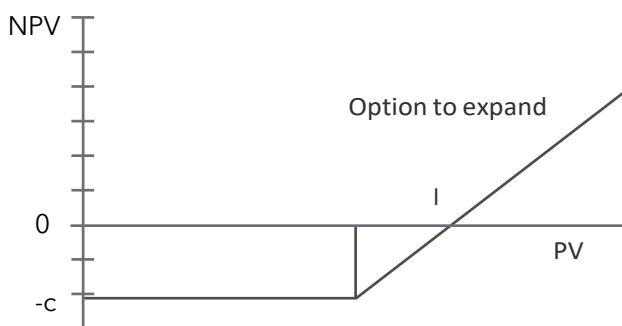
The payoff of the option to delay is shown below and it is the same as the payoff of a call option, the only difference being that the underlying is the present value and the exercise price is the additional investment.



### 3.2 Option to expand

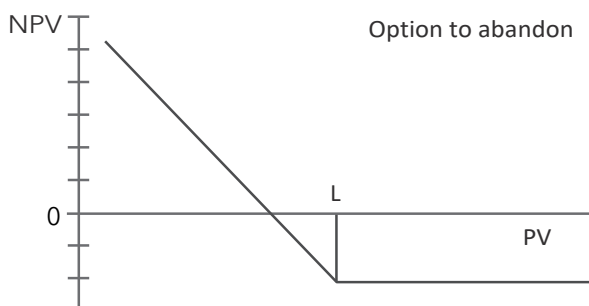
The option to expand exists when firms invest in projects which allow them to make further investments in the future or to enter new markets. The initial NPV calculation may suggest that the project is not worth undertaking. However, when the option to expand is taken into account, the NPV may become positive and the project worthwhile. The initial investment may be seen as the premium required to acquire the option to expand.

Expansion will normally require an additional investment, call it  $I$ . The extra investment will be undertaken only if the present value from the expansion will be higher than the additional investment, ie, when  $PV > I$ . If  $PV < I$ , the expansion will not take place. Thus the option to expand is again a call option of the present value of the firm with an exercise price equal to the value of the additional investment.



### 3.3 Option to abandon

Whereas traditional capital budgeting analysis assumes that a project will operate in each year of its lifetime, the firm may have the option to cease a project during its life. This option is known as an abandonment option. Abandonment options, which are the right to sell the cash flows over the remainder of the project's life for some salvage value, are like American put options. When the present value (PV) of the remaining cash flows falls below the liquidation value ( $L$ ), the asset may be sold. Abandonment is effectively the exercising of a put option. These options are particularly important for large capital intensive projects such as nuclear plants, airlines and railroads. They are also important for projects involving new products where their acceptance in the market is uncertain and companies would like to switch to more profitable alternative uses.



### 3.4 Option to redeploy

The option to redeploy exists when the company can use its assets for activities other than the original one. The switch from one activity to another will happen if the PV of cash flows from the new activity exceeds the costs of switching. The option to abandon is a special case of an option to redeploy.

These options are particularly important in agricultural settings. For example, a beef producer will value the option to switch between various feed sources, preferring to use the cheapest acceptable alternative.

These options are also valuable in the utility industry. An electric utility, for example, may have the option to switch between various fuel sources to produce electricity. In particular, consider an electric utility that has the choice of building a coal-fired plant or a plant that burns either coal or gas.

Naïve implementation of DCF analysis might suggest that the coal-fired plant be constructed since it is considerably cheaper. Whereas the dual plant costs more, it provides greater flexibility.

Management has the ability to select which fuel to use and can switch back and forth depending on energy conditions and the relative prices of coal and gas. The value of this operating option should be taken into account.

### 3.5 Product options

Examples of product options are patents and copyrights, and firms owning natural resources. Firms that have product options are often research and technology based.

When a firm has a product option that is not currently generating cash flow, there is a risk that a DCF approach to valuation will not fully reflect the full value of the option. This is because a DCF approach may not incorporate all the possible future cash flows of the company.

### 3.6 Problems with traditional DCF techniques

In the context of a product option, the DCF approach is not fully appropriate, for the following reasons.

- The options represent a current asset of the business, but are not generating any cash flows.
- Any cash flows expected to be generated by the product could be outside the detailed forecasting period.

### 3.7 Possible solutions to the valuation problem

There are three possible methods of valuing product options.

- Value the option on the open market.** This is only possible if there is a traded market in such options. If there is no active market or if the option is difficult to separate from the other operations of the firm, this approach is probably not feasible.
- Use a traditional DCF framework** and factor in a higher growth rate than would be justified given the existing assets of the firm. The problem with this is that any growth rate used will be subjective. In addition, it expresses contingent cash flows as expected cash flows.
- Use an option-based approach** to valuation. This is considered below.

### 3.8 Use of option pricing models

#### 3.8.1 Problems with using option pricing models to value product options

The problems of using option pricing models, such as Black-Scholes, are:

- They need the underlying asset to be traded.** This is because the model is based on the principle of arbitrage, which means that the underlying asset must be easy to buy and sell. This is not a problem when valuing options on quoted shares. However, the underlying asset in the context of product options will not be traded, meaning that arbitrage is not possible.
- They assume that the price of the underlying asset follows a continuous pattern.** While this may be a reasonable approximation most of the time for quoted shares, it is clearly inappropriate in the context of product options. The impact of this is that the model will



undervalue deeply out of the money options, since it will underestimate the probability of a sudden large increase in the value of the underlying asset.

- c) **They assume that the standard deviation of price of the underlying asset is known** and does not vary over the life of the option. While this may be a reasonable assumption in the context of short-dated equity options, it is not appropriate for long-term product options.
- d) **They assume that exercise occurs at a precise point in time.** In the case of product options, exercise may occur over a long period of time. For example, if a firm has the right to mine natural resources, it will take time to extract the resources. This will reduce the PV of the asset.

### 3.8.2 Using option pricing models to value product patents

When valuing product patents as options, the key inputs for an option pricing model will need to be identified, being the underlying asset price, the strike price, the expected volatility of the underlying asset price and the time to expiry. The following approach could be adopted.

- a) **Identify the value of the underlying asset.** This will be based on the expected cash flows that the asset can generate. Given the uncertain nature of the cash flows and the distant time periods in which they may arise, it clearly will be difficult to value the underlying asset precisely.
- b) **Identify the standard deviation of the cash flows above.** Again, this will be difficult to identify, owing to changes in the potential market for the product, changes in technology and so on. It would, however, be possible to use techniques such as scenario analysis. The higher the standard deviation, the more valuable the asset.
- c) **Identify the exercise price of the option.** This is the cost of investing in the resources needed to produce the asset. It is typically assumed that this remains constant in PV terms, with any uncertainty being reflected in the cash flows of the asset.
- d) **Identify the expiry date of the option.** This is when the patent expires. Any cash flows after this date are expected to have an NPV of zero, since there will be generic competition after patent protection ends.
- e) **Identify the cost of delay.** If the product is not implemented immediately, this will reduce the value of the cash flows from the project, as competing products will enter the market in future years.

A similar approach could be adapted to valuing other product options, such as natural resources. Where a company is investing in research and development, but has no patents developed, the same approach will apply, but the value of the option is clearly even more uncertain due to the greater uncertainty of the inputs.



#### Professional skills focus: Structuring problems and solutions

You are expected to be able to use structured information to identify evidence-based solutions and identify opportunities to add value. The application of real options to an investment decision can add significant value specifically where the initial NPV calculation may suggest that a project is not worth undertaking.

# 4 Externalities and social responsibilities



## Section overview

- Investment appraisals should take into account costs connected with the environment that are a consequence of the impacts that the investment has.
- Businesses should also consider the risk that possible future contingencies connected with their environmental impacts will materialise.
- Businesses may also wish to provide information about the externalities (social impacts) that are a consequence of their activities.

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There are a number of costs and other impacts resulting from the effects of investments on the environment that businesses should consider.



## Definition

**Environmental management accounting:** The generation and analysis of both financial and non-financial information in order to support internal environmental management processes.

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The United Nations Division for Sustainable Development (UNSD) produced a similar definition of environmental management accounting (EMA) as being the identification, collection, analysis and use of two types of information for internal decision making:

- a) physical information on the use, flows and destinies of energy, water and materials (including wastes)
- b) monetary information on environment-related costs, earnings and savings
- c) Environment-related costs could be categorised into four groups.
- d) **Environmental protection (prevention) costs** - the costs of activities undertaken to prevent adverse environmental impacts such as the production of waste
- e) **Environmental detection costs** - costs incurred to ensure that the organisation complies with regulations and voluntary standards
- f) **Environmental internal failure costs** - costs incurred from performing activities that have produced contaminants and waste that have not been discharged into the environment
- g) **Environmental external failure costs** - costs incurred on performing activities after discharging waste into the environment

Many **conventional accounting systems** are unable to apportion **environmental costs** to products, processes and services and so they are simply **classed as general overheads**. EMA, on the other hand, attempts to make all relevant, significant costs visible so that they can be considered when making business decisions.

## 4.1 Other costs

A 1998 IFAC report listed a large number of costs that a business might suffer.

### Direct or indirect environmental costs

- waste management
- remediation costs or expenses

- compliance costs
- permit fees
- environmental training
- environmentally driven research and development
- environmentally related maintenance
- legal costs and fines
- environmental assurance bonds
- environmental certification and labelling
- natural resource inputs
- record keeping and reporting

#### Contingent or intangible environmental costs

- uncertain future remediation or compensation costs
- risk posed by future regulatory changes
- product quality
- employee health and safety
- environmental knowledge assets
- sustainability of raw material inputs
- risk of impaired assets
- public/customer perception

Clearly, some of the contingent costs will be very difficult to predict, both in terms of how much they will be and how likely they are to arise. Management's **risk appetite**, especially perhaps as regards threats to the company's reputation if environmental problems do arise, is likely to be very important.

Companies that appear to be bearing significant environmental risks may also face **increased cost of capital** because investors and lenders demand a higher risk premium.

## 4.2 Externalities



### Definition

**Externality:** The difference between the market and social costs, or benefits, of an activity. An externality is a cost or benefit that the market fails to take into account.

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One way in which businesses can help promote sustainability is to provide information about the external environmental effects - the **externalities** - of their investments and activities. This data can then be used in decision-making processes, both of government, and of other organisations, by **internalising** the costs of environmental effects. In addition, better costing of externalities will **influence the price mechanism** and hence the economic decisions that are taken.

Examples of externalities could include:

- depletion of natural resources
- noise and aesthetic impacts
- residual air and water emissions
- long-term waste disposal (exacerbated by excessive product packaging)

- uncompensated health effects
- change in the local quality of life (through for example the impact of tourism)

With some of these impacts, however, a business may be contributing negatively to the environment, but positively in other ways. An increase in tourism will provide jobs and other economic benefits to the community, but could lead to adverse effects on the environment as the roads become more crowded or because of infrastructure improvements.

Ways of assessing the impact of inputs include the **measurement of key environmental resources** used such as energy, water, inventories and land. Measurement of the impact of outputs includes the proportion of product **recyclability, tonnes of carbon or other gases produced by company activities, waste or pollution**. A business may also be concerned with the **efficiency of its processes**, maybe carrying out a mass balance or yield calculation.



### Context example: Externalities

The UK Treasury's Green Book, which provides guidance for public sector bodies on how to appraise proposals before committing funds to a policy, programme or project, considers non-market impacts as part of using social cost-benefit analysis to assess the net value of a policy or project to society as a whole. Guidance on environmental impacts includes coverage of the following areas.

- **Uncertain future remediation or compensation costs.**
- **Greenhouse gases** - Expressed in terms of carbon saving or additional emissions and using these calculations to assess the societal damage cost of carbon or the monetary value of the emissions.
- **Climate change** - The UK Climate Impacts programme provides guidance on the risks and uncertainties of climate change and a methodology for costing impacts.
- **Air quality** - Impacts on air quality may be measured by the total volume change in the emissions of a particular pollutant from a particular source, the likely impact of this change on levels of air quality or the total number of households likely to be affected by these changes.
- **Landscape** - Landscape measures assess the impact on townscape, heritage and other related matters.
- **Water** - The impact on both chemical water quality and ecological status needs to be considered. Particularly difficult issues include assessing how far distant costs may occur and isolating marginal damage costs for particular pollutants from other impacts. Hence valuations are geared towards producing changes in environmental quality.
- **Biodiversity** - This means the variety of life in a particular environment, which can be difficult to measure, define and value. However, the guidance comments that if biodiversity is disregarded, there is a risk of excessive and potentially irreversible degradation of natural resource stocks.
- **Noise** - The guidance notes that many of the effects of noise are subjective, but nevertheless it is possible to assess noise based on its source, scale and nature. The impact of new transport infrastructure or industrial developments can be quantified by the number of people affected by changes in noise levels.
- **Disamenity** - The guidance comments that activities including the transport and disposal of waste and the quarrying of minerals and aggregates give rise to a range of undesirable impacts that can undermine public enjoyment. Areas to be measured could include noise, traffic disturbance, dust, odours and visual intrusion.

([www.gov.uk/guidance/assessing-environmental-impact-guidance](http://www.gov.uk/guidance/assessing-environmental-impact-guidance)) [Accessed 8 August 2018]

As we saw in the chapter Strategic performance management, it is important for organisations to consider the environmental and social context within which they operate, and this is reiterated by the United Nations (UN) 2030 Agenda for Sustainable Development.

This 'Agenda' includes 17 global goals for sustainable development, with the aims of ending poverty, combatting climate change, and fighting injustice and inequality.

## 4.3 Corporate reporting issues

### 4.3.1 Impact on accounts

We discussed generally in the chapter Finance awareness accounting standards that are relevant for the treatment of environmental issues. The consequences of making particular investments may include incurring of liabilities for waste disposal, pollution, decommissioning and restoration expenses. The company may therefore be obliged to make provisions under the terms of IAS 37, *Provisions, Contingent Liabilities and Contingent Assets* if it is probable that it will have to transfer economic benefits to settle its liabilities, and a reliable estimate will have to be made of the benefits that have to be transferred.



#### Context example: Environmental disclosures

IAS 37 gives a couple of examples related to contaminated land in an appendix. One example is where a company has been contaminating land for some years and a law is virtually certain to be passed requiring previously contaminated land to be cleaned up. The other instance is where a company contaminates land in a country where there is no environmental legislation, but the company has a widely published environmental policy undertaking to clean up all contamination that it causes. IAS 37 suggests that in both these situations a provision should be made, as the company is virtually certain to transfer economic benefits.

IAS 37 also covers the situation where costs of cleaning up are expected to be reduced by future changes in technology. The standard suggests that the amount of the provision should reflect the reasonable expectations of technically qualified, objective observers, taking account of all available evidence of the technology that will be available at the time of the clean-up. Generally, it would not be appropriate to anticipate the development of a completely new technology for cleaning up unless it is supported by sufficient objective evidence.

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### 4.3.2 Business review

As discussed in the chapter Finance awareness, the business review within the directors' report should include reporting on environmental issues, including reporting the impact of the company's business on the environment.

Most of this information will be disclosed on an aggregate level, but possibly some individual investments might be material because of their size, financial or non-financial impacts or risks that details relating to them should be shown in the review.



#### Professional skills focus: Applying judgement

Investment involves expenditure now in return for a stream of future returns. As in most decision-making situations data is based on forecasts which are subject to varying degrees of uncertainty. Investment appraisal requires you to use your judgement to assess

whether the uncertain cost of the investment is outweighed by its uncertain benefits. The calculation of an NPV is therefore simply an estimate of the addition to shareholders' wealth at a point in time and will change as the underlying variables change. When producing recommendations, it is important to also consider the non- financial information you are presented with in the question.

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# Summary

Tick off

The adjusted present value approach examines the impact of borrowing on investment appraisal and valuation.

The modified internal rate of return (MIRR) is the IRR that would result without the assumption that project proceeds are reinvested at the IRR rate.

The impact of risk can be considered as part of investment appraisal by using sensitivity analysis or the certainty-equivalent approach, or considering expected value, likelihood of loss and maximum loss.

International investment appraisal must take into account such complexities as effects of exchange rate assumptions, overseas taxation and exchange restrictions. Transaction, translation and economic exposure must be considered, as well as political, cultural and litigation risks.

Real options give the right to the management of a company to make decisions when it is profitable for the company. They are not derivative instruments and are not tradeable they relate to physical or tangible options. Options include the choice to expand, abandon, delay or redeploy.

The option to expand can be viewed as a call option; the option to abandon can be viewed as a put option.

Environmental management accounting helps businesses bring into investment appraisal costs associated with the environment and helps businesses assess the externalities that may be associated with the investment decision.

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	Can you calculate the NPV of a project, building in tax and inflation? (Topic 1)
2.	Can you appraise an overseas project using both of the recognised methods of international investment appraisal? (Topic 2)
3.	Can you account for double tax relief? (Topic 2)
4.	Can you explain the real options that attach to an investment decision? (Topic 3)
5.	Can you explain the four types of environment related costs? (Topic 4)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed.

Question	Learning benefit from attempting this question
2 PG plc	This is a good introductory question covering international investment appraisal and it is a revision of what you would have covered in your Financial Management studies. Work through this question carefully before attempting exam standard questions.
3 Muggins plc	A good question to practice calculating NPV including adjustments required for certainty equivalent factors. Having a good layout for your calculations will help you tackle this question.
4 Zedland	In this question you are asked to advise if a new postal service should be introduced in Zedland. The requirement doesn't specifically ask you to calculate NPV however it should be obvious from the information in the question (cashflows, inflation, tax, cost of capital) that the investment should be appraised using NPV analysis.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development before you start the next chapter.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.



# Technical reference

## 1 IAS 21, The Effects of Changes in Foreign Exchange Rates

- IAS 21 prescribes how to include foreign currency transactions and foreign operations in the financial statements of an entity, and how to translate financial statements into a presentation currency. The principal issues are: which exchange rate(s) to use, and how to report the effects of changes in exchange rates.

## 2 IAS 37, Provisions, Contingent Liabilities and Contingent Assets

- Outlines the accounting for provisions (liabilities of uncertain timing or amount), as well as contingent assets (possible assets) and contingent liabilities (possible obligations and present obligations which are not probable or are not reliably measurable). Provisions are measured at the best estimate of the expenditure required to settle the present obligation, and reflect the present value of expenditures required to settle the obligation where the time value of money is material.

# Self-test questions

Answer the following questions.

## 1 Project

A project has the following estimated cash flows:

Year	Year 0	Year 1	Year 2	Year 3	Year 4
Initial investment	-75,000	0	0	0	0
Net cash inflows	0	19,000	25,000	30,000	32,000

### Requirement

What is the modified internal rate of return if the project's cost of capital is 8%? Based on this information, should the company invest in the project? Give reasons for your answer.

## 2 PG plc

PG plc is considering investing in a new project in Canada which will have a life of four years. The initial investment is C\$150,000, including working capital. The net after-tax cash flows which the project will generate are C\$60,000 per annum for Years 1, 2 and 3 and C\$45,000 in Year 4. The terminal value of the project is estimated at C\$50,000, net of tax.

The current spot rate of C\$ against sterling is 1.7000. Economic forecasters expect sterling to strengthen against the Canadian dollar by 5% per annum over the next four years.

The company evaluates UK projects of similar risk at 14%.

### Requirement

Calculate the NPV of the Canadian project.

## 3 Muggins plc

Muggins plc is evaluating a project to produce a new product. The product has an expected life of four years. Costs associated with the product are expected to be as follows.

### Variable costs per unit

Labour: £30

Materials:

- 6 kg of material X at £1.64 per kg
- 3 units of component Y at £4.20 per unit

Other variable costs £4.40

**Indirect costs each year**

Apportionment of head office salaries £118,000 Apportionment of general building occupancy £168,000

Other overheads £80,000 of which £60,000 represents additional cash expenditures (including lease payments for the new machinery).

To manufacture the product a production manager will have to be recruited at an annual gross cost of £34,000 and one assistant manager, whose current annual salary is £30,000, will be transferred from another department, where he will be replaced by a new appointee at a cost of £27,000 a year.

The necessary machinery will be leased. It will be installed in the company's factory. This will take up space that would otherwise be rented to another local company for £135,000 a year. This rent (for the factory space) is not subject to any uncertainty, as a binding four-year lease would be created.

60,000 kg of material X is already in inventory, at a purchase value of £98,400. It has no use other than the manufacture of the new product. The disposal value is £50,000.

Expected sales volumes of the product, at the proposed selling price of £125 a unit, are as follows.

Year	Expected sales
	Units
1	10,000
2	18,000
3	18,000
4	19,000

All sales and costs will be on a cash basis and should be assumed to occur at the end of the year. Ignore taxation.

The company requires that certainty-equivalent cash flows have a positive NPV at a discount rate of 14%. Adjustment factors to arrive at certainty-equivalent amounts are as follows.

Year	Costs	Benefits
1	1.1	0.9
2	1.3	0.8
3	1.4	0.7
4	1.5	0.6

**Requirement**

Assess on financial grounds whether the project is acceptable.

**4 Zedland**

The general manager of the nationalised postal service of a small country, Zedland, wishes to introduce a new service. This service would offer same-day delivery of letters and parcels posted before 10:00 within a distance of 150 km. The service would require 100 new vans costing \$8,000 each and 20 trucks costing \$18,000 each. 180 new workers would be employed at an average annual wage of \$13,000 and 5 managers at average annual salaries of \$20,000 would be moved from their existing duties, where they would not be replaced.

Two postal rates are proposed. In the first year of operation letters will cost \$0.525 and parcels \$5.25. Market research, undertaken at a cost of \$50,000, forecasts that demand will average 15,000 letters and 500 parcels each working day during the first year, and 20,000 letters and 750 parcels a day thereafter. There is a 5-day working week and a 52-week year. Annual running and maintenance costs on similar new vans and trucks are estimated in the first year of operation to be \$2,000 a van and \$1,000 a truck. Annual running and maintenance costs on new vans and trucks will increase by 25% a year. Vehicles are depreciated over a five-year period on a straight-line basis. Depreciation is tax allowable and the vehicles will have negligible scrap value at the end of five years. Advertising in Year 1 will cost \$1,300,000 and Year 2 \$263,000. There will be no advertising after Year 2. Existing premises will be used for the new service but additional costs of \$150,000 a year will be incurred in Year 1.

All the above data are based on price levels in the first year and exclude any inflation effects. Staff and premises costs are expected to rise because of inflation by approximately 5% a year during the 5-year planning horizon of the postal service. The Government of Zedland will not allow the prices charged by nationalised industries to increase by more than 5%.

Nationalised industries are normally required by the Government to earn at least an annual after-tax return of 5% on average investment and to achieve, on average, at least zero net present value on their investments.

The new service would be financed half by internally generated funds and half by borrowing on the capital market at an interest rate of 12% a year. The opportunity cost of capital for the postal service is estimated to be 14% a year. Corporate taxes in Zedland, to which the postal service is subject, are at the rate of 30% for annual profits of up to \$500,000 and 40% for the balance in excess of \$500,000. Tax is payable one year in arrears. The postal service's taxable profits from existing activities exceed \$10,000,000 a year. All transactions may be assumed to be on a cash basis and to occur at the end of the year, with the exception of the initial investment which would be required almost immediately.

### **Requirement**

Acting as an independent consultant, prepare a report advising whether the new postal service should be introduced. Include in your report a discussion of other factors that might need to be taken into account before a final decision is made on the introduction of the new postal service. State clearly any assumptions that you make.

Now go back to the Learning outcomes in the introduction. If you are satisfied you have achieved these objectives, please tick them off.

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

## Answer to Interactive question 1

- 1.1 **Note.** The exploratory work of £15,000 is a **sunk** cost and is therefore not relevant when appraising the project.

### Payback period

In this case, the payback period will be the amount of time it will take Robbie plc to earn £500,000.

Year	Cash flow £	Cumulative cash flow £
1	200,000	200,000
2	200,000	400,000
3	200,000	600,000

Payback is therefore 2 years + (100,000/200,000) = 2.5 years

### 1.2 Accounting rate of return (ARR)

ARR = Average Accounting Profit / Average Investment

Accounting Profit = Cash flow - Depreciation

Depreciation = Cost - Resale value / Useful life

= 500,000 - 50,000 / 4

= £112,500 p.a.

Average profit per annum = £200,000 - 112,500

= £87,500

Average profit per annum = £200,000 - 112,500

= 500,000 + 50,000 / 2 = £275,000

ARR = 87,500 / 275,000 = 31.8%

### 1.3 Net present value

B7=NPV(0.1,C6:F6)						
	A	B	C	D	E	F
1		Year 0	Year 1	Year 2	Year 3	Year 4
2		£	£	£	£	£
3	Initial investment	(500,000)				
4	Cash flow		200,000	200,000	200,000	200,000

B7=NPV(0.1,C6:F6)						
	A	B	C	D	E	F
5	Resale proceeds	-	-	-	-	50,000
6	Net cash flow	(500,000)	200,000	200,000	200,000	250,000
7	PV@10% T1-4	668,124				
8	Less outlay @ T0	(500,000)				
9	NPV	168,124				

#### 1.4 Internal rate of return (IRR)

To calculate IRR, use the IRR spreadsheet function.

B3 =IRR(B2:F2)						
	A	B	C	D	E	F
1		Year 0	Year 1	Year 2	Year 3	Year 4
2	Net cash flow	(500,000)	200,000	200,000	200,000	250,000
3	IRR	24.22%				

### Answer to Interactive question 2

#### WORKINGS

##### (1) Tax writing-down allowances (WDAs)

Year	WDA/Written-down value	Tax saved at 24%
20X0	350,000	
WDA (20%)	(70,000)	16,800
20X1	280,000	
WDA	(56,000)	13,440
20X2	224,000	

WDA	(44,800)	10,752
20X3	179,200	
WDA	(35,840)	8,602
20X4	143,360	
WDA	(28,672)	6,881
20X5	114,688	
Proceeds	(60,000)	
Balancing all	54,688	13,125

(2) **Tax computations**

	20X1	20X2	20X3	20X4	20X5
Tax at 24% of net cash inflows	22,800	23,712	24,660	25,647	26,673

**NPV calculation**

	A	B	C	D	E	F	G
1		20X0	20X1	20X2	20X3	20X4	20X5
2	Initial investment	(350,000)					
3	Cash (net)		95,000	98,800	102,752	106,862	111,136
4	Tax (24%)		(22,800)	(23,712)	(24,660)	(25,647)	(26,673)
5	WDA/Bal. all	16,800	13,440	10,752	8,602	6,881	13,125
6	Sale	-	-	-	-	-	60,000
7	Net cash flow	(333,200)	85,640	85,840	86,694	88,096	157,588
8	PV@12% T1-5	352,009					
9	Less outlay @T0	(333,200)					
10	NPV	18,809					

The formula used in cell B8 is =NPV(0.12,C7:G7)

As NPV is positive, the project is feasible and should be undertaken.

### Answer to Interactive question 3

**Step 1 Calculate NPV of the project with the original cost of equity with no gearing.**

**Ung geared beta**

$$\beta_e = \beta_a \left( 1 + \frac{D(1-T)}{E} \right)$$

$$1.178 = \beta_a (1 + (1 \times ((1 - 0.24)/3)))$$

$$\beta_a = 0.94$$

**Ung geared cost of equity (using CAPM)**

$$= R_f + \beta_a \times \text{Market premium}$$

$$= 7 + 0.94 \times 6$$

$$= 12.6\% \text{ (say 13\%)}$$

**Discounted cash flow using 13% as the discount rate**

Year	0	1	2	3	4	5
	\$m	\$m	\$m	\$m	\$m	\$m
Initial investment	(8)	-	-	-	-	-
Annual cash flow	-	2.5	2.5	2.5	2.5	2.5

Annuity factor (13% for 5 years) = 3.517

$$\text{NPV} = \$(8\text{m}) + 3.517 \times \$2.5\text{m} = \$0.79\text{m}$$

**Step 2 Calculate the present value of the tax shield from debt financing.**

$$\text{Interest payable} = \$10\text{m} \times 8\% = \$0.8\text{m}$$

$$\text{Tax saved} = \$0.8 \times 24\% = \$0.192\text{m}$$

$$\text{Discount at cost of debt (8\% over 5 years)} = \$0.192 \times 3.993$$

$$= \$0.767\text{m}$$

**Step 3**

$$\text{Issue costs} = \$300,000$$

$$\text{APV} = \$0.79\text{m} - \$0.3\text{m} + \$0.77\text{m}$$

$$= \$1.26\text{m}$$

As APV is positive, the project should be undertaken with the proposed method of financing.

### Answer to Interactive question 4

B3=IRR(B2:E2)					
	A	B	C	D	E
1		Year 0	Year 1	Year 2	Year 3
2	Cash flow £	(10,000)	3,000	5,000	7,000
3	IRR	20.13%			



B3=MIRR(B2:E2,0.1,0.1)					
	A	B	C	D	E
1		Year 0	Year 1	Year 2	Year 3
2	Cash flow £	(10,000)	3,000	5,000	7,000
3	MIRR	17.28%			

The IRR for the project is 20.13%.

The reason it is higher is because the IRR assumes a reinvestment rate of 20.13% rather than 10% which we have used.

### Answer to Interactive question 5

The PVs of the cash flows are as follows.

	A	B	C	D	E
1	Year	PV of plantcost	PV of running costs	PV of savings	PV of net cash flow
2		£	£	£	£
3		(7,000)	(3,995) <sup>1</sup>	11,557 <sup>2</sup>	562

<sup>1</sup> Calculated using NPV function from the table in the question =NPV(0.08,C4:C5)

<sup>2</sup> Calculated using NPV function from the table in the question =NPV(0.08,D4:D5)

The project has a positive NPV and would appear to be worthwhile. Sensitivity of the project to changes in the levels of expected costs and savings is as follows.

- 1) Plant costs sensitivity =  $562/7,000 \times 100 = 8\%$
- 2) Running costs sensitivity =  $562/3,995 \times 100 = 14\%$
- 3) Savings sensitivity =  $562/11,557 \times 100 = 4.9\%$

### Answer to Interactive question 6

Cash flows should be adjusted for expected inflation. The exchange rate each year, according to PPP theory, will change by a factor of  $\times 1.06/1.04$

B11=NPV(0.10,C10:F10)						
	A	B	C	D	E	F
1	Year	0	1	2	3	4
2			M\$m	M\$m	M\$m	M\$m
3	Revenue		2.100	2.205	2.315	2.431
4	Operating costs		1.080	1.166	1.260	1.360

B11=NPV(0.10,C10:F10)

	A	B	C	D	E	F
5			1.020	1.039	1.055	1.071
6	Tax at 25%		0.255	0.260	0.264	0.268
7	Net cashflow		0.765	0.779	0.791	0.803
8	Exchange rate in M\$		4.077	4.155	4.235	4.317
9			<b>£'000</b>	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>
10	Cash flow in £	(500.0)	187.6	187.5	186.8	186.0
11	PV@10%T1-4	592.9				
12	Less initial outlay	(500.0)				
13	NPV	+92.9				

### Answer to Interactive question 7

#### Assimilating and using information

When performing an NPV calculation, it is important to review and reflect on all of the information available. There is likely to be an abundance of information available in an exam question covering relevant costs, tax, inflation and exchange rates. Make notes on the question screen and determine how each piece of information relates to the overall NPV calculation.

	A	B	C	D	E	F	G
1		<b>Time</b>					
2		<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
3	\$'000 cash flows						
4			1,600	1,600	1,600	1,600	
5	Costs		(1,000)	(1,000)	(1,000)	(1,000)	
6	Tax- allowable depreciation (brought in to calculate taxable profit)		(400)	(400)	(400)	(400)	
7	\$ taxable profit		200	200	200	200	
8	Taxation			(70)	(70)	(70)	(70)

	A	B	C	D	E	F	G
9	Add back tax- allowable depreciation (as not a cash flow)		400	400	400	400	
10	Capital expenditure	(2,000)					
11	Scrap value					800	
12	Tax on scrap value (W1)						(140)
13	Terminal value					500	
14	Tax on terminal value						(175)
15	Working capital	(400)				400	
16		(2,400)	(600)	(530)	(530)	2,230	(385)
17	Exchange rates	5:1	5:1	5:1	5:1	5:1	5:1
18	F'000 cash flows						
19	From/(to) Ruritania	(480)	(120)	(106)	(106)	446	(77)
20	Additional Earland expenses/income		(100)	(100)	(100)	(100)	
21	Earland tax effect of Earland expenses/income			24	24	24	24
22	Net cash flows	(480)	20	30	30	370	(53)
23	PV@10% T1-5	285					
24	Less initial outlay @T0	(480)					
25	NPV	(195)					

The formula used in cell B23 is =NPV(0.1,C22:G22)

**NPV = F(195,000)**, therefore the company should not proceed.

### WORKING

Tax is payable on \$400,000 as tax written-down value = \$2,000,000 - (4 × \$400,000) = \$400,000

# Answers to Self-test questions

## 1 Project

B3=MIRR(B2:F2,0.08,0.08)						
	A	B	C	D	E	F
1		Year 0	Year 1	Year 2	Year 3	Year 4
2	Cash flow £	(75,000)	19,000	25,000	30,000	32,000
3	MIRR	11.9%				

As MIRR > required rate of return (8%), the company should accept the project.

## 2 PG plc

B8=NPV(0.14,C7:F7)						
	A	B	C	D	E	F
1		<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
2	Investment C\$'000	(150)				50
3	After-tax cash flows C\$'000	-	60	60	60	45
4	Net cash C\$'000	(150)	60	60	60	95
5	Exchange rate	1.7000	1.7850	1.8743	1.9680	2.0664
6						
7	Net cash £'000	(88.24)	33.61	32.01	30.49	45.97
8	PV@ 14% T1-4	101.91				
9	Less outflow @T0	(88.24)				
10	NPV in £'000	13.67				

### 3 Muggins plc

Certainty-equivalent cash flows

B12=NPV(0.14,B11:E11)					
	A	B	C	D	E
1		Year 1	Year 2	Year 3	Year 4
2		£'000	£'000	£'000	£'000
3		1,125	1,800	1,575	1,425
4					
5		50	230	248	280
6		517	1,100	1,184	1,340
7		67	79	85	92
8			135	135	
9		66	78	84	90
10		835	1,622	1,736	1,937
11		290	178	(161)	(512)
12		(20.46)			

The net present value is -£20,460, so the project is not acceptable. WORKINGS

**(1) Sales**

Year 1	$10,000 \times £125 \times 0.9$
Year 2	$18,000 \times £125 \times 0.8$
Year 3	$18,000 \times £125 \times 0.7$
Year 4	$19,000 \times £125 \times 0.6$

**(2) Material X**

Year 1	£50,000 opportunity cost
Year 2	$18,000 \times 6 \times £1.64 \times 1.3$
Year 3	$18,000 \times 6 \times £1.64 \times 1.4$
Year 4	$19,000 \times 6 \times £1.64 \times 1.5$

**(3) Other variable costs**

Per unit:	$£30 + 3 + (3 \times £4.20) + £4.40 = £47$
Year 1	$10,000 \times £47 \times 1.1$
Year 2	$18,000 \times £47 \times 1.3$
Year 3	$18,000 \times £47 \times 1.4$
Year 4	$19,000 \times £47 \times 1.5$

#### (4) Management salaries

Year 1	$\text{£}34,000 + \text{£}27,000 = \text{£}61,000 \times 1.1$
Year 2	$\text{£}61,000 \times 1.3$
Year 3	$\text{£}61,000 \times 1.4$
Year 4	$\text{£}61,000 \times 1.5$

## 4 Zedland

### REPORT

**To:** A N Accountant  
**From:** The board of directors  
**Date:** 1 April 20X9  
**Subject:** Proposed new same day service

#### Introduction

This report considers whether the proposed new service will meet the two targets of a return on investment of at least 5% and a non-negative net present value. It also considers other factors which may be relevant. Calculations are set out in the Appendix.

#### Recommendation

The proposed new service has an annual **average return on average investment of 30%**, but it has a **negative net present value** (\$24,000). Because projects must meet both targets to be acceptable, it is recommended that the service is not provided. However, this is subject to the further factors considered below.

#### Non financial factors

Although it has a small negative net present value, the proposed service might well be of **great value** to the public. It should perhaps be provided on that ground alone.

If the postal service's other projects have large positive net present values, it might be possible to net them off against the negative net present value here, to give an acceptable overall result. This is, of course, tantamount to **cross-subsidisation**.

It may be that charges could be increased and/or costs reduced, so that the net present value could become positive.

Before any final decision is taken, the **reliability** of all forecasts should be reviewed, and a **sensitivity analysis** should be carried out.

#### WORKINGS

##### (1) Return on average investment

Year	1	2	3	4	5
Revenue	\$'000	\$'000	\$'000	\$'000	\$'000
Letters	2,048	2,867	3,010	3,160	3,318
Parcels	<u>682</u>	<u>1,075</u>	<u>1,129</u>	<u>1,185</u>	<u>1,244</u>
	<u>2,730</u>	<u>3,942</u>	<u>4,139</u>	<u>4,345</u>	<u>4,562</u>

Expenses					
Staff	2,340	2,457	2,580	2,709	2,844
Premises	150	158	165	174	182
Vehicle maintenance					
Vans	200	250	313	391	488
Trucks	20	25	31	39	49
<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>\$'000</b>	<b>\$'000</b>	<b>\$'000</b>	<b>\$'000</b>	<b>\$'000</b>
Advertising	1,300	263			
Depreciation	232	232	232	232	232
	<u>4,242</u>	<u>3,385</u>	<u>3,321</u>	<u>3,545</u>	<u>3,795</u>
Revenue less expenses	(1,512)	557	818	800	767
Taxation (40%)	605	(223)	(327)	(320)	(307)
Profit after tax	<u>(907)</u>	<u>334</u>	<u>491</u>	<u>480</u>	<u>460</u>

Total profit after tax = \$858,000

Average profit after tax = \$858,000/5 = \$171,600  
 Average investment = \$1,160,000/2 = \$580,000

Average annual after - tax on investment =  $\frac{\$171,600}{\$580,000} \times 100\% = 30\%$

## (2) Net present value

	A	B	C	D	E	F	G	H
1	<b>Year</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
2		<b>\$'000</b>	<b>\$'000</b>	<b>\$'000</b>	<b>\$'000</b>	<b>\$'000</b>	<b>\$'000</b>	<b>\$'000</b>
3	Revenue less expenses		(1,512)	557	818	800	767	
4	Add depreciation		232	232	232	232	232	
5	Taxation			605	(223)	(327)	(320)	(307)
6	Initial investment	(1,160)	-	-	-	-	-	-
7	Cash flow	<u>(1,160)</u>	<u>(1,280)</u>	<u>1,394</u>	<u>827</u>	<u>705</u>	<u>679</u>	<u>(307)</u>
8	PV@14% T1-6	1,138						
9	Less investment@T0	(1,160)						
10	NPV	(22)						

The formula in cell B8 is =NPV(0.14,C7:H7)

Net present value = (\$22,000)

**(3) Assumptions made**

- The **inflation rate**, for both revenue per unit and costs (excluding depreciation) will be 5%.
- The cost of **preliminary research** is to be ignored, as it has already been incurred.
- If the five managers were not needed for this new service, they would **remain** in their **present posts** rather than being made redundant.
- **Return on average investment** is to be computed ignoring financing costs.



# Chapter 18

# LEADERSHIP

## Introduction

Learning outcomes

Knowledge brought forward and syllabus links

Chapter study guidance

## Learning topics

1. Introduction to leadership
2. Leadership Style
3. The role of leadership in strategy
4. The role of ACA in leadership and strategy
5. Leadership and Management roles in strategic alignment
6. Entrepreneurial orientation
7. Strategic innovation
8. Intrapreneurship
9. Open innovation and value creation
10. Leadership and Management roles in strategy for emerging business model

Summary

Further question practice

Technical reference

Self-test questions

Answers to Interactive questions

Answers to Self-test questions



# Introduction

## Learning outcomes

- Discuss the roles of management and leadership for crafting organizational strategy in the contemporary business environment.
- Identify and analyze different leadership styles in strategy implementation
- Identify and evaluate the communicating role of leaders in the strategy process and the responsibility of leaders for strategic decisions.
- Analyze and evaluate the role of an ACA in the discipline of strategic analysis and strategic decision making.
- Explain and evaluate the key concepts, components and frameworks applicable to the development of an organisation's strategy and the roles of management and leadership that drive the development of the strategy.
- Analyze and evaluate the dimensions of an entrepreneurial orientation and intrapreneurship.
- Identify and explain the key challenges faced in the implementation of strategy and the role of the accountant in the implementation and leadership functions
- Consolidate the understanding of strategy and leadership concepts through the use of real-world examples integrated throughout the material, and apply these concepts to business case scenarios through the use of a case studies
- apply skills in thinking strategically and formulating broad strategies for consideration and application in their organisational environment

## Knowledge brought forward and syllabus links

In the increasingly complex business environment in which organisations operate, characterised by change, uncertainty and escalating competition, the disciplines of strategy and leadership have become critical to successful organisational performance. This chapter reviews a number of analysis tools and detailed knowledge of these techniques will be critical at the Advanced Level where you will need to demonstrate not only your knowledge of them, but also your ability to apply them to complex scenarios.

## Chapter Study Guidance:

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical Significant	Study approach	Exam Approach	Interactive questions
1	<b>Introduction to leadership</b> Decisions must be made at every stage of the strategy development process, and leadership is needed at every stage to ensure that the right direction is being taken, stakeholders are appropriately consulted and effectively communicated with, difficult decisions are made, and the organization has the support of key stakeholders. expectations. Dealing with complex scenarios is a fact of business life. It is vital that you become familiar with different leadership style and also that you understand the responsibility of Leaders and managers for many of the decisions related to the strategy process.	<b>Approach</b> In this section the focus is on different viewpoints about what actually constitutes leadership, the qualities required and its level of importance.	In the examination, students may be required to analyze different type of leadership theory that best an organization and appraise how the roles of management and leadership drive organizational strategy in the contemporary business environment	<b>IQ1:</b> Role of strategic leadership  This question requires you to demonstrate the role of strategic leadership.

Section 1 provides a brief overview of an overview of some of the prominent leadership theories that shape your understanding of leadership today and then discuss the differences between leadership and management .

### Stop and think

Consider an organisation you are familiar with. Which leadership theory is applicable to them?

Topic	Practical Significant	Study approach	Exam Approach	Interactive questions
2	<p><b>Leadership Style</b></p> <p>Strategic success is complex, it requires a coordinated effort from the organization, and thereby, it needs an effective strategic leader. Successful strategies require commitment, not just acceptance. Therefore, one of the roles of leaders is to inspire everyone in the organization to commit to the strategy, and to provide a workable framework for going forward.</p>	<p><b>Approach</b></p> <p>Section 2 discusses various approaches how leadership is described and defined based on style and situation.</p> <p><b>Stop and think</b></p> <p>How the leaders and managers balance stability and change in order to ensure current objectives are met while enabling future development ?</p>	<p>Exam questions may require you to assess different leadership styles that suited to different individual, team and organisational characteristics and circumstances in the context of the complex scenario.</p>	<p><b>IQ2:</b> Transformational leadership- This question requires you to demonstrate transformational leadership to disengage individuals from the past.</p> <p><b>IQ3:</b> Change and Leadership style</p> <p>This question requires</p> <ol style="list-style-type: none"> <li>1. What category of changes was required ?</li> <li>2. What style of leadership is best suited to that category of change?</li> </ol> <p><b>IQ4:</b> Using Leadership style</p> <p>This is a question to test your ability How each style of leadership in used in a company?</p> <p><b>IQ5:</b> Leadership style-Surgeon</p> <p>This question requires you to demonstrate the leadership style of a 'surgeon'.</p> <p><b>IQ6:</b>Organisational culture</p> <p>This is a question to examine the organisational cultural issues that had to overcome in order to turn around performance of a company.</p>

Topic	Practical Significant	Study approach	Exam Approach	Interactive questions
3.	<p><b>The role of leadership in strategy</b></p> <p>Leadership is required to develop an organisations strategy, drive the change and align the organisation's structure, resources and culture with the strategy. Strong leadership is required to turn plans into reality.</p>	<p><b>Approach</b></p> <p>Section 3 deals with the roles and responsibility of leaders: communication role in the strategy process, responsibility for strategic decisions, responsibility for setting an ethical role model for the conduct of the organisation.</p>	<p>Exam questions may require you to evaluate and analyze the role and responsibility of a leader</p>	<p><b>IQ7:</b> Empower This question requires you to <b>how a leader empowered others to act?</b></p> <p><b>IQ8:</b> Communicating Strategy</p> <p>This question requires you to specific actions that a leader took to communicate his strategy.</p> <p><b>IQ9:</b> Decision making Style</p> <p>This question requires you to analyse and explain the style of decision making.</p> <p><b>IQ10:</b> Role model This is a question for examine how a leader acted as a role model and took proactive measures to demonstrate the importance of a company and its activities.</p> <p><b>IQ11:</b> Value and Ethics This is a broad question for Identify and explain the leadership decisions with regard the welfare of employees, the environment and society based on their respective approaches to organisational values and ethics.</p>

#### Stop and think

What are the importance of strategic leadership during implementation, and the minimum necessary requirements for success?

Topic	Practical Significant	Study approach	Exam Approach	Interactive questions
4	<p><b>The role of ACA in leadership and strategy</b></p> <p>The ACA's role in organisational strategy implementation includes aligning functional strategy with the organisation's business strategy, the re-allocation of resources and budgets to facilitate and fund the organisation's strategic options, and the development of key performance measures to monitor the organisation's performance against its strategy.</p>	<p><b>Approach</b></p> <p>Section 4 looks at Understanding and managing the dynamics of a global economy is important in developing the ACA's contribution to the decision-making processes and performance of the organisation</p> <p><b>Stop and think</b></p> <p>To what extent the CA's knowledge on strategy is important to career success?</p>	<p>Globalisation has seen a move away from centralised accounting operations to decentralised arrangements in organisations. ACAs are more likely to work in partnership with local and/or international crossfunctional teams, dealing with different cultures and business practices. Exam questions may therefore require you to evaluate the ACA's role in organisational strategy implementation.</p>	<p><b>IQ12:</b> Role of CAs</p> <p>This is a question for examine a CAs important roles to play in strategy process.</p>

Topic	Practical Significant	Study approach	Exam Approach	Interactive questions
5	<p><b>Leadership and Management roles in strategic alignment</b></p> <p>The role of leadership within the business needs to be visionary and create momentum and belief in the strategy to move it forward.</p>	<p><b>Approach</b></p> <p>Section 5 discuss and evaluate a number of core skills and tasks of leadership and management in strategy development.</p> <p><b>Stop and think</b></p> <p>Are the Managers particularly important in ensuring the organisation and its personnel act in accordance with the organisation's values and towards achieving its goals?</p>	<p>Leaders are particularly important in establishing the vision, mission and values that define the purpose of the organisation, how it will act and the principles upon which its decisions and activities will be made. In the exam you may therefore need to evaluate the importance of leaders in establishing the vision, mission and values of the organisation.</p>	
6	<p>Entrepreneurial orientation</p> <p>An entrepreneurial orientation involves behaviours aligned to the continual identification and generation of new business, which will create and sustain a competitive advantage.</p>	<p><b>Approach</b></p> <p>Section 6 discuss about dimensions of an entrepreneurial orientation, correlation between entrepreneurial orientation and performance and technological and marketing capabilities influence on entrepreneurial orientation.</p> <p><b>Stop and think</b></p> <p>Consider an organisation you are familiar with. Can you correlate between entrepreneurial orientation and performance?</p>	<p>In the exam you may need to analyse and evaluate the dimensions of an entrepreneurial orientation from case example.</p>	

Topic	Practical Significant	Study approach	Exam Approach	Interactive questions
7	<p><b>Strategic innovation</b> Organisations adopting an entrepreneurial orientation often seek strategic renewal through a process of strategic innovation. Four key elements of strategic innovation: strategising, entrepre- neuring, changing and investment processes.</p>	<p><b>Approach:</b> Section 7 concludes The requirements of strategic innovation.</p> <p><b>Stop and think</b> As a strategising process what are the require- ments of Strategic inno- vation?</p>	<p>An exam question may require you to evaluate requirements of strategic innovation.</p>	
8	<p><b>Intrapreneurship</b> Employees who create new prod- ucts, services and processes, identify new opportuni- ties for business development, and create value for the organization. An important aspect of encouraging intra- preneurship within the organisation is to provide motiva- tion and rewards for those staff engaging in it.</p>	<p><b>Approach</b> This section deals with the features of organi- sation-wide innovation management system to successfully achieve intra- preneurialism.</p> <p><b>Stop and think:</b> Think about the organ- isation-wide innovation management system features.</p>	<p>An exam question may require you to evaluate the features of organi- sation-wide innovation management systems.</p>	
9	<p><b>Open innovation and value creation</b> Leaders and managers have to develop an open-innovation capability within the organisation, which comprises the following four value processes: value provision, value negotiation, value realization, value partake.</p>	<p><b>Approach</b> This section discusses about the approaches of innovation such as closed innovation and open innovation. Also discuss about the innova- tion intermediaries, inno- vation hub and business incubator.</p> <p><b>Stop and think:</b> Think about the organi- zation that decided to take an open innovation approach and invited companies, institutes, re- searchers and entrepre- neurs to engage in open innovation. What are val- ue processes therein?</p>	<p>Exam ques- tions may require you to assess the various in- novation ap- proaches that are related to accompany.</p>	



Topic	Practical Significant	Study approach	Exam Approach	Interactive questions
10	<p><b>Leadership and Management roles in strategy for emerging business model</b></p> <p>Leadership and management roles in the context of a dynamic business environment, with a particular focus on successfully meeting the challenges of driving strategy for emerging business models. We will conclude with a discussion of how current and future leaders and managers can continue to develop their portfolio of skills.</p>	<p><b>Approach</b></p> <p>This section broadly discuss about various issues that are business model innovation, leadership and management implications of technology-enabled business models, decision-making role of leaders, leadership for start-up and established business. Also distinguished between start-ups and incumbents. Further discuss about stakeholder management, leadership and management development.</p> <p><b>Stop and think:</b></p> <p>Evaluate how the roles of management and leadership drive the organisational strategy for emerging business models.</p>	<p>Exam questions may require you to evaluate how the roles of management and leadership drive the organisational strategy for emerging business models from case example.</p>	<p><b>IQ13:</b> Response to the challenge</p> <p>This question requires you to how the leadership and management of a company has shifted resources and tried to build capabilities in their response to the challenge of the internet to their historically successful print media business.</p> <p><b>IQ14:</b> Using EBO model</p> <p>This is question for analyzing a model then fit it to a company.</p> <p><b>IQ15:</b> Best Approach</p> <p>This is a question for assess whether a company uses the best approach to developing their news service, relative competitive strengths and weaknesses, could fend off copycat behavior and appear to be positioned to take advantage of future opportunities that arise due to technological developments.</p>

# 1. INTRODUCTION TO LEADERSHIP



## Section overview

This section discusses about how the roles of management and leadership drive organizational strategy in the contemporary business environment.

### What is leadership?

Based on our definition of strategy being ‘decisions that have high medium- to long-term impact on the activities of the organization, including analysis leading to the resourcing and implementation of those decisions, to create value for key stakeholders and to outperform competitors’, and our decisions of the strategy development process, is clear that many, often complex, decisions have to be made, often in short timeframes.

Decisions must be made at every stage of the strategy development process, and leadership is needed at every stage to ensure that the right direction is being taken, stakeholders are appropriately consulted and effectively communicated with, difficult decisions are made, and the organization has the support of key stakeholders.

Leadership is commonly observed at five levels in an organization:

- The Board.
- the CEO.
- senior management.
- general management.
- project management.

However, any number of employees can perform leadership roles in their position. In some cases, great leaders are not great managers, and must instead seek out other managers to fill this role in their organizations. Effective managers may also have to develop their leadership skills in order to fulfil their roles more effectively.

As with strategy, there are different viewpoints about what actually constitutes leadership, the qualities required and its level of importance. We start with an overview of some of the prominent leadership theories that shape our understanding of leadership today and then discuss the differences between leadership and management.

## 1.1 LEADERSHIP THEORIES

The Leadership Institute at Harvard College defines leadership as ‘the skill of motivating, guiding, and empowering a team towards a socially responsible vision’ (LIHC 2008). The fundamental basis of leadership is to lead in a way that brings about positive change in people, allowing them to follow wherever the leader needs them to go.

Over the years, many theories of leadership have been researched and studied. There is a wide range of literature on what approach to leadership is most successful, and what makes a great leader. The results are ambiguous, illustrating that no single set of instructions or methodology can assure successful leadership. However, it is important to understand some of the prominent leadership theories that shape our understanding of leadership today. The traits approach suggests that leaders are born with certain traits and qualities that will make them successful leaders, whereas the behavioral approach argues that great leadership qualities can be taught and developed.

### 1.2.1 The Traits Approach

The traits approach is based on the theory that leaders are born with particular qualities that will produce patterns of behavior to make them successful leaders over time. It argues that there is a biological basis for leadership. Personality, intellectual ability and physical factors were examined. Traits that were associated with leaders included ambition and high energy levels, the desire to lead, self-confidence, task-relevant knowledge and emotional intelligence. Emotional intelligence consists of sensitivity to employees’ feelings and views and the ability to manage one’s own emotional reactions.

Decades of research on the question of whether there are natural leaders failed to provide conclusive evidence that general qualities or abilities could be identified. Specifically, the research:

- failed to find any traits that would explain or predict leader behavior
- overlooked the needs of followers
- failed to clarify the relative importance of traits
- did not separate cause and effect – are leaders self-confident or does leadership breed self-confidence?

The shortcomings of the traits approach led to a shift towards researching leadership styles – from investigating ‘what leaders have’ to ‘what leaders do’.

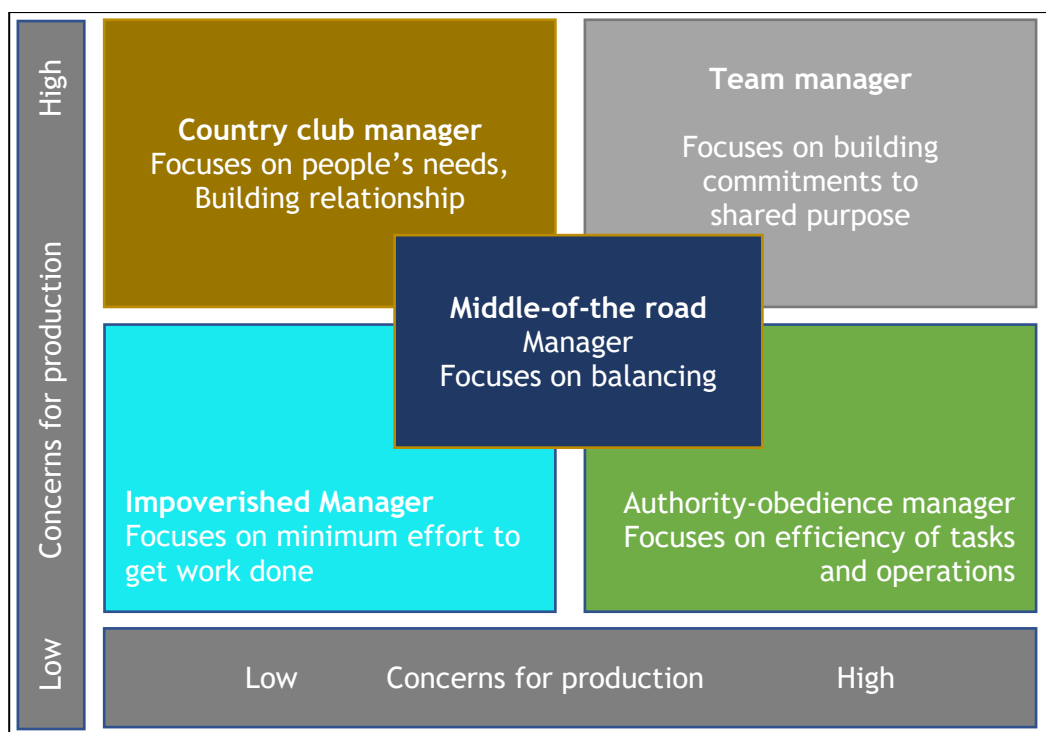
## 1.2.2 The Behavioral Approach

The behavioral approach suggests that leaders can be trained, as opposed to the traits approach, which assumes that leaders are born (so the right person must be selected for the leadership role). The distinction between the behavioral and traits approaches is that traits represent physical and psychological characteristics, whereas behavioral styles are consistent behaviors or actions that describe a leader's style. Research in this area has focused on the impact of leader behaviour on group attitudes and performance. Leaders who are concerned with achieving outcomes and with their employees are more likely to achieve buy-in to their strategic vision. The growth in professional leadership development programs is a consequence of this approach, with executives being trained on how to improve their leadership style.

Major studies (Robbins et al. 2001) at Ohio State University and the University of Michigan in the United States reveal a contrast in leadership and managerial styles. The two most common styles were characterised by either an employee orientation or a task orientation. These orientations describe styles that have, respectively, a high concern for people and a high concern for operational issues. These styles were not viewed as mutually exclusive, in that a leader could have both an employee and a task orientation.

**FIGURE : 1**

Summarizes the behavioral approach and suggests that a team leadership style is the most effective.



By themselves, the traits and behavioural approaches to leadership provide insufficient guidance for determining what makes a great leader. However, a combination of both the inherent traits of an individual and the behaviours that the individual develops and learns over time will together create some of the necessary attributes of a great leader.

Another major criticism of the behavioural approach was that situational factors were overlooked; this led to the development of a third and comparatively recent contingency approach.

### 1.2.3 The Contingency Approach

The contingency approach suggests matching leadership style to the situation. Here the argument is that leaders, like leopards, cannot change their spots. Hence the leadership style needs to suit the circumstances.

The contingency approach also considers substitutes for leadership. If a task is routine, then not much in the way of leadership would be required which leaves leaders free to focus on other big-picture matters that require their attention.

Later in this module we discuss the concept of the strategic leadership style, Rothschild's model, where the style of leadership is linked to the organizational life cycle position. This is an example of how the contingency approach can be applied.

## 1.2 LEADERSHIP VERSUS MANAGEMENT

There is a fundamental distinction between leadership and management. Kotter (1990) states that leadership is about coping with change, whereas management is about coping with complexity. For Kotter, the leadership process involves:

- developing a vision for the organization.
- aligning people with that vision through communication.
- motivating people to action through empowerment and through basic need fulfilment. The leadership process creates uncertainty and change in the organization. In contrast, the management process involves:
  - planning and budgeting
  - organizing and staffing
  - controlling and problem solving.

The management process reduces uncertainty and stabilizes the organization and consists of implementing the vision and direction provided by leaders, coordinating and staffing the organization, and handling day-to-day problems. These differences are illustrated in table 1

Table : 1

Dual roles of managing and leading

Managing (Stability)	Leading (change)
Plan, allocate resources and assigned tasks	Inspire and influence
Performance reporting and control	Build confidence and enthusiasm
Communicate	Develop future leaders
Coordinate	Promote culture
Make decisions	Role model
Evaluate	Communicate
	Establish networks and relationships
	Catalyst for change
Accept the Status quo	Challenge the status quo
Do not ask difficult questions	Ask what and why questions
Rely on control	Inspired trust
A short-range view	A long -rang strategic view

## Context example 01: Jeffrey Chan

Looks at how leadership and management roles can interact and combine

### Grasping the Big Picture, While Still Focusing on the Details

Jeffrey Chan is the finance director of Triumph International, a lingerie-maker headquartered in Switzerland and operating in over 120 countries, with more than 35 000 employees.

Chan's role is complex, encompassing regional financial control in Asia and South Africa, and finance support for the Hong Kong-based global innovation and quality assurance functions. This part of the role

is closely linked to the managing and stability role highlighted in table 1.5.1 Chan describes the combination of leading and managing:

Nowadays strategic leadership is imperative, and with my experience I'm able to quickly grasp what a company needs, how to drive added value and bring in changes to manage the dynamics. I remain diligent, not just in strategic overview, but also into the details.

Chan also needs to continually monitor the global economy and review the organisation's budget to make sure it is realistic. Identifying and responding to patterns in the economy is an important part of his role.

Chan describes the importance of learning about different cultures: 'We have to be very aware of cultural and human aspects in order to collaborate and bring out the best in the team'. This part of Chan's position can be linked to the 'Leading' role in table 1.8, which describes the roles that help lead his team to excellence. **Source:** Adapted from P Robinson, 2014, 'Meet the CFO: Jeffrey Chan FCPA', *INTHEBLACK*, 12 August, CPA Australia,

[www.intheblack.com/articles/2014/08/12/meet-the-cfo-jeffrey-chan-fcpa](http://www.intheblack.com/articles/2014/08/12/meet-the-cfo-jeffrey-chan-fcpa).

It is desirable that the activities of leadership and management are successfully performed by the same person, as highlighted by Jeffrey Chan in example 1. However, in some cases, great leaders are not great managers, and must instead seek out other managers to fill this role in their organizations. Effective managers may also have to develop their leadership skills in order to fulfil their roles more effectively.

## Context Example 02 : Great Leader, Poor Manager

Illustrates the effective management of Facebook by Sheryl Sandberg, and the insight of Mark Zuckerberg, a great leader who recognised the need for a great manager to balance out his leadership.

Facebook founder and CEO Mark Zuckerberg had a vision for his organisation, but realised that he did not possess the skills necessary to manage the organisation's rapid growth. Zuckerberg believed that Facebook needed strong management and control to continue functioning efficiently through its rapid growth period. Zuckerberg hired Sheryl Sandberg as Chief Operating Officer to fill this gap. Sandberg has an excellent reputation for her management abilities. According to Adam Freed, Sandberg's former Google colleague:

Sheryl had to make decisions very quickly based on reasonable but imperfect data. The annals of business history, especially in Silicon Valley, are littered with the wreckage of companies that started to experience hyper-growth and mismanaged it. But Sheryl was able to see way down the highway, very quickly, to judge what the outcomes of her decisions would be (Conley 2010).

**Sources:** Adapted from D Clark, 2013, 'Why great leaders make bad managers – and that's OK', *Forbes*, [www.forbes.com/sites/dorieclark/2013/01/10/why-great-leaders-make-bad-managers-and-thats-ok](http://www.forbes.com/sites/dorieclark/2013/01/10/why-great-leaders-make-bad-managers-and-thats-ok); K Conley, 2010, 'Sheryl Sandberg: What she saw at the revolution', *Vogue*, 15 April, [www.vogue.com/article/sheryl-sandberg-what-she-saw-at-the-revolution](http://www.vogue.com/article/sheryl-sandberg-what-she-saw-at-the-revolution).

The Facebook example illustrates that a successful leader must perform both roles or recognize that they need assistance to ensure both roles are fulfilled at an executive level in the organization. Certainly, Zuckerberg did this by hiring Sandberg.

This example also illustrates how a manager can also display leadership attributes. Sandberg is now a best-selling author and is routinely sought out by other organizations for her leadership expertise. For example, she sits on Disney's board of directors.

In this subject we support the idea that leadership is an essential part of the strategic process. However, there is an opposing view that the importance of leadership is overstated. Table T2 articulates the arguments in support of and against leadership.

**Table : 2**

**Arguments in support of and against leadership**

For	Against
The leader's style determines the success or otherwise of the strategy.	Organizational structure and culture determine success or failure of the strategy.
The leader's predictive capacity determines the success or otherwise of the strategy.	Outcomes result from external or internal events, not the leader's strategy.
The leader's values determine the success or otherwise of the strategy.	Educated, experienced staff are substitutes for leadership.
A strategic leader is able to coordinate the internal dynamics and groups in an organization.	Routine tasks do not require much in the way of leadership.

Source: CPA Australia 2020

**1.3 STRATEGIC LEADERSHIP**

The core tasks of strategic leaders are summarized in figure 1.4. F2 Leaders are proactive. They do what is required to achieve the strategic objectives of the organization, ensuring everyone in the organization understands what they need to do to contribute to the strategy: leaders make things happen. Leaders also need to set goals that everyone in the organization can understand and use to achieve the strategy: leaders set goals that direct and shape. They champion the strategy and make sure everyone else becomes a champion of it too: leaders champion the organization's strategy and direction. Leaders must also draw on the critical thinking skills within the organization to identify and commit to the strategic options that will achieve the strategy: leaders make complex decisions. Finally, leaders define and innovate the business model to ensure the organization can meet the changing demands of the market: leaders identify the right business model.

**FIGURE : 2**

**Core tasks in strategic leadership**



Source: CPA Australia 2020

Strategic leadership is described by Daft (1999) as encompassing the vision, mission, strategy and structure of an organization. Daft describes strategic leaders as having the ability to match the strategic choices, vision and mission of the organization with the external environment. In other words, they ensure the organization can change as appropriate to meet the changing demands of customers and the marketplace. Table 1.4.T3 captures key elements in the strategic leadership role. All elements are critical for successful change.

Table : 3

### Key elements in the role of the strategic leader

Role	Key elements
<b>1. Strategic thinking</b>	<ul style="list-style-type: none"> <li>• Translate a vision into reality.</li> <li>• Question current wisdom.</li> <li>• Consider the big picture</li> </ul>
<b>2. Strategic decision Making</b>	<ul style="list-style-type: none"> <li>• Use a rational approach to decision making whenever possible.</li> <li>• Use eight-step decision-making model.</li> <li>• Four key ways of making decisions are command, collaborative, consensus and convenience.</li> <li>• Use data to assist strategy formulation.</li> </ul>
<b>3. Strategic external and internal analysis</b>	<ul style="list-style-type: none"> <li>• Challenge unproven assumptions and far-fetched interpretations of environmental factors.</li> <li>• Determine external stakeholders' level of influence on the organization and make plans to minimize or control this influence.</li> <li>• Evaluate and challenge assessments which might be provided by biased employees.</li> <li>• Include key internal stakeholders in internal analysis and assess their ability to adapt to strategic change</li> </ul>
<b>4. Setting direction</b>	<ul style="list-style-type: none"> <li>• Focus on results and have an agenda.</li> <li>• Realistic and credible vision of an attractive future that is acceptable to employees.</li> </ul>
<b>5. Strategy Formulation</b>	<ul style="list-style-type: none"> <li>• Ensure that there is a shared vision about the strategic goals.</li> <li>• Determine who will be involved and their tasks in the process.</li> </ul>

## 6. Strategy Implementation

- Develop projects to support the strategy.
- Ensure that resources are effectively used.
- Establish a sense of urgency, communicate the vision.
- Empower staff to act and cement the new approaches in the organization.

## 7. Communication

- Communicate the need for change, vision and strategy.
- Communicate the new strategy with actions as well as words.
- Address what works in the current situation and outline the benefits and risks in the changed situation.

**Source: CPA Australia 2020**

### Strategic Thinking

The concepts and practices of strategy, rather than being static and fixed, are dynamic and subject to continual change. Strategic thinking is about linking concepts to operational practices and being able to understand and articulate the 'big picture' in terms of an organization's potential strategic directions and developments.

Strategic thinking is considered to be one of the four most important dynamic capabilities that enable an organization to quickly reconfigure its physical, financial and human resources in order to adapt to major exogenous environmental shocks. The other three critical dynamic capabilities are flexible leadership, flexible organizational culture and strategic alliances (Simon et al. 2015).

An important part of the managerial and leadership roles is to think and act more strategically in relation to solving problems or taking advantage of opportunities in the market. The challenge of strategic thinking is often one of time. Typically, managers are preoccupied with 'getting the job done' on a day-to-day basis, that little time is left to 'step back' and think creatively and innovatively.

Effective leaders should be able to conceptualize and articulate in clear terms their organization's strategic position and direction. This conceptualization requires an understanding of two dynamics.

1. The integration and alignment of the people and functions inside the organization (strategy needs to be supported by an organization's culture, information systems, structure, performance systems and its various operational areas).
2. The relationship between the organization and its environment – the degree to which an organization is meeting or exceeding the needs of its external stakeholders (including customers and the general community).

An effective leader needs to be capable of seeing the 'big picture' and understanding how that picture is changing, in order to conceive the current and future contexts in which their organization is and will be operating. Too much focus on the specifics of the situation faced today can constrain strategic thinking.

A challenge is that employees lower down in the organizational hierarchy may view the strategy process as a leadership exercise disconnected from the operational realities of the organization. As a result, these employees may resist the implementation of the strategic plan. In light of this criticism, it is vital that the planning process is well communicated and invites input of employees, particularly those affected by the strategic plan, or those who will have an impact on the execution of the plan. It is important that the senior management team works to ensure that the key employees gain an understanding of, and commitment to, the strategic plan and the changes associated with its implementation.

### Context Example 03 : Japan Airlines

Describes the turnaround of Japan Airlines and will be used to study leadership aspects related to strategy throughout the rest of the module.



## Japan Airlines – The Power of Strategic Leadership

Japan Airlines (JAL) was established in 1951 and operated as Japan's government-owned national airline from 1953 until it was privatized in 1987. The 1980s was a time of extraordinary success for JAL – it was the world's best-performing freight and passenger airline for five years in a row.

From the mid-1980s through the 2000s, however, the company lost its way. It had pursued an overly ambitious and unfocused diversification plan that saw JAL purchase an extensive, largely unprofitable portfolio of international properties. A downturn in the Japanese economy saw JAL record a loss in 1992 – and a loss in each of the following six years.

Having returned to a small profit by the end of the 1990s, the 2000s then presented a series of disasters that saw passenger numbers collapse: the 9/11 terror attacks in the USA, the Gulf War in 2003 and the outbreak of Severe Acute Respiratory Syndrome (SARS) that same year.

JAL obtained a support grant after the 9/11 attacks and took out a further loan of 90 billion yen, taking JAL's debts above 240 billion yen.

This was to support a strategy to compete more effectively with the leading domestic airline All Nippon Airways. JAL felt that merging with domestic carrier Japan Air System could generate more domestic revenue. The merger went ahead in 2002, but brought a new set of inefficiencies into the company. Japan's aviation industry regulations forbid personnel to be accredited for more than one type of aircraft. The JAL board had not understood that Japan Air System's fleet would require their own separate flight crews, maintenance teams and an entirely different stock of spare parts. This also prevented JAL from using smaller planes on routes where it could not sell all the seats available in its large planes. It was flying Boeing 747s with empty seats while start-up competitors were filling smaller planes with cheaper operating costs.

When the global financial crisis hit in 2008, JAL again turned to the government for a loan of ¥100 billion. The growing debt highlighted the airline's inefficiencies, and customer and employee confidence tumbled.

Professor Jochen Wirtz, the Vice Dean (Graduate Studies) of the National University of Singapore Business School, described the company's problems as follows:

'There was a lot of bureaucracy (and) complacency, very slow decision-making and not really the guts and the energy to make deep-seated changes to the airline.'

Despite cost-cutting measures, including scaling back marketing expenditure and reducing the size of its workforce, and the sale of part of its property portfolio and other assets, on 19 January 2010 JAL filed for 'reorganization proceedings' – bankruptcy protection. Its debts totaled ¥2.32 trillion.

Rather than signaling the end of JAL, this marked the beginning of an extraordinary turnaround. On 8 February 2010, the Enterprise Turnaround Initiative Corporation of Japan appointed retired Kyocera founder Kazuo Inamori as chairman. A rehabilitation plan was approved for JAL late in 2010, requiring the company to terminate almost one-third of its workforce and reduce salaries by up to 30%. In return it was given a ¥900 billion loan and some of its debts were written off. The reorganization proceedings were completed in March 2011.

Within two years, under Inamori's leadership, the company became the world's most profitable airline. Former Enterprise Turnaround Initiative Corporation of Japan committee chairman Hideo Seto explained that the company needed a new style of leadership that could break away from the semi-government style of management that had long been in place and could establish motivation and commitment among JAL's staff.

Inamori – a scientist by education, a billionaire thanks to the success of Kyocera, and an ordained Zen Buddhist priest – came to JAL with a reputation for putting people ahead of profit. He said he accepted the position for three reasons:

1. to avert an economic disaster for Japan by ensuring JAL did not become bankrupt
2. to protect the jobs of the remaining JAL staff
3. to maintain fair competition in the airline market and thus benefit the public.

Inamori adapted the management philosophy he had developed at Kyocera and introduced his managerial accounting system known as 'amoeba management'.

The management philosophy was intended to break down the rigid, bureaucratic corporate culture at JAL, establish common values among employees and make their welfare the number one priority. This is based on the idea that they will then do their best and thus contribute to society. Inamori says 'My simple philosophy is to make all the staff happy . . . Not to make shareholders happy but simply to create the company that every employee is proud to work for.' One of his approaches involved having a few drinks with employees working late so they could talk informally.

The amoeba management system uses profit centres (such as manufacturing or sales units) as its basic unit of operation – these consist of 5 to 50 people. Each unit is known as an amoeba and has responsibility for planning, decision making and administration. Each amoeba is tasked with improving revenues and lowering costs. This 'management by all' approach places responsibility on staff and gives them a sense of ownership of outcomes, and at the same establishes transparency and accountability. Staff become more aware of the connection between their work performance and the company's profitability, shifting the way they view their jobs from 'serving bosses' to 'contributing to the company's performance'. The system also helps identify and develop leaders. The amoeba approach is a stark contrast to traditional Japanese business practice whereby decisions are made by the senior management and handed down to staff to be implemented. It does include a strong element of scrutiny, however. Staff are trusted to deliver, and they are left with little way to conceal underperformance.

Inamori says the staff could see that he was desperate to rebuild the company. His sincerity was backed up by his decision to decline a salary. Seto said Inamori brought an analytical mind to understanding the company's figures and exhibited confidence and commitment.

In 2011-12, JAL was the world's most profitable airline with a profit of more than ¥180 billion, three times its target of ¥60 billion.

Investor confidence in the future of JAL was evident when it returned to the Tokyo Stock Exchange in 2012 with an IPO that raised ¥663 billion. The only larger IPO that year was Facebook. Having transformed JAL, Inamori moved into an advisory role.

By 2019, the airline group had a fleet of 235 aircraft, flying almost 35 million domestic passengers and more than 9 million international passengers to 66 international destinations. It employed 34 000 people across its 83 subsidiaries and 58 affiliated companies. Its 2018-19 revenue was ¥1487.2 billion and its net income was ¥176.1 billion.

JAL has maintained the systems and philosophy Inamori introduced. As of 2019, JAL begins to describe its philosophy with the statement:

We believe that it is important to create a unified consciousness among our staff. The JAL philosophy has been established as a mindset, a set of values or an attitude that everyone working on JAL services and products should share have in their minds.

The airline industry involves intense competition and is strongly influenced by a number of external factors, including oil prices and pressure to reduce greenhouse gas emissions. With a committed workforce and strong systems of accountability in place, JAL is well positioned to tackle future opportunities and threats, including competition from low-cost carriers moving into the medium- and long-distance flight market and JAL's launch of a new international budget airline.

**Source:** Adapted from Japan Airlines, 2020, [www.jal.com/en](http://www.jal.com/en); DA Paulo, 2018, Channel News Asia, [www.channelnewsasia.com/news/cnainsider/buddhist-monk-ceo-kazuo-inamori-save-japan-airlines-jal-bankrupt-11033866](http://www.channelnewsasia.com/news/cnainsider/buddhist-monk-ceo-kazuo-inamori-save-japan-airlines-jal-bankrupt-11033866), R Cooper, 2012, 'Case study: Kyocera Corp: The amoeba management system', 25 August, Harvard Business Review; Kyocera, 2020, 'Official website of Kazuo Inamori', <https://global.kyocera.com/inamori/profile/>; M Oi, 2012, 'Beer with boss Kazuo Inamori helps Japan Airlines revival', BBC News, 15 November [www.bbc.com/news/business-20293487](http://www.bbc.com/news/business-20293487).

### Interactive question 1: Role of strategic leadership

**Mr. Inamori can be considered as a strategic leader. With reference to the context example of Japan Airlines, examine how Mr. Inamori has demonstrated the role of strategic leadership?**

See Answer at the end of this chapter.

The key points covered in section 1 of this chapter, and the learning objective they align to, are as follows.

### KEY POINTS

#### **Appraise how the roles of management and leadership drive organizational strategy in the contemporary business environment.**

- Leadership is commonly observed at five levels in an organization:
  1. the Board
  2. the CEO
  3. senior management
  4. general management
  5. project management.
- Leadership can occur at any level of the organization regardless of formal appointment.
- Leadership may be viewed through various theories.
  - The traits approach is a theory that leaders are born with particular qualities that lend themselves to successful leadership.
  - The behavioral approach is a theory that individuals can learn leadership behaviors.
  - The contingency approach is a theory that there is no single set of suitable leadership behaviors, but rather what constitutes an effective leadership style depends on the situation.
- Leadership and management are different. Leaders develop a vision, align people with that vision and motivate people to contribute to achieving the vision. Managers plan, budget, organize, staff, control and solve problems.

- In some cases, great leaders are not great managers and vice versa.
- Strategic leaders make things happen, set goals, champion the organization's strategy, make complex decisions, identify the right business model.
- Strategic thinking is the practice of linking big-picture concepts to actionable practices.

## 2. LEADERSHIP STYLES



### Section overview

This section appraises how the roles of management and leadership drive organisational strategy in the contemporary business environment. It also examines various types of leadership styles.

Formulating and implementing strategy is extremely complex. At the same time, organizations are increasingly using the strategy process as an approach to stay in front of the competition, and to be innovative and ethically responsible. Because strategic success is complex, it requires a coordinated effort from the organization, and this means it needs an effective strategic leader. Successful strategies require commitment, not just acceptance. Therefore, one of the roles of leaders is to inspire everyone in the organization to commit to the strategy, and to provide a workable framework for going forward. The next section describes different leadership styles in strategy implementation.

### 2.1 TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP

When most people are asked to describe the characteristics of a leader, they typically describe the very visible characteristics of well-known leaders that have charisma and presence, that can inspire and motivate change. They have the ability to transform and lead major change and are typically described as **transformational leaders**. They are well suited to the start-up, growth and renewal stages of the organizational life cycle. **Transactional leaders** on the other hand are more concerned with maintenance of current activities and better suited to the maturity and decline stages of the organizational life cycle.

While many organizations may need complete transformation, there are also those whose strategy requires only some fine-tuning of existing arrangements. Therefore, it is important to think of leadership as being on a continuum from transactional to transformational. On one side is the need for minor adjustments and fine-tuning, and on the other is a complete overhaul of the current organization.

#### 2.1.1 Transactional Leadership

Transactional leadership involves maintaining the flow and processes within the organization. Transactional leaders use incentives and rewards to encourage team members' performance and successful day-to-day activities. Unlike transformational leadership, transactional leadership is focused on current activities and maintaining efficiencies in the current environment.

Transactional leadership is more than management, however, as it is about setting the direction and moving the organization forward in regard to the current activities, and about providing a long-term view to inspire employees. It is also about building their trust. In today's business environment however, transactional leadership is not enough on its own to achieve strategic success and maintain relevance in the longer term. Where a change in the mindset of the organization is required, or where the shared beliefs, values and culture of an organization need to be completely transformed, transformational leadership is required.

### 2.1.2 Transformational Leadership

Organizations in the contemporary business environment need to be capable of continuous transformation. This in turn requires transformational leaders whose role is to creatively rebuild and remake the organization. Tichy and Devanna (1990) identify three key phases of transformational leadership.

#### Phase 1

Phase 1 of transformation starts when a need for change is felt. This may be the result of strategic thinking and an intuitive understanding of the environment. Alternatively, it may arise after a detailed analysis of the internal and external environment reveals considerable gaps between the current performance and potential opportunities.

This need may even be manufactured or created to convince people that complacency about the current situation is unacceptable. Once the need to transform is identified, it must be communicated to people in the organization.

#### Phase 2

Phase 2 is where a transformational leader is required to provide an alternative vision for the future. A vision needs to be idealistic yet based in reality to encourage people to commit to implementing it. Without vision, people may realise the current situation is not viable in the long term, but not know where to turn. The vision phase combines the creation of a vision with mobilisation of the organisation to pursue the vision with vigour. This relates to the development of a strategy and the strategic plan. Leadership of Phase 2 is essentially the leadership that is required when conducting the activities .

#### Phase 3

Once selected, strategies must be implemented, and the final phase of transformation embeds the change into the organisation and makes it permanent. Although this concept is simple enough, it is not an easy task and is considered to be a major reason for the failure of change management (Kotter 1995). In large organisations, it may take over five years for change to be embedded. If the change is not reinforced continually over this period, it often slowly unwinds, especially if the leadership team that implemented it has moved on and been replaced.

**Table : 3** Matching the strategy process with transformational leadership

Demonstrates how different aspects of transformational leadership are loosely matched to various parts of the strategic process.

Strategic activity	Transformational leadership
Strategic thinking	Creating the foundation for Phase 1
Internal/external analysis	Informs Phase 1 by establishing the need for change based on the information
Need for change	Phase 1
Development of strategy	Phase 2
Implementation	Phase 2 and 3

**Source:** CPA Australia 2020

### 2.1.3 Impact of Transformational Leadership on Individuals

While the overall organization experiences the different phases of transformation, there is also an impact on individuals within the organization, who need to respond in certain ways. They must end their association with the existing situation, and this requires disengagement from the past. The transition may invoke strong feelings within employees, as their lives, identity and self-esteem are often intertwined with the organization.

The current situation may have satisfied their needs and any change (even if positive and necessary to the overall organization) may be unsettling until employees can link their identity with the new situation. This generally occurs as individuals gradually accept that what worked in the past is no longer appropriate. People are both drawn to and hope for change yet are still fearful about leaving the present behind. Consequently, this process takes time, and trying to rush it may have a detrimental effect. There is likely to be a period of disorientation that, if not resolved, will lead to disillusionment and hinder the change management process.

**Interactive question 2: Transformational leadership**

**With reference to the context example of Japan airlines, examine how Mr Inamori has demonstrated transformational leadership to disengage individuals from the past at JAL?**

See Answer at the end of this chapter.

Disillusionment is also likely to occur if the vision of the future is either inadequate or not communicated effectively. This is discussed in Kotter’s eight-step change process (see module 6) with the importance of communicating the change vision. As Kotter (1995) points out, a transformational leader must be able to influence an organisation and its employees to change, rather than attempting to drive the change coercively.

Kotter’s key concepts are illustrated in table 4. Which shows the key phases and the actions that occur at both the organisational and individual level, and how they align to Kotter’s eight-step change process.

**TABLE : 5      Impact of transformational leadership**

Transformational leadership			
Phase	Organization level	Alignment to Kotter’s eight-step change process	Individual level
1.	Setting the strategy: • creating the need to revitalize. • establishing a powerful group to achieve change.	1. Establishing a sense of urgency. 2. Creating a guiding powerful coalition.	Disengaging from the past.
2.	Implementing the strategy: • forming and communicating a new vision • empowering others and eliminating obstacles. • planning and achieving short-term goals.	3. Creating a vision. 4. Communicating the vision. 5. Empowering others to act, and eliminating obstacles. 6. Planning for and creating short-term wins.	Experiencing disorientation and possible disillusionment.
3.	Business as usual after implementation: • consolidating and building on improvements. • institutionalizing change.	7. Consolidating improvements and producing still more change. 8. Institutionalizing new approaches.	Accepting change or becoming disillusioned.

*Source: CPA Australia 2020. Column 3, 'Alignment to Kotter's eight-step change process' based on JP Kotter, 1995, 'Leading change: Why transformation efforts fail', Harvard Business Review, vol. 73, no. 2, March-April, p. 61*

## 2.2 BALANCING STABILITY AND CHANGE

Leadership is essential to make sure that today's core competencies and strategic capabilities do not become tomorrow's core rigidities. The roles of both manager and leader must be successfully balanced to satisfy current objectives effectively, without stifling future change and development. The following phases outline a way to visualize the balancing act between stability and change in the transformational leadership stages discussed earlier.

- **Phase 1** – the need for change is felt, so the leader must ensure there is enough flexibility within the organization to bring about change. However, stability is also required to allow current performance and work to continue through the change process.
- **Phase 2** – the vision and strategy are developed. The leader must ensure that the organization's capabilities are stable enough to provide a framework for going forward yet flexible enough to ensure the organization can adapt to changes in the future. The organization's vision is crucial at this phase as it is all about designing the future. This is also where growth of the organization can occur, in order to increase performance and success.
- **Phase 3** – the strategy is implemented. It is important to implement change right through until it is embedded, to the point that the change is stable in the organization and has become a streamlined and efficient way of behavior.

Effectively combining flexibility and stability allows smaller organizations to exploit the weaknesses of more entrenched organizations. Often, these organizations are flexible and less set in their ways when compared with larger organizations. There is often a trade-off between the benefits of scale that large organizations achieve and the inflexibility that this larger size can engender. A similar trade-off occurs for smaller firms that may be very flexible, but struggle to maintain control of processes.

Being large usually provides economies of scale in terms of production runs, pooling economic resources and grouping talented people together. Several weaknesses can also arise, including a growing indifference to customers (and other departments) if employees perceive themselves as insignificant components of a giant machine. The rules required to maintain control can become stifling and inflexible and may prevent innovation and quality customer service.

Being a small organization may facilitate immediate responses to customer requirements but having fewer controls and procedures may lead to errors and quality control issues. Small companies are often damaged by too much growth that is not properly managed. Staff shortages, lack of infrastructure, inability to supply products or a failure to maintain quality may then result.

Strong leadership is required to ensure enough time is devoted to strategic thinking, and that attention is not focused on managing the present without considering the future.

## 2.3 LEADERSHIP STYLES BASED ON THE INTENSITY OF CHANGE

According to Dunphy and Stace (1994), change can be categorized into four different types that have different leadership implications:

1. fine-tuning – minor change akin to continuous improvement
2. modular transformation – a major change but only for part of the organization
3. incremental adjustment – relatively minor change but has impacts across the whole organization.
4. corporate transformation – major change that impacts the whole organization.

**FIGURE : 3**

Illustrates the four change categories and how the type of leadership that is best suited to the category of change.

Stace & Dunphy (1994)	Finetuning	Incremental	Modular transformation	Corporate transformation
Collaborative		Developmental transitions (Constant change)	Charismatic transformations (Inspirational change)	
Consultative	Taylorism (Avoiding change)			
Directive		Task-focused transitions (Constant change)	Turnarounds (Frame breaking change)	
Coercive				

Source: D A Stace & D C Dunphy, 1994, *Beyond the Boundaries: Leading and Recreating the Successful Enterprise*, McGraw Hill, Sydney.

Different change management styles should be applied depending on the category of change to be implemented.

1. **Collaborative style:** involves significant participation from employees in important decisions related to the future and organizational change will be implemented. This style of change management is appropriate when knowledge relevant to the change is distributed throughout the organization.
2. **Consultative style:** employees are consulted before implementing organizational change and are involved in the process of goal setting related to their area of expertise. This style of change is appropriate when management has developed a plan but there is value in getting perspectives and feedback from others in the organization.
3. **Directive style:** involves limited participation from the employees in the decision-making process and uses authority for important decisions related to the organisational change. This style is appropriate when knowledge is held centrally within the organisation and benefits of discussion are limited to the perspective of consultation. It can also be appropriate when the leadership is trying to change the culture of an organisation.
4. **Coercive style:** forces organisational change on employees either by involving the outside parties or involving the managers/executives in the process. This style is appropriate when an organisation is in crisis and has limited time and resources. Top-down leadership has to make decisions in the short-term to get through the immediate crisis, and often involved retrenchments and downsizing.

Strategic leadership encompasses several approaches to how leadership is described and defined, based on style and situation, some of which are discussed in the following sections.

### Interactive question 3: Change and Leadership style

Based on the Dunphy and Stace Intensity of Change Model and information from context example of Japan airlines.

Requirements:

1. What category of change was required at JAL?
2. What style of leadership is best suited to that category of change?

Support your response by identifying and explaining how the style of leadership was demonstrated.

See Answer at the end of this chapter.



## 2.4 LEADERSHIP STYLES BASED ON TEAM AND INDIVIDUAL DEVELOPMENTAL STAGE

Blanchard et al. (1985) describe four main leadership styles used when interacting with individuals in specific situations during strategy implementation, to enable support for teams or individuals that are at different developmental stages in their area of work.

1. *Directing* – an authoritarian style characterized by specific instructions and close supervision.
2. *Coaching* – while specific instructions and supervision are still provided, there are also clear explanations of what is occurring, and suggestions offered by employees may be accepted; coaching is still regarded as being authoritarian but takes tentative steps towards collaboration.
3. *Supporting* – employee efforts are facilitated, and employees share decision-making responsibility.
4. *Delegating* – responsibility for both decision making and problem solving is transferred to employees.

Good leaders are able to identify individual's needs and use different approaches depending on what is needed for the situation.

You will notice from figure 4 that these four styles represent stages on a continuum between authoritarian and collaborative leadership. None of these styles is considered to always be the most effective and the most appropriate style must be chosen for each situation. If a junior member of staff is new to a role and inexperienced then directing them may be appropriate, while directing an experienced person is a quick way to demotivate them. Be aware that a delegating approach that is effective with an experienced person may be ineffective for a new employee who may feel abandoned to deal with a complex task.

**FIGURE : 4** Continuum of authoritarian and collaborative leadership



*Source:* Adapted from K Blanchard, P Zigarmi & D Zigarmi, 1985, *Leadership and the One Minute Manager*, Fontana/Collins, Glasgow.

The inability to use the appropriate leadership style for each situation does not just prevent leadership from being successful but may lead to a significant reduction in performance. By evaluating each employee's competence and commitment in a specific role, the appropriate leadership style may be enacted. Clearly, sound understanding of your employees is required to ensure the effectiveness of this approach.

### Interactive question 4: Using Leadership style

**Based on Blanchard and Ziegarmi's continuum of authoritarian and collaborative leadership and information from the context example of Japan airlines, Requirement: Examine how each style was used by Mr Inamori at JAL?**

See Answer at the end of this chapter.

## 2.5 LEADERSHIP STYLES BASED ON ORGANISATIONAL LIFE CYCLE STAGE

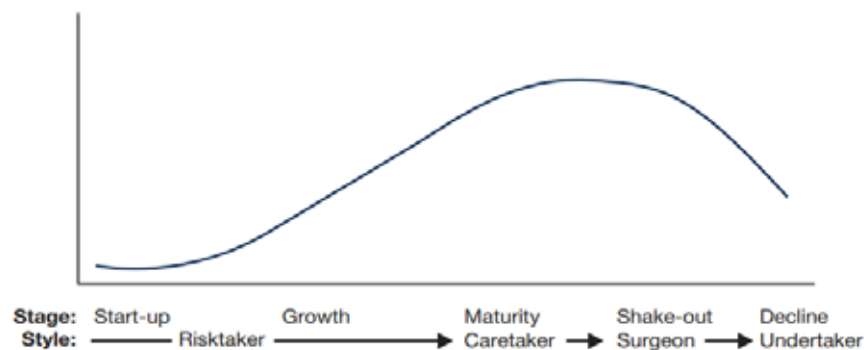
As with industry life cycles, organizations follow a pattern of start-up, growth, maturity, shake-out and decline. Organizations in different stages of the organization and industry life cycle will need to make different decisions based on their situation and this will influence the style of leadership needed to be successful at a specific point in time.

A simple model for understanding this approach is provided by Rothschild (1993) who characterizes the four styles of strategic leadership as risktakers, caretakers, surgeons and undertakers.

- Risktakers – often the founder of an organization. Their original vision makes the firm what it is today. They are a good match with the start-up and growth phases of an organization but may not be appropriate during maturity.
- Caretakers – help an organization move from the growth phase into the maturity phase.
- Surgeons – ensure future success or to fight against current problems; they have an ability to prune or sever parts of the organization that, although they may once have been valuable, have become a hindrance.
- Undertakers – when an organization has approached the end of its life, it is time to harvest or salvage what is viable and shut down the rest. This style is required to prevent prolonging losses.

**FIGURE : 5**

Illustrates how these styles of strategic leadership may be matched to the various life cycle stages of an organization.



*Source:* Adapted from W Rothschild, 1993, *Risktaker, Caretaker, Surgeon, Undertaker: The Four Faces of Strategic Leadership*, John Wiley & Sons, New York.

Certain styles may not be beneficial at certain times, and if key leaders are unable to adapt, the organization's performance may be hindered. For example, consolidating a firm's position may require the elimination of less profitable areas; major changes to current processes; and the creation of detailed systems and control structures. These needs may be ignored or rejected by a risk-taking leader who has a personal investment of both money and identity with the current situation.

### Interactive question 5: Leadership style-Surgeon

**Based on Rothschild's model of organisational life cycle and strategic leadership, and information from the context example of Japan Airlines:**

**Requirement:**

**How Mr Inamori has demonstrated the leadership style of a 'surgeon'?**

See Answer at the end of this chapter.

## 2.6 LEADERSHIP STYLES AND ORGANISATIONAL CULTURE

The culture of any social unit includes group norms, shared perceptions, espoused values, and consensus around goals and objectives. It includes the way people interact with each other, how they solve problems, and how they justify themselves. Culture is strongly tied to values and values is strongly tied to the type of organisation and principles of 'cui bono – who benefits' that were discussed previously in this module, and impacts how work gets done and how decisions are made.

How success in the age of data and analytics was supported not only by leadership and a data and analytics strategy focused on the longer term, but also by a culture that tolerates failure. The risk appetite and values of an organisation are strong drivers of an organisation's culture and will mean one organisation might do things quite differently to another on the basis of that difference alone. A culture that values learning and applies feedback rapidly so that iteration is possible is one of the key capabilities underpinning innovation and is growing in importance for organisations success and sustainability.

What are often deemed soft skills, such as understanding employee work styles and preferences is critical to putting teams together that complement each other's skills and can achieve high levels of performance. Being able to put together teams across borders adds a further layer of complexity for leadership and management, as it is not only technical skills that explain team success.

Strategy implementation often entails management of projects and activities around the world, where different values and cultural beliefs can influence the style needed to support successful strategy implementation. In a globalised economy, the ability to work harmoniously with different cultures has increasing significance. Leaders not only need to understand the cultures in the geographic markets where their organisation has their operations, but they must also be able to work with these cultures. An ability to develop an understanding of culture that transcends national boundaries is essential for effective leadership and strategy implementation.

Power distance refers to the way in which power is distributed in society and in organisations, and the extent to which the less powerful accept that it is distributed unequally. Asian employees generally accept greater directive authority from senior managers and leaders (Lam & O'Higgins 2013). Chinese employees are more likely to suppress their emotions and remain silent when their bosses make unreasonable demands (Lam & Higgins 2013). As a result, there are considerable differences between the leadership styles of Australian executives and their often older counterparts in China and other Asian countries. Importantly, Chinese business leaders remain more relationship-oriented than rule-based. Guanxi is the term for good connections. Here most attention is paid to a network of social relationships as a way of reducing uncertainty and achieving business success (Berger & Herstein 2014).

### Interactive question 6: Organistional culture

**Based on the information from the context example of Japan airlines, examine the organisational cultural issues that Mr. Inamori had to overcome in order to turn around JAL's performance. Support your answer with discussion of information from the context example of Japan airlines.**

See Answer at the end of this chapter.

The key points covered in section 2 of this chapter, and the learning objective they align to, are as follows.

## KEY POINTS

**Appraise how the roles of management and leadership drive organisational strategy in the contemporary business environment.**

- Leaders may seek to implement strategy using a variety of styles.
- Transactional leadership involves using incentives and rewards to maintain the activities within the organisation.
- Transformational leadership involves leading major change.
- Leaders and managers must balance stability and change in order to ensure current objectives are met while enabling future development.
- Different leadership styles are suited to different individual, team and organisational characteristics and circumstances.

### 3. THE ROLE OF LEADERS IN STRATEGY

Section overview

This section examines how the roles of management and leadership drive the organisational strategy in the contemporary business environment. Also examine the roles of leaders throughout the strategy process is to communicate and share their understanding and vision with the whole organization and business ethics.

Leadership is required to develop an organisations strategy, drive the change and align the organisation's structure, resources and culture with the strategy. Strong leadership is required to turn plans into reality. We revisit several of the key points presented by Kotter (1995) to reiterate the importance of strategic leadership during implementation, and the necessary minimum requirements for success:

- establish a sense of urgency
- communicate the vision
- empower others to act
- make new approaches ingrained in the organisation.

Even if all of these requirements are achieved in some measure, implementation will still become a mixture of both planned activities and adaptations due to changing circumstances. Leaders are required to drive the strategy, as well as monitor and modify its implementation while still successfully completing day-to-day operations.

The role of leaders in implementing the strategy is largely in developing the projects that will support it. Leaders are required to deal with the changes that result, and with any issues that may arise along the way. Strong leadership is necessary to make sure policies are enforced; changes are accepted both culturally and behaviorally; and resources are effectively used. Without effective leadership and discipline, members of the organisation will not participate willingly in the change.

#### Interactive question 7: Empower

**Based on information from the context example of Japan Airlines, identify and explain how Mr Inamori empowered others to act.**

See Answer at the end of this chapter.

## 3.1 COMMUNICATION

One of the most important roles of leaders throughout the strategy process is to communicate and share their understanding and vision with the whole organisation. This is a continual process that must use all informal and formal communication channels and include actions as well as words. Only by effectively communicating their strategic objectives and goals are leaders able to receive support and acceptance for their strategy. Communication is therefore vital to successful strategic implementation.

Communicating the need for change must be effectively combined with communicating the vision and strategy that will lead to a better future. This allows for the transformational effect of disengaging from the past and preparing for the transition to the future. Failure to think of the emotional as well as the physical aspects of the change may mean that physical changes (e.g. new systems, structures and processes), are implemented without the necessary transitions in the behavior and motivation of individuals.

To avoid resistance to change by stakeholders, leaders must communicate effectively to increase the alignment of people with leaders' vision and strategy.

To ensure effective communication, leaders have to present information that addresses the:

- current situation
  - what currently works
  - problems, or future problems (identifying the need for change)
- recommended change
  - outline and benefits
  - risks and problems.

By systematically addressing each of these key areas, the likelihood of success is increased. Jumping immediately from problems with the current situation to the benefits of the recommended change, without clearly outlining the changes, may seem to speed up the process, but could prove to be problematic in the future. Resistance is likely to occur as people hold onto the advantages and benefits of the current situation and focus on the risks and problems of the recommended change. Trying to force through these points instead of actively identifying and dealing with issues will only create further problems.

It is also important to consider issues relating to the phases of transformation, starting with the rejection of the old, followed by transition and turmoil, and concluding with the new beginning. Therefore, leading decisively can sometimes mean doing nothing for a short period of time, even when there is pressure to be active at all times. To assess whether each phase has been given adequate time, consider the following questions.

- Have people been given the opportunity to express their feelings in an open and protected manner?
- Have concerns raised formally or informally been acknowledged and discussed?
- Has there been recognition of what was achieved in the past, while marking or celebrating that change towards the new direction has been embraced?
- Have the requirements and expectations of the new direction been understood clearly to avoid unnecessary fear and disruption?

Communication involves more than sending out messages – it includes listening. The essential leadership skill of understanding other people can be enhanced by actively listening to them. Listening only to be able to reply is not good enough. The purpose of active listening is understanding. Paying attention to people's body language and tone of voice, as well as to what they say, provides valuable insight into what people are actually trying to communicate.

The new strategy needs to be communicated with actions as well as words. Techniques such as management by walking around (MBWA) are helpful. The CEO of Toyota Manufacturing, Kentucky, in an address to a Quality Circles conference in Mauritius, said that the logo at

the bottom right hand corner of every slide in his presentation was a pair of binoculars. This meant that managers must walk around the plant with their eyes and their ears wide open. In every interaction, formal and informal, conversations and actions should reinforce the need for change, the value of the future direction and the success that will result. Kotter's eight steps of change highlights the importance of communicating the change vision. Technology insight 1.3 discusses learning and development in the digital age.

### Interactive question 8: Communicating Strategy

**Based on information from the context example of Japan Airlines, identify and explain the specific actions that Mr Inamori took to communicate his strategy.**

See Answer at the end of this chapter.

### TECHNOLOGY INSIGHT 1

#### Learning and Development in the Technology Age

**In the age of data and analytics the leadership skills and capabilities necessary for success are changing. Along with it, approaches to educating the next generation of leaders are changing too.**

**Online learning and networking are becoming more important and prevalent, and an attitude of lifelong learning is essential. The emergence of Personal Learning Clouds (PLC's) provides the opportunity for organisations to customise learning and development of individuals and teams, selecting learning and development opportunities from a far wider range of traditional providers of executive education such as business schools and universities and relative newcomers in the learning and development space, such as large management consulting firms, HR consulting firms and digital platforms such as Coursera and Udacity (Moldoveanu & Narayandas 2019).**

**Data and analytics are disrupting the learning and development industry and expanding the opportunities for organisational learning and development that can be much more targeted in terms of its design and in the tracking of user-specific learner outcomes.**

## 3.2 DECISION MAKING

The strategy process provides a framework for systematically working through the choices that individual organisations and their leaders and managers need to make based on their specific context. All the factors discussed previously in this module, such as the type of organisation, its size, industry, level of maturity, vision, mission and goals complicate the process. They also influence the requirements for leadership.

Decision making is required in every step of the strategy development process. Deciding what to do should be the result of clear, transparent and rigorous internal processes: rational decision making. However, decisions are often far from rational in an organisation, and so it is important to consider how decisions are actually made.

### 3.2.1 Rational Approach to Decision Making

Rational decisions have the following criteria. They:

- are conscious, explicit and deliberate
- are internally consistent and logical

- are fully informed
- aim at achieving the end goal
- allow for independent means and ends
- involve choice between alternative ends and alternative means, choices which aim to maximise the end results achieved
- assume a causal relationship between the means taken and the end results achieved (Harsanyi 1986, p. 84).

Members of the senior management and leadership team need to ensure that they reach agreed decisions that are as rational or objective as possible and that individual viewpoints, issues, perspectives and situations are understood and taken into account during the process.

### Why Decision Making can Vary from the 'Rational' in Practice

It is well-accepted that a rational model of decision making should be applied. However, it is equally well-understood that this rational model is often deviated from in practice. The following sections look at the reasons behind this. For example, many organisations tend to jump straight from analysis to recommendation without considering any other alternatives. This can occur due to:

- enthusiasm to quickly get to the end of the analysis process
- readily agreeing with the leader's proposal
- having prior views about the 'best' solution (Harsanyi 1986, p. 86).

One of the most difficult tasks for leaders is making effective decisions, often while in a high-stress and fast-paced environment – that is, in the actual practice of their organisation. The organisation's strategy is a result of decisions that leaders have made along the strategy development process, and then during its final formulation and implementation.

Making decisions is part of everyday life but making decisions in highly volatile, stressful situations with limited information can be challenging. Brent Gleeson (2012), CEO of Internet Marketing Inc., describes four approaches that can be used to make decisions.

1. **Command** – this is where decisions are made by leaders without consultation with their team. This occurs in organisations where things are moving quickly, and there is no time for consultation. When a crisis arises, it is often unexpected and requires immediate attention to avert damage. It is here when command decisions are most utilised and the most effective.
2. **Collaborative** – decisions are made collaboratively with the team. This leadership style allows the team to provide opinions, insight and knowledge. The leader can consider each perspective and is then well-informed to make the final decision. Where the particular situation allows for it (not in a crisis situation where a decision is required instantly), this is considered the most effective leadership style when leading in an organisation.
3. **Consensus** – this is a 'majority rules' style of leadership, where leaders and their teams take a vote in order to determine a decision. When the entire team is affected, this can be seen as a fair and efficient way to make a decision, allowing every team member to have a voice. However, this is often not possible in a fast-paced business environment where strategy development is taking place, and many decisions need to be made throughout the process.
4. **Convenience** – this is essentially a delegation of decision making by the leader, whereby they allocate a trusted team member to make the ultimate decision. This is useful in allowing your team members to develop their decision-making skills and confidence. However, in strategy thinking, it is important that decision makers remain stable through the process, to ensure the same alignment and direction of the organisation is understood by all those involved (Gleeson 2012).

This aligns with the contingency approach to leadership – that leadership style is situational and must be assessed against the particular situation where a decision needs to be made. It cannot be said that one style is better than the other, because it depends on the time allowed, the people involved and the importance of the decision that needs to be made.

### Interactive question 9: Decision making Style

**Based on information from the context example of Japan Airlines, analyse and explain the style of decision making involved in the performance turnaround at JAL.**

See Answer at the end of this chapter.

## 3.3 BUSINESS ETHICS

**Business ethics** is the study of the rules of conduct, basic values and ethical principles of an organization and its practices. Aligned with business ethics is the term 'corporate social responsibility' (CSR). CSR is organisations' obligation to minimise their negative effects on society, and to account for their economic, social and environmental outputs. A socially responsible organisation is accountable for its actions in society. The key to distinguishing between CSR and business ethics is that CSR refers to the effects that an organisation's actions have on society, while business ethics is about the guidance and formation behind the decisions that shape those actions.

In formulating and developing strategy, leaders in the senior management team are making significant and far-reaching decisions that influence what an organisation does. Moreover, the most fundamental questions about the values and resources of a business are managed at the strategic level, articulated in vision and mission statements, values and goals. Relevant questions to ask include the following.

- How are we going to get there?
- What values will guide the process of change?
- What limits should be placed on the methods and means used to achieve the end outcomes and strategies?

Leaders in organisations are influential role models for the behaviour of employees, for both establishing and maintaining the ethical climate in their organisation. The strategies that leaders formulate and implement determine the fundamental goals of an organisation. In determining how the organisation will achieve its goals, leaders establish or shape the ethics and values that guide the activities of the organization and set the limits or the extent to which the 'means justifies the ends'.

Competitive and profit-maximising organisations may well be efficient, but an overriding focus on efficiency and profit can lead to ethical issues and dilemmas such as unequal income distribution or damage to the environment. In a purely profit-maximising economy, leaders of organisations may overlook the social costs of their actions. The obligation to act ethically requires leaders to internalise the negative side effects or by-products of their organisation's activities (e.g. by taking steps to minimise their organisation's pollution of the local environment) and take proactive measures to be a valued part of their community, such as for example creating employment opportunities, developing the local workforce skills, and supporting causes that are important to the local community.

### Interactive question 10: Role model

**Based on information from the context example of Japan Airlines, examine how Mr Inamori acted as a role model and took proactive measures to demonstrate the importance of JAL and its activities.**

See Answer at the end of this chapter.



### 3.3.1 Values and Ethics

The importance placed on making a large profit in business is one reason why leaders are faced with ethical dilemmas. The pressure to succeed in a competitive market is significant. To counter balance this, however, organisations are increasingly under scrutiny by the regulators to ensure the welfare of employees, the environment and society in general. There is often a trade-off, because increased profits may be achieved at the expense of what is accepted as good corporate citizenship, with evidence suggesting that an organisations reputation is strongly linked to its performance. Ethics and morals can guide leaders, while rules and laws can restrict their behaviour and help ensure that they act appropriately. Leaders need to be aware, as they guide employees and coordinate activities, that they have a strong influence over the ethical issues that emerge in their organisations.

### 3.3.2 Classical View of Ethics

The classical view of ethics proposes that for an organisation to pursue values other than profit, it is confronted with a threat to survival and therefore the intentions of its owners may be undermined. Milton Friedman, an economist and leading exponent of the classical view, argued that the primary obligation of senior management is to provide a return on investment to the owners (shareholders) of the organisations for which they work. Friedman argued that the only social responsibility of an organisation is to utilise its resources and engage in profit-maximising activities, as long as those activities are conducted without fraud or deception. From the classical perspective, seeking socially responsible goals is not only likely to incur costs, but may also de-focus the efforts of the firm, which may lead to decreased productivity (Friedman 1962). Ultimately, according to Friedman and the classical view, the only responsibility of a firm is to increase its profits through open competition (Bejou 2011).

#### Context example 4: 7-Eleven's Labour Cost Woes

Examines an instance in which a media investigation suggested the franchise business 7-Eleven was underpaying many of its workers, both an ethical and a legal issue

Russell Withers, a long-time member of the Australian Olympic Committee, and his sister, Beverley Barlow, two of the wealthiest people in Australia, brought the franchise licence to establish 7-Eleven outlets in Australia in 1977. By 2015 there were more than 600 stores in New South Wales, Victoria, Queensland, Western Australia and the ACT. The stores are open 24 hours, seven days a week, making salaries a huge expense, especially when accounting for late night and weekend penalty rates. Most of the 4000 workers employed in the stores are students, many of them from overseas, in particular from India.

A joint Fairfax Media and ABC Four Corners investigation in mid-2015 obtained explosive internal documents, and its review of 225 stores found that almost 70% of franchisees manipulated their rosters and had payroll compliance issues. When rosters were cross-checked against CCTV footage, it could be seen that several workers were not actually on the roster. Instead they were international students who were paid in cash but well below the legal minimum Australian wage. Many were being paid between AU\$11 and AU\$15 an hour, when the legal minimum wage at the time was AU\$24.69 during the week and AU\$28.49 on weekends. Tess Hardy notes the investigation reported that approximately two-thirds of 7-Eleven employees have been 'severely underpaid and grossly overworked in deliberate contravention of key employment standards'. Laura Hayes reported that 'a 7-Eleven franchisee with several convenience stores was investigated for several counts of immigration fraud. The immigration investigation regarding allegations against one set of owners caused 7-Eleven franchisees to be investigated nationwide. 7-Eleven was subjected to significant negative publicity, and some of the news articles likened the convenience stores to modern-day plantations.'

In the wake of this report, Professor Alan Fels, the first chairperson of Australian Competition and Consumer Commission (ACCC) was appointed head of a two-person panel, supported by independent assistants from Deloitte Australia, to receive and examine claims of underpayment to 7-Eleven employees. On its website, 7-Eleven stated that past and present staff should come forward and give evidence to the Fels enquiry and that the results of their work, but not the names of individual claimants, would be made public. In May 2016, 7-Eleven fired Fels and the independent panel, taking the investigation in-house.

There is, however, another side to the story. It could be argued that these students are at least getting some money to help them make ends meet. This is the same argument often used to justify sweatshop labour for a dollar a day in China, namely, that a bowl of rice is better than no rice at all. This argument is unlikely to gain much sympathy in Australia, however, as these workers could be much better paid working for another employer that compensated them with the minimum wage. More convincingly, however, Hardy writes that once the 7-Eleven franchisee 'covers labour costs, meets interest repayments and pays the necessary royalty fees to the head franchisor, the store owner – which is often a small business operator – may make only a modest profit of about AU\$40 000 a year'. For this reason, many of the franchisees have put their stores up for sale. 'Since the Four Corners-Fairfax Media investigation into 7-Eleven began, the number of stores for sale by franchisees ballooned from 50 to 76' (Ferguson et al. 2015).

Source: J Schermerhorn, P Davidson, A Factor, D Poole, P Woods, A Simon & E McBaron, 2017, *Management*, 6th Asia-Pacific edn, John Wiley & Sons, Milton, Queensland, pp. 143–44.

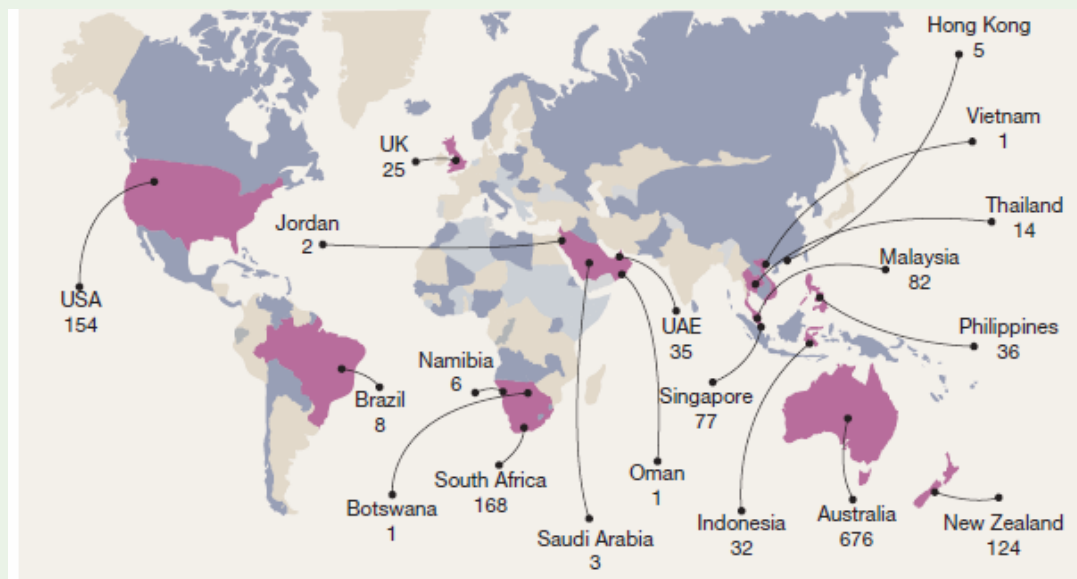
### 3.3.3 Socio-Economic View of Ethics

In contrast to the classical view, the socio-economic view argues that the leaders of organisations have a responsibility to the society that creates and sustains them. This responsibility goes beyond the profit imperative to include protecting and improving society's welfare. Leaders should ensure that their organisations refrain from socially undesirable behaviour and act in the public good, maximizing their positive impact on society. The reason behind this view is that organisations, in particular large corporations, have significant economic and social power, so in return for granting organisations a separate legal entity, society is entitled to expect from them a significant net positive contribution to the general good (Ferrell & Fraedrich 1997).

#### Context example 4: 7-Eleven's Labour Cost Woes

Cotton On, discussed being exemplifies this approach.

Cotton On is Australia's largest global retailer. It states its purpose as wanting to 'make a positive difference in the lives of everyone we touch; whether that's in our backyard or on the other side of the world'. The Cotton On Group operates over 1500 stores across seven brands (Cotton On, Cotton On Kids, Cotton On Body, Factorie, Rubi, Typo and Supre) around the world.



The Cotton On Foundation is the Cotton On Group's philanthropic arm dedicated to empowering youth, globally underpinned by the belief that quality education is critical to ending extreme global poverty. The Foundation exists to empower youth globally through the delivery of quality education projects across Uganda, South Africa, Thailand and in Australia and has invested over \$AU13.3 million into international development and indigenous education in 2019. Through a unique partnership with customers and team members, the Cotton On Foundation markets products such as tote bags and bottles of water in over 1500 Cotton On Group stores, where 100% of the proceeds contribute towards empowering youth through quality education.

Since 2007 the Cotton On Foundation has raised over AU\$100 million to help reduce global poverty and in 2019 was recognised as Australia's 22nd highest giving corporate for 2019 and the highest ranking private contributor in the country according to the Australian Financial Review (AFR).

According to the Deloitte Global Millennial Survey 2019, 32% of millennials believe companies should be trying to improve society – by improving education or reducing inequality, for example – but only 16% believe companies are actually achieving that.

Source: Cotton On Group, n.d., <https://cottonongroup.com.au/cotton-on-foundation>.

### Interactive question 11: Value and Ethics

Context examples 4 and 5 highlight very different approaches to doing business based on different organisational values and ethics.

**Organisations that pursue the classical view of ethics and the socio-economic view of ethics approach business differently.**

**Requirement:**

**Identify and explain the leadership decisions that have been made differently by 7-Eleven and Cotton On (using information in context examples 4 and 5) with regard the welfare of employees, the environment and society based on their respective approaches to organisational values and ethics.**

See Answer at the end of this chapter.

### Context example 6: Value for all Stakeholders

#### **Value for all Stakeholders**

On 19 August 2019, all but 12 of the 193 member companies of the Business Roundtable in the US endorsed new principles of corporate governance, recognising that the idea that corporations exist principally to serve shareholders is no longer an accurate reflection of how CEOs seek to create value for all organisational stakeholders.

In releasing the statement, the Business Roundtable highlighted issues such as the natural environment, social inclusion and diversity. They said the long-term interests of all stakeholders (customers, employees, suppliers, communities, shareholders and others) were inseparable.

It is important to realise that such a position is not inconsistent with the interests of shareholders or the company itself. It is merely recognition that the company's long-term interests are better served by adopting a broader perspective on key stakeholders than has often been practice in the past.

In today's business environment, most organisational leaders recognise that their company is best served by treating all stakeholders fairly and that a narrow focus on shareholders can damage the business. An example is the reputational damage and increased regulatory oversight impose on Australia's major banks following investigations into their conduct, particularly their treatment of customers.

Increasingly, businesses must better balance all stakeholders' needs in order to maintain their social licence to operate and avoid increasing disruption of and interference in their business.

Source: Adapted from Business Roundtable, 2019, <https://opportunity.businessroundtable.org/ourcommitment>; S Bartholomeusz, 2019, 'Listen up! Shareholder value no longer everything for big business', The Age, 21 August, [www.smh.com.au/business/companies/listen-up-shareholder-value-no-longer-everything-for-big-business-20190821-p52jau.html](http://www.smh.com.au/business/companies/listen-up-shareholder-value-no-longer-everything-for-big-business-20190821-p52jau.html).

The key points covered in section 3 of this Chapter, and the learning objective they align to, are as Follows.

## KEY POINTS

**Appraise how the roles of management and leadership drive organisational strategy in the contemporary business environment.**

- **Leaders play an important communication role in the strategy process, ensuring information flows through the organisation and that it supports the organisation's strategy.**
- **Leaders are responsible for most strategic decisions.**
- **A rational approach to decision making involves being fully informed to make decisions that will result in desired outcomes. In practice, leaders often deviate from the rational approach due to the realities of the contexts in which decisions are required.**
- **Leaders are responsible for setting an ethical role model for the conduct of the organisation – the principles upon which the organisation goes about pursuing its objectives.**

## 4. THE ROLE OF THE ACA IN STRATEGY AND LEADERSHIP

### Section overview

Appraise how the roles of management and leadership drive organisational strategy in the Contemporary business environment.

The role of an ACA is becoming increasingly integrated with the discipline of strategic analysis and strategic decision making. ACAs are extending their responsibilities beyond traditional accounting functions to emerge as a future finance professional.

ACAs, rather than being housed only in the traditional accounting department, are more likely to be located throughout an organisation's operations, working on strategic analysis, planning and implementation activities. In this respect, they are working more as business and strategic partners, challenging them to broaden their traditional perspective and to acquire new skills to operate and contribute successfully in a new environment.

With the developments in information technologies automating the traditional accounting task, ACAs are increasingly able to use new accounting and performance models that integrate financial and non-financial information, as well as acting as strategic partners with line managers in decision making. In this respect, accountants are required to take a more proactive role in strategic decision making.

Effective decision-making processes are critical for strategy execution. In this respect, ACAs play an important role in clarifying responsibilities and decision-making processes concerning finance and budget allocations, and in providing financial data to inform and shape strategic decisions. How people make decisions and the way in which people are held accountable are important determinants of performance.

ACAs have a key role to play in influencing and facilitating strategy through resource and budget allocations, and in translating higher level strategic goals into specific growth and earnings targets and measures for operating managers.

The traditional role of accountants in managing an organisation's finances is a key factor in strategic success. This applies to the private sector in terms of generating cash to pay employee and shareholder returns, and to reinvest for future growth. In the public sector, there is a need to manage within budgets to deliver the optimal product or service value under the financial limits, and in order to secure ongoing government funding.

Value creation is about delivering products and/or services that provide superior benefits to customers and other stakeholders and is therefore fundamental to achieving long-term strategic success. Value creation can occur anywhere along an organisation's value chain. In respect of 'financing', for example, value creation relates to the cash-generating and capital-

raising abilities of an organisation, which are key to its ability to pay shareholder dividends and to reinvest for future growth. In the case of a public sector organisation, managing for value relates to the optimal use of public moneys.

ACAs must be able to describe their organisation's business model in strategic terms. Whereas a strategy focuses on the long-term evolution and goals of the organisation, the business model describes the organisation's current state, albeit in an abbreviated form. It is essentially the 'blueprint' of the business.

Whenever the strategy changes, the business model of the business must change and vice versa. The more dynamic the market environment, the more necessary it is to strategise and, as a consequence, finetune or innovate the business model as a normal part of the strategy process. This means that ACAs must develop a strong appreciation of the implications associated with changing any part of the existing business model or innovating it. This includes the way in which the financial performance of the organisation could be impacted.

The ACA's role in organisational strategy implementation includes aligning functional strategy with the organisation's business strategy, the re-allocation of resources and budgets to facilitate and fund the organisation's strategic options, and the development of key performance measures to monitor the organisation's performance against its strategy. Although these extra functions are now expected of accountants, it is important to note that the traditional role still applies. The primary focus should be on accounting standards and regulations with the ideas and frameworks of strategic thinking guiding the peripheral and over-arching direction.

**TABLE: 6** The role of the finance professional in strategy

	External/internal Analysis	Develop strategic plan	Implement strategic plan	Review
Accountant	Gather finance, enterprise and big data	Provide support in business modelling	Support implementation, analysis of interim performance	Gather finance, enterprise and big data
Senior Accountant	Gather finance, enterprise and big data, and interpret and analyse results and performance metrics (e.g. SWOT, ROI) from an organisational context and trend perspective, and act as an intermediary between the finance, technology and information functions of the organisation	Offer insights, collaborate to develop ideas, produce forecasts, active role in business modelling, and business case generation an analysis	Support implementation, analysis of interim performance, and strategic project re-scoping efforts if these are necessary	Gather and interpret finance, enterprise and big data, including ensuring the sound management of large volumes, varieties, and velocities of data with a focus on veracity (ensure data validity and reliability)

Financial Controller	Interpret finance, enterprise and big data, analysis results, performance metrics and any other information of relevance to better value assets, make operational and strategic decisions and manage and mitigate risk effectively	Develop resource requirements, challenge assumption in business models, conceptualise ideas, anticipate future trends, develop strategic options and help develop budgets	Champion change and plan for contingencies, actively mitigate risks, and strategic project re-scoping efforts if these are necessary	Identify and analyse information and help identify if and when the strategic plan and business model(s) of the organisation need to be changed
CFO	Analyse the operational and strategic implications of all the asset valuation, operational and strategic and risk information made available to the senior management team, including their implications for strategic decision making at every level of the organisation	Ensure the decisions made across the organisation are based on sound judgement and could lead to the development of a coherent corporate strategic plan, including aligned business and functional plans and communicate/gain support of key stakeholders, including the Board	Be a role model for change, drive and lead the change, and any project re-scoping efforts if and when required	Identify strategic and business model issues, and consult with the organisation's leaders to identify through consensus the next logical steps to ensure the organisation is to remain relevant, including staying competitive, innovative and productive into the future
Internal Auditor	Identify suitable dashboards of finance, enterprise and big data and other relevant performance and risk mitigation related information to monitor periodic	Contribute to the strategic plan with a focus on improving performance at all levels of the organisation and the effective mitigation of risk	Monitor the performance of the implementation plan with an emphasis on identifying risks and mitigating risk	Review dashboards of performances and key metrics and other data across the organisation, including the progress of the strategy implementation plans, and identify issues for senior management and the Board to consider

Describes a range of roles for accountants in the strategy development process

**Source: ACA Australia 2020.**

Globalisation has seen a move away from centralised accounting operations to decentralised arrangements in organisations. ACAs are more likely to work in partnership with local and/or international crossfunctional teams, dealing with different cultures and business practices. Within this context, they are increasingly required to manage the intricacies associated with transacting intra- and inter-organisationally across the globe, and the problems associated with integrating the organisation's value chain with those of partners based in other countries.

Understanding and managing the dynamics of a global economy is important in developing the ACA's contribution to the decision-making processes and performance of the organisation. Whether working for a large multinational corporation, a small local firm, or in their own business, the ACA will most likely have involvement with international buyers and suppliers, with foreign corporations entering the local market, or be trading in markets around the world. In these contexts, the ACA's strategy knowledge is important to career success, and will also enhance prospects for gaining international work experience.

### Interactive question 12: Role of CAs

**CAs have an important role to play in strategy process.**

**Requirement:**

**Provide two actions of a CA that reflect a management behaviour that drives strategy and two actions that reflect a leadership behavior that drives strategy that are relevant to finance professionals.**

See Answer at the end of this chapter

**TABLE: 7** Some key questions candidates should be able to answer

Key questions	Concepts/models/approaches that can be used to answer the key questions
What is leadership?	<ul style="list-style-type: none"> <li>• The skill of motivating, guiding, and empowering a team towards a socially responsible vision</li> </ul>
What are some of the main approaches to leadership that have been researched and described?	<ul style="list-style-type: none"> <li>• Traits, behavioural and contingency approach</li> </ul>
Where is leadership typically found in an organisation?	<ul style="list-style-type: none"> <li>• The Board</li> <li>• The CEO</li> <li>• Senior management</li> <li>• General management</li> <li>• Project management</li> </ul>
What's the difference between leadership and management?	<ul style="list-style-type: none"> <li>• Dual roles of leading and managing</li> <li>• Transactional and transformational leadership</li> </ul>
What's needed to ensure the organisation can change to meet the changing demands of customers and the marketplace?	<ul style="list-style-type: none"> <li>• Strategic leadership</li> <li>• Strategic thinking</li> <li>• Strategic fit and stretch</li> </ul>
What are the impacts of organisational change on individuals?	<ul style="list-style-type: none"> <li>• Kotter's eight-step change model</li> <li>• Balancing stability and change</li> <li>• Visionary leadership</li> </ul>
Why is decision making in strategy so important?	<ul style="list-style-type: none"> <li>• Definition of strategy</li> <li>• Rational approach to decision making</li> <li>• Decision-making approaches (command, collaborative, consensus, convenience)</li> </ul>



What other factors impact the type and style of leadership for strategy implementation?	<ul style="list-style-type: none"> <li>• Intensity of Change Model (Dunphy and Stace)</li> <li>• Situational Leadership Model (Blanchard and Zigarmi)</li> <li>• Industry Lifecycle Stage Model (Rothschild)</li> <li>• Organisational culture</li> </ul>
What is the role of leaders in strategic analysis?	<ul style="list-style-type: none"> <li>• External analysis</li> <li>• Key external stakeholder analysis</li> <li>• Internal analysis</li> <li>• Key internal stakeholder analysis</li> </ul>
What is the role of leaders in setting direction?	<ul style="list-style-type: none"> <li>• Visionary leadership – setting the (right) direction; acting as change agent; communicating as spokesperson; coaching others</li> </ul>
What is the role of leaders in strategy formulation, selection and implementation?	<ul style="list-style-type: none"> <li>• Intensity of Change Model (Dunphy and Stace)</li> <li>• Situational Leadership Model (Blanchard and Zigarmi)</li> <li>• Industry Lifecycle Stage Model (Rothschild)</li> <li>• Organisational culture</li> </ul>
What is the role of leaders in strategic analysis?	<ul style="list-style-type: none"> <li>• Visionary leadership – setting the (right) direction; acting as change agent; communicating as spokesperson; coaching others</li> </ul>
What is the role of leaders in strategy formulation, selection and implementation?	<ul style="list-style-type: none"> <li>• Kotter's eight-step model</li> <li>• Risk assessment</li> <li>• Communication</li> </ul>
What is the role of the accountant in strategy and leadership?	<ul style="list-style-type: none"> <li>• Table 1.13 – the role of the accountant in strategy and leadership</li> <li>• Understanding the dynamics of a global economy</li> <li>• Understanding technology and dealing with it specialists</li> <li>• Identifying, verifying and analysing data as inputs to decision making</li> </ul>

## KEY POINTS

The key points covered in section 4 of this Chapter, and the learning objective they align to, are as follows.

**Appraise how the roles of management and leadership drive organisational strategy in the contemporary business environment.**

- **CAs have a growing opportunity to draw on and extend their skills to participate in strategy development and become decision partners in the strategic management of the organization principles upon which the organisation goes about pursuing its objectives.**

## 5. LEADERSHIP AND MANAGEMENT ROLES IN STRATEGIC ALIGNMENT



### Section overview

This section examines how the roles of management and leadership drive the development of the strategy and importance of Managers in ensuring the organisation and its personnel act in accordance with the organisation's values and towards achieving its goals.

The leadership team (which, in this context, includes the senior executive and managers from functional departments) is core to building the mission and vision and developing the resulting values, goals and strategy. Leaders and managers in the organisation must recognise when an existing vision, mission and strategy are no longer working, and when it is time for a new direction. The leadership team plays an important role in ensuring the firm can be agile, evolve and maintain a strong future.

As discussed in modules 2 and 3, businesses must analyse external and internal environments using quality data and from this, they must develop the skills and agility to move on strategic change and identify new opportunities developing a strong direction for the future. This can be a challenge and the common failure to do so is evident in brands once considered iconic that are no longer viable or evident in the market. For example, a failure to recognise and respond to new technology-based product entry (digital photography) and changing market trends contributed to the decline for photographic equipment and accessories company Kodak.

The core skills and tasks of leadership and management in strategy development include:

- reflecting on previous performance and the influences from the external environment and competitors
- constructing a strong understanding of internal capabilities and expertise
- generating news ideas and directions focused on potential new customers and new markets
- developing an innovative, visionary and design-led business that focuses on strategies that meet the needs of future growth and sustainability
- building a strong organisational culture with a strategic focus
- making evidence-based decisions, capturing data through business analytics and building a strong body of metrics and evidence to support decisions
- building agility and responsiveness into the business for a strong future.

The role of leadership within the business needs to be visionary and create momentum and belief in the strategy to move it forward. The business executive needs to empower managers to monitor and promote the generation of ideas, evidence-based decision making

and reporting of performance metrics against the strategic goals. Strong leadership and management are all about building a framework for strategic development, monitoring performance and considering the future.

### KEY POINTS

The key points covered in section 5 of this module, and the learning objective they align to, are as follows.

#### **Appraise how the roles of management and leadership drive the development of the strategy.**

- Organisational leaders and managers are responsible for establishing and then ensuring the alignment of an organisation's strategy with its vision, mission, values and goals.
- Leaders are particularly important in establishing the vision, mission and values that define the purpose of the organisation, how it will act and the principles upon which its decisions and activities will be made.
- Managers are particularly important in ensuring the organisation and its personnel act in accordance with the organisation's values and towards achieving its goals.

## 6. ENTREPRENEURIAL ORIENTATION



### Section overview

This section discusses the key dimensions of an entrepreneurial orientation such as Innovativeness, Proactiveness and Risk taking.

The change drivers described collectively create environmental dynamism (Aloulou and Fayolle, 2005). This volatile and continuously changing context makes it difficult, if not impossible, to predict the future of the competitive environment and its impact on the organisation. While environmental dynamism challenges traditional business models, it also creates new opportunities for organisations (Lumpkin & Dess 2001; Hakala 2011; Nelson & Winter 1982).

Environmental dynamism requires organisations to adapt traditional models of strategy development and implementation to create a strategic process in which they demonstrate innovative behaviour to create new opportunities, accept higher levels of risk and implement entrepreneurial actions (Dess & Lumpkin 2005). This is known as an entrepreneurial orientation to strategy (Miller 1983; Wiklund & Shepherd 2003; Hughes & Morgan 2007; George 2011).

An entrepreneurial orientation involves behaviours aligned to the continual identification and generation of new business, which will create and sustain a competitive advantage (Wiklund & Shepherd 2003). In particular, entrepreneurial organisations aim to be first to market with product and service innovations.

The three key dimensions of an entrepreneurial orientation are as follows (Hughes & Morgan 2007; Hakala 2011).

- Innovativeness – the tendency or willingness to participate in support of new ideas, creativity and experimentation as well as to develop creative processes of technological and R&D leadership which result in new products, services or technological processes (Lumpkin & Dess 1996; Zho 2006).
- Proactiveness – a forward-looking view, where organisations try to develop new products or improvements on them, anticipating changes and opportunities that arise in the environment, promote changes in current tactics and detect future market

trends (Hughes & Morgan 2007). Proactiveness enables firms to minimise the threat of obsolescence, which is usual in dynamic environments (Lumpkin & Dess 2001). Dynamic environments encourage a firm's to achieve new target market segments before they are discovered by the firm's rivals (Zahra 1996).

- Risk taking – the willingness to commit resources to projects where the results are uncertain and/or the cost of failure can be high (Wiklund & Shepherd 2003; Zahra 1991). For example, the early stages of technology product development is usually uncertain, because competing firms try to establish the industry standard (Meijer et al. 2010), which renders the others obsolete.

Studies have found a robust correlation between entrepreneurial orientation and performance (Rauch et al. 2009). Of course, the ability of an organisation to adopt an entrepreneurial orientation is dependent on the organisation's resources and capabilities. In particular, the availability of technological and marketing capabilities has a positive influence on entrepreneurial orientation. The more resources an organisation commands, the more likely it will develop the innovative, proactive and risk-taking behaviours that define the entrepreneurial orientation (Ruiz-Ortega & Parra-Requena 2013)

## 7. STRATEGIC INNOVATION

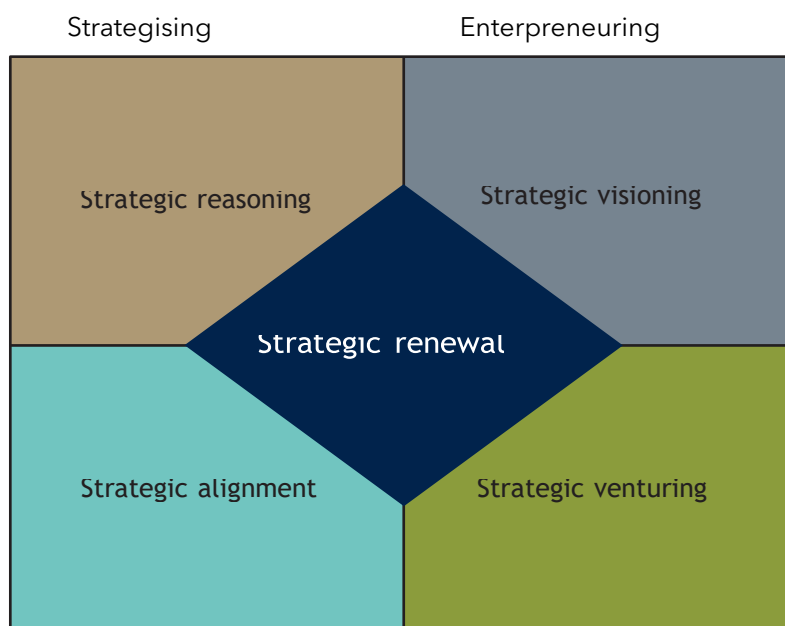


### Section overview

Gain an understanding on four key elements of strategic innovation: strategising, entrepreneuring, changing and investment processes.

Organisations adopting an entrepreneurial orientation often seek strategic renewal through a process of strategic innovation. De Wit (2017) identified four key elements of strategic innovation: strategising, entrepreneuring, changing and investment processes. These are represented in figure F 6.

**FIGURE : 6** Strategic innovation



Source: CPA Australia 2020.

Strategic innovation as a strategising process requires managers to identify new bases of competitive advantage, often against the dominant logic of the organisation. This requires managers to identify opportunities and threats through their continuous assessment of changes in the organisational environment and constant evaluation and re-evaluation of organisational strengths and weaknesses. The capabilities managers need in order to lead their organisations to strategic renewal will be discussed later in the module. The strategising process allows organisations to overcome strategic myopia and move away from outdated cognitive maps.

Strategic innovation as an entrepreneurial process requires managers to identify new markets for existing products and services, apply new technologies in current markets and establish new businesses in addition to the existing business portfolio. This requires managers to possess or develop entrepreneurial capabilities. Strategic innovation as a change process requires adjustments of the organisational structure (e.g. when new products require the combination of resources that are located in separate business units). Organisational structure refers to how the individuals in the firm have been configured and relate to one another. Conventional organisational structures divide the tasks and responsibilities among the organisational members, forming different functions and units, and then coordinate their separate tasks into an integrated whole (De Wit 2017). Organisational culture will almost certainly need to change if a conventional organisation is to successfully pursue strategic innovation.

Strategic innovation requires investment in a variety of resources and capabilities and thus competes with investment into other areas (e.g. entering new markets, mergers and acquisitions). Investment in strategic innovation can be seen as risky due to the uncertainty over the prospects it will lead to future value creation. Managers often seek to mitigate risk by sharing it using processes such as open innovation and value co-creation with partners in the business ecosystem.

## 8. INTRAPRENEURSHIP



### Section overview

This section examines the importance of intrapreneurship for creation of an organisation-wide innovation management system.

Gifford Pinchot coined the term 'intrapreneur' in 1978 to describe 'employees who do for corporate innovation what an entrepreneur does for his or her start-up' (Daykin 2019). In other words, intrapreneurs are employees who create new products, services and processes, identify new opportunities for business development, and create value for the organisation.

We discussed earlier the tension between the flexibility required for an organisation to be innovative and the routinised nature of processes that have achieved efficiency and are responsible for an organisation's past successes. It is unfortunately common that managers and leaders suppress the innovative tendencies of talented employees, fail to provide the necessary resources of autonomy, or reject innovative ideas created by those not formally appointed to a research and development role. As the pace of change and level of complexity in the business environment continue to accelerate and the components of business models become increasingly complex, the top-down model of leadership, management and decision making becomes increasingly problematic. Organisations seeking staff often advertise for creative, passionate and innovative people – they must then encourage and support the staff to exercise these qualities if the organisation is to benefit (Daykin 2019).

Google exemplifies an organisation that has excelled in creating a culture of innovation and intrapreneurship. Some of its flagship products, including Gmail, have been initiated by the work of employees during the 20% of work time that Google requires employees to pursue interests and ideas outside the core of their work duties. 3M has a long-established similar program. Such an approach encourages collaboration across organisational units and motivates employees to explore their creativity.

An important aspect of encouraging intrapreneurship within the organisation is to provide motivation and rewards for those staff engaging in it. This may involve the organisation providing resources and a high degree of autonomy, and tolerating a degree of risk and failure. It may also involve recognition, financial and other rewards for those who successfully generate innovations that enhance achievement of the organisation's goals. Equally, employees engaging in intrapreneurship using the organisation's resources must accept responsibility for the outcomes. This mirrors the ways entrepreneurs seek returns on the risks they take.

Capozzi et al (2010) found that organisations with formal processes to enable intrapreneurship have higher intrapreneurship success rates than those that do not formally adopt supportive processes. Earlier in the module we discussed the idea of re-inventing an organisation to be innovative, but Altringer (2013) suggests much can be achieved by mentoring, workshoping and other methods that identify, encourage and support intrapreneurs without a wholesale change in the organisation's structure and culture. Corbett (2018) argues intrapreneurs cannot take an innovation from idea to realisation in the absence of a culture, structures and systems that nurture innovative ideas and support their development. Further, he suggests that to successfully achieve intrapreneurialism, a key requirement is the creation of an organisation-wide innovation management system featuring:

- leadership committed to creating an innovative organisation
- a culture of innovation
- a structure that highly interconnects different parts of the organisation
- a willingness to commit resources throughout the organisation
- decision-making processes that can respond quickly to innovations
- processes and tools to support the pursuit of innovation
- metrics and rewards
- specialised skills and talent aligned with innovation.

Corbett (2018) suggests organisations should hire innovation specialists, but that they should be integrated across all functions of the organisation, not placed in a separate 'innovation department'

## 9. OPEN INNOVATION AND VALUE CREATION



### Section overview

This section discusses closed innovation that relies on the organisation's own resources and capabilities and attempts to retain the value created by the innovation for itself. Also discuss about open innovation an alternative to the vertically integrated closed innovation model in which all innovation activities are internal to organisations.

Organisations may protect their intellectual property using measures such as legal protections (e.g. trademarks, copyright, patents) and confidentiality (preventing competitors from imitating the offering). They take these steps to ensure any competitive advantage they achieve cannot be easily overcome by competitors. This is a long-established practice, common throughout the business world. Efforts at innovation, including research and development, are fiercely protected within the organisation to ensure the organisation can capture the value that its efforts create. This approach is known as closed innovation – it relies on the organisation's own resources and capabilities and attempts to retain the value created by the innovation for itself.

More recently, particularly over the past 10–15 years, as the business environment has become more complex (involving rapid change and high levels of uncertainty) increasing numbers of organisations have found there is benefit in adopting an open innovation approach. Open innovation is defined as:

a distributed innovation process based on purposively managed knowledge flows across organisational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organisation's business model (Chesbrough & Bogers 2014).

Open innovation thus represents an alternative to the vertically integrated closed innovation model in which all innovation activities are internal to organisations. Generally, open innovation involves knowledge flows between organisations in the value chain (e.g. between the organisation and its suppliers or between the organisation and its customers) (Hagedoorn & Duysters 2002). It can, however, also involve knowledge flows between competitors. For example, the electric car company Tesla allowed other car companies to use its patented technology in an effort to accelerate development of the electric car market.

To craft a successful collaboration between a large organisation and a start-up requires each party to understand the other's perspective (Usman & Vanhaverbeke 2017). Open innovation activities must create value to sustain their purpose. Thus, open innovation must be assessed through the lens of value (Chesbrough, Lettl & Ritter 2018; Spender et al. 2017).

Leaders and managers have to develop an open-innovation capability within the organisation, which comprises the following four value processes:

1. value provision – the organisation's participation in open innovation must be able to provide value to the other party
2. value negotiation – the organisation must be able to leverage its contribution in order to ensure it receives a benefit from its participation
3. value realisation – the organisation must be able to translate the outcomes of the collaboration into value
4. value partake – the organisation must be able to share the value with its collaborators. Consider, for example, the appliances company Philips, discussed in example 7.

#### Context example 7: Philips

##### Open Innovation at Philips

Philips centralised research and development in 1998 before deciding to take an open innovation approach. It renamed its R&D space 'High Tech Campus Eindhoven' and invited companies, institutes, researchers and entrepreneurs to engage in open innovation. Companies associated with the Campus now generate almost 40% of all Dutch patent applications. Philips also established a lab called MiPlaza, which invites companies to access Philips knowledge and resources to develop their own applications. The four value processes are:

1. *value provision* – Philips provides other organisations with value through access to facilities, knowledge and Philips' own research
2. *value negotiation* – Philips retains the right to use inventions made by participants in the MiPlaza lab to improve their own products
3. *value realisation* – Philips exercises judgement about who participates in its Campus and MiPlaza programs and thus ensures alignment with its interests; in addition to business-related innovation, it takes a broad view of value, including the generation of social benefits such as healthcare and the development of technology for developing countries and
4. *value partake* – both collaborators and Philips share in the right to use and benefit from the innovations created (Isomaki 2018; Philips 2020).

Both large, established organisations and start-ups can utilise open innovation to share (and thus reduce) the risks attached to innovation efforts (e.g. market uncertainty). Start-ups look for collaboration with established organisations to access specialised resources, share risks and identify potential customers. Collaborating with various business partners is critically

important to start-ups' survival (Wouters et al. 2018). For example, financial technology (fin-tech) start-ups operating in the co-working centre, Stone & Chalk, rely on feedback from well-established banks, finance and insurance companies to finetune their innovative products, make them industry ready, find investors for scaling up projects and, ultimately, sign a deal with corporate clients. Collaboration with well-established companies allow start-ups to develop their business networks, become recognised and legitimised (Di Pietro et al. 2018), and overcome their liabilities of newness and smallness (Usman & Vanhaverbeke 2017). Large organisations often seek collaboration with start-ups in order to acquire external knowledge to improve their innovativeness (Spender et al. 2017). The collaborative interactions between start-ups and large organisations in their open innovation commonly grow from simple activities to complex relationships and not all result in creation value (Weiblen & Chesbrough 2015).

Participation in open innovation requires effective governance mechanisms. Key challenges include information-sharing and communication costs and the alignment or reconciliation of different objectives among partnering organisations. Chesbrough and Crowther (2006) stress the importance of establishing clarity around who will own intellectual property generated, using contracts to formally allocate responsibilities, and using control mechanisms to balance openness and confidentiality (Chesbrough & Crowther 2006).

Collaboration activities often involve more than just two parties and may be ongoing rather than project-oriented. They can involve diverse networks of organisations that form collaborative ecosystems and co-create value (Reypens, Lievens & Blazevic 2016; Vargo et al. 2015).

## 9.1 Innovation Hubs and Incubators

Many organisations engage 'innovation intermediaries' to identify and access external sources of innovation. These intermediaries provide support roles in the collaboration between two or more other actors across various stages of the innovation process (Howells 2006). Intermediaries add value by developing dense communities (Spigel 2017); establishing and mediating collaborative relationships (De Silva, Howells & Meyer 2018); and fostering shared values, trust and risk-taking which support exchange (Bergek & Norman 2008; Scillitoe & Chakrabarti 2010).

The way in which innovation intermediaries contribute is evolving in response to the demands of diverse contexts and the expectations of value creation by participating firms (Brunswick & Chesbrough 2018; De Silva et al. 2018; Howells 2006; Oh et al. 2016). The innovation hub is becoming an increasingly popular model in facilitation value creation.

An innovation hub is a shared space intended to foster collaboration within an industry by bringing together various parts of the business ecosystem, including established operators and suppliers, entrepreneurs, start-ups and researchers. A business incubator is a company that provides services, resources, networking, advice and mentorship to start-ups to help them become viable businesses. For example, the CORE Innovation Hub in Perth is intended to foster collaborative innovation in the oil, gas and minerals sector. The hub also incorporates Unearthed Solutions, an industry incubator that organises hackathons and supports innovative start-ups until they become industry ready.

Incubators generate multiple benefits through their co-working design (Spinuzzi 2012) and affordable and flexible office arrangements, and provide economies of scale through the sharing of resources and facilities (Goswami et al. 2017). By strategically selecting certain types of start-ups based on development stage and innovation focus, incubators also benefit from projecting a collective image (Bergek & Norman 2008). This encourages interorganisational interactions that enable start-ups to better recognise market opportunities and how their innovations can be embedded within current product systems (Bøllingtoft 2012; Zott & Amit 2010).



The key points covered in section 7.5, and the learning objective they align to, are as follows. De Silva et al. 2018; Howells 2006; Oh et. al. 2016). The innovation hub is becoming an increasingly popular model in facilitation value creation.

An innovation hub is a shared space intended to foster collaboration within an industry by bringing together various parts of the business ecosystem, including established operators and suppliers, entrepreneurs, start-ups and researchers. A business incubator is a company that provides services, resources, networking, advice and mentorship to start-ups to help them become viable businesses. For example, the CORE Innovation Hub in Perth is intended to foster collaborative innovation in the oil, gas and minerals sector. The hub also incorporates Unearthed Solutions, an industry incubator that organises hackathons and supports innovative start-ups until they become industry ready.

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### KEY POINTS

The key points covered in section 9, and the learning objective they align to, are as follows.

Evaluate how the roles of management and leadership drive the organisational strategy for emerging business models.

- Management must balance routine and dynamic capabilities to maintain existing business and enable the pursuit of new business. This balancing task is a major challenge for the managers of established businesses that must maintain and grow their existing business while laying the foundations for future business.
- Leaders and managers seeking to establish an agile organisation must balance the dynamic nature of the organisation with a strong central core with shared values and purpose to provide stability.
- In an increasingly complex and changing environment, leaders and managers are less able to understand and make decisions about all aspects of an organisation's strategy and operations. Decision making needs to be devolved to lower levels of the organisation in order to motivate and enable innovation. Leaders and managers need to create a culture and environment in which this approach can be effective.

## 10. LEADERSHIP AND MANAGEMENT ROLES IN STRATEGY FOR EMERGING BUSINESS MODELS.



### Section overview

This section examines leadership and management roles in the context of a dynamic business environment, with a particular focus on successfully meeting the challenges of driving strategy for emerging business models. It concluded with a discussion of how current and future leaders and managers can continue to develop their portfolio of skills.

### 10.1 LEADING BUSINESS MODEL INNOVATION

Most researchers view business model innovation and strategy as different things (Wirtz et al. 2016). Business model innovation needs to align with overall organisational strategy, but equally business model innovation can be an important driver of strategic innovation.

Business model innovation is seen as source of substantial value creation and a way to effectively react to uncertainty and rapid change in the business environment. It also generally has more potential to create a sustainable competitive advantage than does product or service innovation (Wirtz et al. 2016). Dynamic capabilities (see section 7.5) are crucial to achieving successful business model innovation (Schneider & Spieth 2014). Because the outcomes of the process are somewhat unpredictable, business model innovation is by its very nature experimental. This poses a problem for the leaders of established organisations in particular who must be wary of compromising their existing strengths. As Carayannis et al. (2014) note, business model innovation requires profound governance and organisational competencies.

Wirtz et al. (2016) identified that business model innovation design often takes place as a mix of structured and creative steps. Gunzel and Holm (2013, cited in Wirtz et al. 2016) suggested using an experimental approach to those aspects of the business model that are externally oriented and a structured process for those that are internally oriented.

Most research into business model innovation suggests it is seen as crucial but very difficult to implement (Wirtz et al. 2016). One problem that successful organisations experience is that past successes will tend to drive future thinking. It often becomes extremely difficult to move away from longstanding routines and behaviours that were established to support past successes, but which may no longer be appropriate. Innovation is stifled as managers become hesitant to take risks and performance suffers.

Business model innovation often involves substantial changes in the organisation's value chain, structure, resources and capabilities. Successful implementation requires leaders in organisations to:

- break down barriers to knowledge sharing
- overcome behavioural and social barriers to change
- create a culture and processes for organisational learning
- create an environment that supports creativity and experimentation
- allocate sufficient resources
- provide a sense of legitimacy to the process
- ensure decision makers cooperate and work in alignment with the organisation's strategy.

There are also some contexts in which business model innovation may not be the optimal response. Aspara et al. (2010, cited in Wirtz et al. 2016) suggested large established organisations may often be better replicating the innovations of others than trying to generate business model innovation themselves. Wirtz et al. (2016) note that business model innovation in an established organisation often involves a period in which management must simultaneously deal with multiple business models, with attendant risks.

## 10.2 LEADERSHIP AND MANAGEMENT IMPLICATIONS OF TECHNOLOGY-ENABLED BUSINESS MODELS

- The shift towards business models based on technology requires corresponding shifts in how the organization's resources and capabilities are developed and utilised (Kark et al. 2019).
- Automation and AI technologies reshape the nature of work itself. This requires new skills and capabilities in the workforce and may push towards using more contract or gig work rather than traditional full-time, long-term employment models. Communications technologies and in particular sharing and collaboration via internet technologies enables interaction between geographically distant workers that would once have required physical proximity.
- The technology resources, particularly the human resources, are increasingly likely to work within business functional areas rather than in a centralised technology department.

- Investment in technology should be based on a strategic approach and the investments should be subject to metrics in order to establish accountability. Nevertheless, organisations must be able to balance identifiable returns on investment with the risk of failing to invest in their technology-enabled future.
- Heavy reliance on technology, including cloud-based technologies that exist outside the organisation's direct control, introduce risks related to confidentiality, legal compliance and in some cases product usage (e.g. internet-connected smart devices that can be hacked or hijacked).
- To successfully manage these changes, Kark et al (2019) suggest leaders must promote a culture and establish an organisational structure that can change quickly and willingly. Organisational structure must integrate functional areas must become more integrated to ensure that resources and capabilities are working together towards the organisation's strategy. A workforce must be developed that can work with and alongside technologies, including AI, and that values innovation and collaboration.
- Cultural change to support technology-enabled business models is a major challenge for leaders. Briggs et al. (2018) found that leaders regularly blamed resistance to change throughout the organisation as a key reason business model change initiative fail. For example, managers and employees accustomed to project management approaches, with defined schedules, budgets and deliverables often struggle to move to an agile approach in which development occurs in a fast-paced iterative manner. Leaders and managers therefore need to establish the necessity of cultural change, act as role models and reward behaviours that support change.
- As described in section 7.1, digital transformation requires the creation and implementation of a new business model. Start-ups are well positioned to use new business models because they do not need to maintain their existing businesses. Established businesses, however, must achieve transformation without sacrificing their current performance.
- The entire senior executive team is likely to be involved in decision making for digital transformation. It is important to recognise that while transformation implies a start and end point, transformation is in fact an ongoing process. As described earlier in the module, the dynamic nature of the business environment and the continuing development of technology and other forces of change means that 'almost-constant strategic iteration is the new norm' (Samuels 2018).
- Tabrizi et al. (2019) note that 70% of digital transformation initiatives fail to achieve their goals, with organisational culture and adherence to old practices responsible for much of the failure rate.

## FIGURE. F7

Suggests how to improve the prospects of success of a digital transformation strategy, drawing on suggestions from Tabrizi et al. (2019). These recommendations reinforce the important message that 'digital transformation is about people' (ZoBell 2018).

### 1. Establish the Goals and Business Strategy Before Deciding on and Investing in Technology

Technology should be chosen based on its ability to help the business achieve its specific goals. Too often, businesses invest in technology tools based on the way those technologies are promoted rather than establishing goals and then assessing which technologies are best suited to achieving them.

### 2. Integrate External Expertise and Internal Organisational Knowledge

Organisations often bring in external consultants for their expertise about technology and transformation and their fresh perspective. This is a legitimate approach, but consultants can never understand the business in the same way as internal stakeholders. Digital transformation strategy must be informed by both external expertise and organisational knowledge.

### 3. Involve Customers

Customer experience is an increasingly important part of many organisations' value propositions. Obtaining extensive input from customers helps the organisation ensure each aspect of its digital transformation improves customer experience.

### 4. Manage the Impact on Employees

Organisational transformation involves not just the product or service, but all the processes that create the value proposition. For employees, such initiatives often seem associated with job cuts. The fear that naturally arises can lead to resistance and a lack of cooperation. Leaders can manage this process by framing the transformation as an opportunity for employees to develop into higher value-adding roles and where possible involving employees in the implementation plan. Of course, management should not mislead employees.

### 5. Adopt a Start-Up Culture

Digital transformation involves uncertainty and requires agile practices and agile decision making. Traditional organisational hierarchies often hinder efforts to transform a business. The organisation or at least those parts most directly involved in the transformation should adopt a less hierarchical structure that enables decision making based on experimentation and iterative strategy.

*Source: Adapted from B Tabrizi, E Lam, K Girard & V Irvin, 2019, 'Digital transformation is not about technology', Harvard Business Review, 13 March, <https://hbr.org/2019/03/digital-transformation-is-not-about-technology>.*

## Context example 8: Saving The New York Times

Provides a comprehensive case study of the efforts of the leadership and management of the New York Times news organisation to manage digital disruption, design and implement new business models and shape the organisation to succeed in the contemporary business environment.

## Saving The New York Times

The New York Times (NYT) was quick to recognise the potential – and the threat – of the internet. The NYTimes.com website launched in 1996 and focused upon adapting content from the print edition for web display. It was free to access and aimed to attract paid advertising.

In 1999, New York Times Digital was established to manage the websites of the Times, Globe, and International Herald Tribune and to launch other online initiatives. It was an independent business unit within NYT in the belief that, if NYT was to be a serious player in cyberspace, it needed to have the people, systems, and culture of a dot.com start-up rather than of a century-old newspaper.

Despite success in attracting online visitors, digital advertising revenues were disappointing, and executives increasingly recognised the need to charge users. The first online subscription, launched in 2005, was Times Select, which charged an annual US\$49.95 fee for premium content and access to online archives. It generated a mere US\$10 million a year and was discontinued in 2007. Then, in March 2011, NYT introduced its 'metered access' model, which allowed web visitors free access to a limited number of articles each month, after which a paid subscription was required. By the end of 2011, there were 390 000 paid digital subscribers to subscription packages and, by the end of 2014, there were 910 000 digital-only subscribers.

Although digital advertising revenues grew – by 2014, digital accounted for 27% of NYT's advertising revenues – this growth failed to offset declining revenues from print advertising. Moreover, despite huge improvements in the content and accessibility of NYTimes.com, it was the digital-only upstarts that were leaders in innovation and user features.

Some industry observers saw the hybrid model – print and digital editions – as doomed to failure. Rick Wartzman, Director of the Drucker Institute, argued: 'Dead-tree editions must immediately yield to all-internet operations. The presses need to stop forever, with the delivery trucks shunted off to the scrapyard.' He pointed to the Huffington Post (owned by AOL) as the model for an online newspaper. Eric Schmidt, chairman of Google, suggested that users would only be willing to pay for unique content, as most news was available from multiple online sources. For online newspapers to generate adequate advertising revenues, they needed to offer targeted advertising linked to customised content – for this, Google was an essential partner for the newspaper companies.

One of the main initiatives of the incoming CEO, Mark Thompson, was to initiate a fundamental rethink of NYT's digital strategy. In May 2014, a committee headed by AG Sulzberger delivered a report entitled 'Innovation' that provided a wrenching diagnosis of NYT's weaknesses in 'the art and science of getting our journalism to readers'.

Among the many challenges the report identified were the following.

- Creating a fully digital newsroom: with Jeff Bezos funding advanced technological development at the Washington Post, BuzzFeed and Yahoo increasing their investments in news gathering and delivery, and new entrants such as Flipboard and First Look Media entering the business – NYT was being left behind. The report noted: 'The newsroom has historically reacted defensively

by watering down or blocking changes, prompting a phrase that echoes almost daily around the business side: "The newsroom would never allow that".

- Fewer and fewer readers were accessing the Times through the NYTimes.com home page: the NYT needed to take its journalism to the reader: at NYT 'the story is done when you hit publish. At the Huffington Post, the article begins its life when you hit publish'. Taking NYT journalism to readers' 'digital doorsteps' would require eliminating the NYT's traditional division between the news side and the business side of the newspaper.
- Exploiting the archive. 'We have an archive of 14 723 933 articles extending back to 1851 that can be resurfaced in useful or timely ways. Yet we rarely think to mine our archive, largely because we are so focused on news and new features.'
- Experimentation: especially in finding new ways of packaging existing content that would be conducive to sharing on social networks.
- Personalisation: 'using technology to ensure that the right stories are reaching the right readers in the right places and the right times. For example, letting you know when you are walking past a restaurant we have just reviewed'.
- User-generated content: The Times' audience is its 'most underutilized resource. We can count the world's best-informed and most influential people among our readers. And we have a platform to which many of them would be willing and honored to contribute'.

The report was intended for a handful of senior managers; however, the leak of the report to BuzzFeed triggered an explosion of anguish and debate within the company. Harvard's Nieman Lab reported: 'One [NYT employee] admitted crying while reading it because it surfaced so many issues about Times culture that digital types have been struggling to overcome for years.' For AG Sulzberger the leak was '... a moment of panic ... suddenly it felt like our dirty laundry was being aired'. Yet, within days, the report had become a rallying cry: 'You couldn't read that report and think that the status quo was an option.'

The Innovation Report was a prelude to a flurry of top management and organisational changes. A week after the distribution of the report, the executive editor of the Times, Jill Abramson, was fired. She was replaced by the Times' managing editor Dean Baquet. One factor in her dismissal was her perceived opposition to the greater integration of the news and business sides of the NYT – a key objective of CEO Thompson, but contrary to the long tradition of the independence of the Times' journalism. As AG Sulzberger later explained: '... the most important thing is to have real strong protections around the editorial independence of our newsroom', but the separation of the news and the business sides of the newspaper had created a barrier to change. 'We regarded the members of our technology team and product team as being on the business side ... the folks who were building our website weren't able to talk to the people who were filling the website with great journalism each day.'

Jill Abramson's dismissal was followed by the elimination of about 100 positions in the company's newsroom: 'the most extraordinary collection of talent, of human knowledge, that has ever left the New York Times in a single day,' according to reporter David Dunlap. Under Dean Baquet, the newsroom leadership was reorganised around four deputy editors. The major emphasis was on promoting and bringing in talent that could propel the Times' digital efforts – especially within mobile communication. Essential to this effort was the integration of journalism and technology.

According to Clifford Levy, who won two Pulitzers at the Times before being promoted to the assistant managing editor overseeing digital platforms: 'Working hour by hour, day by day, with software developers and designers and product managers – to me that was a real revolution, a kind of epiphany ... This is standard operating procedure in Silicon Valley, but it was radical here.'

Having established a consensus around the imperative of a digital future for the *Times*, it was easier to articulate a longer-term strategy for the company. In October 2015, the top management team released *Our Path Forward*, a public document intended 'to share our challenges, our progress and our plans for moving forward'. At the foundation of the NYT's strategy was the principle of 'offering content and products worth paying for', which put quality journalism at the heart of NYT's strategy and established that NYT's basic revenue model was user fees. If producing quality content was the dominant priority, it needed to be financed. To do this, the company set the goal of doubling its digital revenues over the next five years to more than US\$800 million – which in turn meant more than doubling the number of digital readers, most of whom would be accessing news content on their phones and mobile devices.

Expanding the number of users and building a revenue-generating relationship with users required the following.

- 'We will continue to lead the industry in creating the best original journalism and storytelling.' This involved not only maintaining NYT's corps of journalists but also infusing them with the technical and design skills needed to deploy new storytelling tools. Initiatives included increased emphasis on visuals, including videos, and increased customisation to allow fully personalised content delivery.
- 'We will continue to develop new audiences and grow the *Times* as an international institution.' The international expansion offered a huge potential for subscriber growth: this strategy required both greater global integration and greater customisation to meet the needs of specific audiences in different countries.
- 'We will improve the customer experience for our readers, making it easier to form and deepen a relationship with the *Times*'. The goal was to make the *Times* an essential part of its readers' lives. This required that: 'Every moment in the reader's journey, from visiting for the first time to registering as a user to becoming a lifelong subscriber, must be frictionless, intuitive, and responsive. To support this goal, we will improve each stage of the experience.'
- 'We will continue to grow digital advertising by creating compelling, integrated ad experiences that match the quality and innovation of the *Times*'.
- 'We will continue providing the best newspaper experience for our print readers and advertisers, while carefully shifting time and energy to our digital platforms.'

These aspirations were reflected in a host of digitally based new initiatives launched between 2014 and 2017. Behind these initiatives was the Beta Group – an in-house digital development group housed on the 9th floor of the NYT's building. Most of the new products were apps for mobile platforms. These included *NYT Now*, a mobile app aimed at younger readers, and *NYT Cooking*, a hugely successful mobile app allowing access to the *Times*' library of over 17 000

recipes, which became the model for additional apps covering real estate, crosswords, health and fitness, and TV and movie reviews. In 2015, NYT launched a virtual reality app. Emailed newsletters were another means by which NYT communicated with users. By mid-2017, it had 50 different newsletters with 13 million subscribers. Wirecutter, acquired in 2016, was another website and mobile app providing reviews of consumer products.

T Brand Studio, was established in 2014 to create 'native advertising' – stories appearing on NYT websites and apps that were sponsored by advertisers. One of the first of these paid posts was an article on women prison inmates, accompanied by video interviews with several of them, designed to generate interest in Netflix's *Orange is the New Black* series. T Brand Studio developed into a fully-fledged marketing and creative services agency – partly through acquiring Hello Society, a leader in influencer marketing, and Fake Love, an experiential design studio with a focus on virtual reality and augmented reality.

By 2018, the NYT had made substantial progress in implementing a clearly articulated strategy based upon an intelligible vision for the future and a realistic understanding of the challenges it faced. The decline in its revenues had been halted and its presence in digital media transformed.

Yet still doubts remained. The dominance in digital media of Google and Facebook and the power exerted by the other digital giants – Apple, Amazon, Microsoft, and Netflix – placed all digital media companies in a subservient position, while the pace of technological change gave born-digital upstarts an advantage over the former giants of print media. This was especially apparent in digital advertising revenues whose growth since 2014 had been modest.

A report by a NYT newsroom working party in early 2017, *Journalism that Stands Apart*, made it clear that NYT still had far to go: 'For all the progress we have made, we still have not built a digital business large enough on its own to support a newsroom that can fulfill our ambitions', the report's authors wrote, and 'too often, digital progress has been accomplished through workarounds ... our work too often reflects conventions built up over many decades, when we spoke to readers once a day'.

**Among the report's criticisms were the following.**

- Too many stories that 'lack significant impact or audience' or were 'little different from what can be found in the freely available competition'.
- Stories 'dominated by long strings of text' because reporters 'lack the proper training to embed visuals contextually'.
- The need for greater engagement by readers through 'email newsletters, alerts, FAQs, scoreboards, audio, video, and forms yet to be invented'.
- The success of NYT's Cooking and Watching (TV and movie reviews) apps needs to be extended with 'more big digital bets' in features – especially features that are designed to provide useful guidance to readers (as The Wirecutter and Smarter Living).

The need for better organisation around themes of reader interest: 'High-priority coverage areas are spread across multiple desks Our health care coverage, for example,



- spans five departments and multiple print sections’.
- The needs to improve hiring and training processes to ensure ‘the right mix of skills in the newsroom to carry about the ambitious plan for change’.
- ‘Lack of clarity over who are we writing for’. The success of sections like Cooking and Well is because they were designed with specific audiences and story forms in mind. Other parts of the Times are unclear who their target audience is. Every section should specify what the team will cover, the target audience, how that audience will experience the section’s reporting, and what kinds of skills the group will need. Even If NYT were to be unable to generate the revenues needed to finance the high costs of high-quality, global journalism, would it need to explore alternative business models? One possibility was that NYT could become a social enterprise: either explicitly, through enlisting charitable support or establishing an endowment that could support news gathering and analysis, or implicitly, through seeking a wealthy backer (as in the case of the Washington Post with Jeff Bezos). Alternatively, should NYT view itself less in the news business and more in the intelligence business, using its news gathering and analytical capabilities to supply customised intelligence to corporations and government agencies?

*Source: Adapted from RM Grant, 2018, Contemporary Strategy Analysis, 10th edn, John Wiley & Sons Inc., Hoboken.*

### Interactive question 13: Response to the challenge

#### Using the information from context example 8

##### Requirement:

**Explain how the leadership and management of the NYT has shifted resources and tried to build capabilities in their response to the challenge of the internet to their historically successful print media business. Use case facts to explain the difficulties they have faced in doing this.**

See Answer at the end of this chapter

## 10.3 DECISION MAKING

As described above, the formal decision-making role of senior management is less suited to modern organisational forms. Nevertheless, leaders and managers remain responsible for the organisation’s strategy and performance. Where decision-making responsibilities are devolved through the organisation, leaders and managers must ensure staff have sufficient information to support decisions, fully understand how their decisions relate to the organisation’s strategy and have a sound and ethical decision-making framework to work through.

Girotra and Netessine (2014) suggest that a business model is a set of key decisions and that the business model can be improved by changing when decisions are made, who makes them and why. In terms of timing, they suggest:

- where possible, postpone decisions to gather more useful information (e.g. the pricing of each seat on an aeroplane should be determined in real time with reference to demand to maximise revenue)
- change the sequence of decisions so investment is made after demand is known (e.g. crowdfunding campaigns on platforms such as Kickstarter raise funds from interested customers at the idea or prototype stage, ensuring production only proceeds if a sufficient market is in place) and

- divide decisions into multiple parts so that each progressive decision is better informed (e.g. use discovery-driven planning).

**In terms of who should make decisions, they suggest:**

- assign decision making to the best-informed people (e.g. a supplier may be able to better make inventory decisions than the organisation itself; customer-facing staff will be best informed about customer experience; senior management may be unable to be sufficiently informed to be the best decision maker)
- assign decision making to the party that can best manage the consequences (e.g. the drop-shipping model moves inventory decisions from the individual retailer to the manufacturer or wholesaler)
- place decisions with the party that stands to gain most.
- In terms of adjusting the motivations of decision makers, they suggest:
- ensuring the implications for decision makers' revenue align with the organisation's interests
- creating long-term relationships with suppliers
- integrating different parties involved in the business model into the business itself. Technology insight 7.4 examines a range of data analytics issues related to decision making. A recurring theme in this module has been the increasing volatility and pace of change in the business environment. There is an associated high level of uncertainty, particularly for organisations seeking to make disruptive changes to their industry or enter an industry with a disruptive business model. Nevertheless,
- fundamental principles of gathering information, conducting analysis, assessing and managing risks and making evidence-based decisions remain relevant. While it can be tempting to adopt defensive actions in times of uncertainty, leaders and managers seeking strategic advantage need to be able to put the fundamental principles into practice and not be distracted or misled by 'noise' that arises from change and information overload.
- Snabe and Trolle (2018) suggest discarding business plans and strategic plans. They argue plans work to stifle creativity and that the measures taken to implement plans (see module 6) focus on 'correcting' deviations from the plan, thus shutting down creativity and responsiveness (Business School 2019). Snabe and Trolle suggest that a move away from formal plans needs to be accompanied by empowerment of teams and the creation of a shared purpose (what they term a 'dream').

## Analytics

As the business environment becomes increasingly volatile, the ability to access and analyse data for decision making in real time becomes crucial. Cloud computing services have enabled even the smallest start-ups to access big data and sophisticated analytics. This gives them the power to uncover insights on new trends, needs, markets and segments that provide potential opportunities for growth. Data can be used not just to help optimise an existing business model, but also to transform it into something altogether new and innovative.

Business model transformation involves streamlining business activities to remove unnecessary activities and optimise performance. Data and analytics can also be optimised by removing unnecessary silos and barriers and enabling bi-directional communication between all stakeholders in a market or even industry. The technology already exists to communicate, gather and analyse vast amounts of data. The next stage is for organisations to unify data from myriad sources across their business model in order to provide more informed analysis and uncover previously unknown correlations.

By eliminating silos of information and creating data 'lakes', you are able to analyse data in real time while it is streaming. In this situation organisations their customers, suppliers, partners, etc all become sources of information for each other. This data sharing creates a bi-directional communication mesh of stakeholders, enabling rapid, real-time responses to issues and requests.

In addition to providing information for decision making, analytics platforms that incorporate AI have begun to be built into products and services. One of the most familiar is the safety features, such as lane assist and active accident avoidance technology in motor vehicles. These rely on numerous sensors that detect the car's behaviour, the driver's behaviour and static and moving objects near the car. Industrial machinery company Siemens has established a cloud-based platform to capture data from sensors in machinery located around the world and create a central reporting system that can be used to schedule preventive maintenance.

Many industries have long used real-time data analysis for dynamic pricing to reflect variations in supply and demand. For example, the airline industry changes fares to try to sell seats for the highest possible price while ensuring it does not fly with empty seats. Getting close to departure, airlines can drop prices dramatically as its flight costs are largely fixed and any revenue is preferable to an empty seat. As technology has improved over time, this process has been increasingly driven by complex algorithms. Ride-share platform Uber's pricing algorithm, for example, responds immediately to changes in demand (people looking for a ride) and supply (drivers logged in and available). Uber's dynamic pricing approach affects not only the amount the customer pays, but also of course affects Uber's income. Since Uber's revenue consists of a 20 to 30% commission on all fares, dynamic pricing also directly relates to the driver's income. During periods of surge pricing, the fares increase, rewarding drivers who provide the service during peak demand and encourage inactive drivers to log in and increase supply to meet that demand.

**Source:** Adapted from J-P Ruth, 2019, '6 examples of AI in business intelligence examples', *Emerj*, <https://emerj.com/ai-sector-overviews/ai-in-business-intelligence-applications>; H Rindani, 2018, '5 ways data analytics is transforming business models', *Medium.com*, 23 April, <https://medium.com/datadriveninvestor/5-ways-data-analytics-is-transforming-business-models-6944dc0affac>; K Marko, 2018, 'Can data analytics inform new business model development?', *Diginomica*, 26 June, <https://diginomica.com/can-data-analytics-inform-new-business-model-development/>; D Paredes, 2018, 'Analytics helps companies launch new business models: research', *CIO Australia*, 24 October, [www.cio.com/article/3509444/analytics-helps-companies-launch-new-business-models-research.html](http://www.cio.com/article/3509444/analytics-helps-companies-launch-new-business-models-research.html).

## 10.4 LEADERSHIP FOR START-UPS

Entrepreneurial success has always required the combination of a good business idea with the ability to implement it – for leaders of start-ups that includes people skills, persuasion, communication, flexibility, tolerance of risk, problem solving and, increasingly, a focus on a range of stakeholder needs other than generating wealth for the founders and investors. Tesla founder, Elon Musk, perhaps embodies this combination better than most. Most of his businesses are informed by and closely related to solving problems facing humanity, including principally tackling climate change by developing and commercializing alternative energy technologies.

Entrepreneurialism is often based on the idea of identifying and solving problems that others have been unable to see or solve. In developing a business that can solve these problems, numerous challenges arise that are also uniquely different from the challenges facing established businesses. Leaders in start-ups therefore need strong problem-solving abilities and the ability to make decisions in an environment of uncertainty. Start-ups usually lack the resources that leaders and managers in established businesses can draw on to analyse and understand issues. This must be replaced by insight and the flexibility to quickly respond as new information emerges (Knowledge@Wharton 2019).

Global Education and Leadership Foundation chair Shiv Khemka (cited in Knowledge@Wharton 2019) identified three key reasons behind the failure of start-ups.

1. The entrepreneur's idea does not deliver a value proposition or its timing is wrong.
2. The start-up exhausts its current and potential resources before reaching viability.
3. The entrepreneur fails to build trust and confidence in the vision of the start-up that will enable the flexibility and persistence to navigate early setbacks.

Social venture start-ups face a set of different challenges and while some of the characteristics needed from social venture and conventional entrepreneurs are the same, leaders of new social ventures require deep values of empathy, altruism and ethics. Perhaps the main common ground between leaders of start-up businesses and start-up social ventures is the focus on problem solving. Social venture leaders need to find solutions to entrenched social problems and to be motivated by the social outcomes that will be achieved – a substantially different motivation from that of ambitious business entrepreneurs seeking rapid growth and financial reward (Knowledge@Wharton 2019).

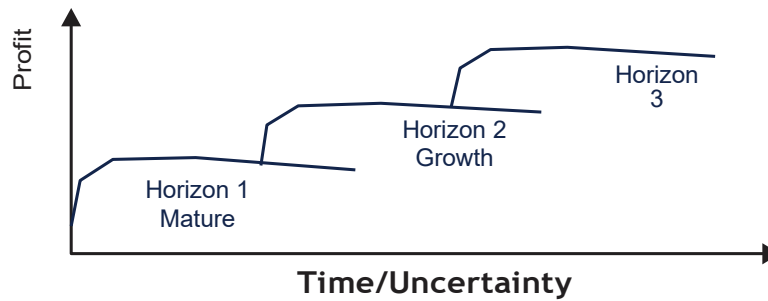
## 10.5 LEADERSHIP FOR ESTABLISHED BUSINESSES

The strategic management of an established business requires a mix of developing new capabilities while maintaining the core established business. IBM proposed the 'emerging business organisation' concept (see figure 7.18) in which leaders are responsible for managing the business with a view to optimising profit in the mature part of the business, expanding the growth part of the business, and achieving milestones in the future part of the business.

As discussed earlier in the module, business innovation is one of the most difficult tasks for leaders and managers, but as figure 7.18 shows, it is the basis of the future of the business and must therefore be a key focus. The knowledge and tools in this module are intended to help current and future decision makers in business take a strategic approach to the future development of their organisation without compromising the existing business.

**FIGURE 8**

**Leadership and management tasks – an emerging business organisation model**  
**IBM's emerging business organisation (EBO) model**



Focus	Defend and increase the profitability of existing businesses	Resources to expand and build new businesses	Discover options and place selected bets on emerging opportunities
Outputs	Annual budgets and operating plans	Investments, business plans for growth	Market insight data, initial project plans
Key success factors	Cost, efficiency, customer intimacy, incremental innovation	Customer acquisition, speed, execution, flexibility	Learning, adaptation, risk taking, business model innovation
Metrics	Profit, margins, costs	Market share, growth	Milestones

**Source:** C O'Reilly, J Harreld & M Tushman, 2009, *Organizational Ambidexterity: IBM and Emerging Business Opportunities*. Stanford University, Graduate School of Business, Research Papers, 51

#### Interactive question 14: Response to the challenge

**Use IBM's EBO model and the information from example 8 to analyse how NYT's leadership has responded to the challenge of the internet to their historically successful print media business.**

See Answer at the end of this chapter

### 10.5.1 Managing Disruption

Christensen (1997) highlighted the tension between management of an established business, based on responsiveness to customers, development of strategic capabilities and considered investment, and responsiveness to potential threats from disruptive innovators (see section 7.2). Christensen argued that established businesses often failed to recognise disruption, because it did not initially target the organisation's mainstream customers, and responded too late, leading to declining performance or ultimately failure. Christensen and Raynor (2003, p. 35) state:

With resource allocation processes designed and perfected to support sustaining innovations, they are constitutionally unable to respond ... Disruption has a paralyzing effect on industry leaders.

This view has been challenged by others who suggest most businesses do identify and successfully counter disruption (King & Baatartogtok 2015). The analysis has been complicated by the way the term 'disruption' has evolved to refer to innovations that prompt industry upheaval, regardless of whether they arose in the way Christensen originally described (see section 7.2).

According to Christensen's model, disruptive threats do not at first target an established business's key market segments. Leaders and managers may not perceive the new entrant as a legitimate threat. Thus the emerging threat is not recognised until it becomes a significant threat. Once recognised, the need for leaders and managers to maintain and grow the returns from the existing business constrains their ability to shift focus and dedicate resources and capabilities towards addressing the growing disruptive threat. Further, depending on the nature of the disruptive innovation the organisation may lack the resources and capabilities to adopt it. Finally, established businesses may face regulatory and other hurdles that constrain their response. For example, the taxi industry in Australia has been highly regulated and could not legally respond to many features of Uber's service. By the time regulation was loosened, Uber had established a strong market presence.

King and Baatartogtok (2015), however, cited research that suggested management will nearly always respond in a way that matches their capabilities: those with the capabilities to adopt or compete with disruptive innovations do so, while those without will focus on maximising returns as they prepare to exit the disrupted market. Moreover, they suggested that any new competitive threat should be approached in a systematic way, as follows.

- Analyse the value to the organisation of defeating the competitive threat – and thus determine whether to compete or plan to exit the market.
- Determine how existing capabilities can be used – this may involve addressing the threat, but could also involve shifting focus to a new market/expanding into other areas.
- Where practical, collaborate with other companies – there may be an opportunity to work with a potential new competitor for mutual benefit (King & Baatartogtok 2015).

## 10.6 START-UPS VERSUS INCUMBENTS

Established organisations often view the markets targeted by start-ups as too small to justify their attention. This can be a serious error as industry disruption often begins when a start-up gains a foothold by targeting an untapped part of the market. The threat is usually more serious in the other direction – start-ups that do have some success often face very substantial responses by established organisations that command considerably greater resources. Consider, for example, the workplace instant messaging platform Slack (which is based on a freemium business model). After strongly growing its user base for four years, Slack was confronted with Microsoft's addition of the similar, but more highly featured, product Teams to its software suite. Microsoft had earlier attempted to acquire Slack, but Slack declined the offer. So Microsoft decided to develop its own platform instead. Such a competitive move can prove fatal for start-ups, but in Slack's case it responded by integrating more deeply with Google's service platform and took over the users of Atlassian's Stride and HipChat platforms, with Atlassian integrating Slack into its agile project software products. More than one-quarter of Slack's users pay for the premium product. The rest use the freemium version.

While established organisations' resources often provide a significant weapon against start-ups, start-ups can try to identify and leverage aspects that large organisations will struggle to copy. This includes, for example, customisation, exclusivity and other points of differentiation. For example, online clothing retailer Zulily focused on building strong relationships with suppliers based on high-quality communication, prompt payment and fair dealings, in return for exclusive supply arrangements. This contrasted with Amazon's approach to suppliers, which is based simply on the exercise of Amazon's purchasing power. Zulily's exclusive supply contracts enabled them to offer a range not available on any other platform and thus Zulily was immune to price discounting by Amazon and other online retailers.

- Texeira (2019) suggests start-ups can fend off copycat behaviour if the following factors are all present:
- the established player has a major strength that it relies on for its success
- there is a product offering of value to a market segment that the dominant player's major strength works against

- imitating the offering would negatively impact on the established player's main business
- if the offering succeeds the established player could only copy it or compete directly with it by giving up their main strength.

## 10.7 STAKEHOLDER MANAGEMENT

Stakeholder management is the process of managing the expectations of people, groups and organisations that have an interest in a company and will be affected by its activities. Module 3 described a process to identify key stakeholders and develop effective communication and management approaches to them. The importance of managing any particular stakeholder group was dependent on the level of interest of that stakeholder and the power they could exert over the organisation. Thus, for example, senior managers were identified as key internal stakeholders and regulators were identified as potentially key external stakeholders. Emerging business models raise numerous important considerations for stakeholder management, including:

- the increasing recognition that a wider variety of stakeholders have a legitimate interest in the organisation and that the organisation has a duty towards all these stakeholders
- that emerging business models are unfamiliar and are therefore seen as involving higher risk and thus stakeholder perceptions of risk must be managed
- how to attract investors to unproven business models
- how to prepare internal stakeholders for change
- how to manage a non-permanent workforce.

We will discuss managing risk, attracting investment and managing a non-permanent workforce in a little more detail in this section.

New business models naturally involve unfamiliarity and this affects how stakeholders perceive the level of risk they involve. An important task for management in organisations with emerging business models is to manage stakeholder perceptions of the balance between risks and returns. For example, the public company Virgin Galactic has a business model based on space tourism. While there are clear links to the aviation, tourism and space industries, the business model is unique and thus stakeholders, including investors, have relatively little experience or evidence to base their decisions on. To sure up investor confidence, Virgin Galactic announced in early 2020 that it would commence space flights later in the year and would begin taking US\$1000 deposits from interested customers. Virgin had accepted deposits of up to US\$250 000 as early as 2004 from enthusiasts, but ceased accepting them in 2018. Re-opening deposits will demonstrate the level of interest in the service, while customers have the assurance of their deposit being refundable up to the point a seat booking is confirmed. Virgin Galactic said it has almost 8000 expressions of interest, collected via its website. Its next step is to use these numbers to determine the frequency of flights to manage its advance bookings (Bachman 2020).

The Virgin Galactic discussion leads us to the next issue for stakeholder management – attracting investors. There are numerous examples of organisations that have become household names over the past few years by disrupting long-established industries with innovative business models. These include Amazon, Uber and Airbnb. In addition, companies at the forefront of technology-based products and services, including Google, Facebook and Apple, have generated enormous wealth for their shareholders. As described above, however, new business models are unproven and may be perceived as risky. Organisations therefore need to manage investor perceptions in order to raise the capital required to launch the business and achieve viability.

Consider that online retail giant Amazon recorded annual losses for its first four years, totalling US\$2.8 billion, before recording a small quarterly profit in 2001. It was only in 2003 that the company began to consistently achieve profitability. During its formative years, Amazon burned through shareholders' funds focusing on its strategy of disrupting the book retail industry and eventually retail in general.

Organisations seeking to pursue goals that reflect a wide range of stakeholder interests need to manage the potential perception among investors that the other stakeholder interests may compromise the amount of value that can be generated for shareholders. In practice, many of the world's largest investment funds have driven organisations towards a more sustainable and socially focused agenda. This reflects the priority the funds' members place on sustainability and ethics, as well as recognising that good corporate citizenship is increasingly important as part of a long-term strategy to create wealth for shareholders.

### Context example 9: Lime's

#### Lime's Shift from a Growth Focus to a Profitability Focus

- E-scooter company Lime was founded in 2017. It operates ride-share electric scooter and bicycle businesses in well over half of the world's countries in competition with other start-ups including Lyft, Bird, Scoot and Skip.
- In early 2020, co-founder Brad Bao announced the company would shift its focus from growth to profitability. As part of this shift, the company would withdraw from some markets, including various cities in the United States, Europe and Latin America – Atlanta, Phoenix, Linz, Buenos Aires, Lima, Rio de Janeiro and others.
- The e-scooter ride-share industry has also encountered issues with regulations. Some jurisdictions do not allow legal operation of e-scooters. While the operators have often campaigned for regulatory changes, this has been met with mixed success, with safety in particular a concern for many regulators.
- Most e-scooter ride-share companies have not yet proven they can generate a profit and sustain their business model. Bao said financial independence was crucial to the future of Lime.

**Source:** Adapted from N Kurczewski, 2020, 'Lime puts the squeeze on its e-scooter and electric bike fleet', *Ride*, 1 February, <https://ride.tech/mobility-lifestyle/pitch-lime-puts-the-squeeze-on-its-e-scooter-fleet>.

The fast-changing business environment and ongoing business model innovation elevate the importance of change management to a new level compared with changes associated with implementing strategy. The contemporary business environment often requires ongoing change. In such circumstances, organisations need to create an organisation that is inherently adaptable to change rather than seeing change as a one-off or periodic activity (Schepis et al. 2010). The ultimate realisation of this may be the creation of an agile organisation, as discussed in section 6.

Readiness for change is also determined by factors such as organisational life cycle, attitude towards risks, job knowledge and skills, management-leadership relations, social relations in the workplace and organisational culture. Readiness for change can be increased by empowering employees (e.g. capacity building, internal and external trainings and other skills development) and decreasing their workload to allow time for exploration of new ways of work (Schepis et al. 2010).

As described in section 6, ongoing business model innovation and responsiveness to environmental changes create a need for an agile organisation. Agile organisations are defined by a stable core surrounded by flexibility. One way this flexibility is evident is in the nature of the workforce. As business models and strategy change, the capabilities and resources the organisation needs also change. Given the pace of change and the need to respond quickly, organisations increasingly seek to bring resources and capabilities into the organisation as required and equally to move them back out of the organisation when no longer required. This, along with various other influences, has led to a change in the nature of the workforce. Increasingly organisations use contract workers who are with the organisation for a fixed period of time. This has important consequences for organisational knowledge



management, organisational culture and shared purpose. Successful agile organisations do not accept compromises in these factors, but rather ensure a people-centred culture by empowering teams, encouraging collaboration and ensuring co-creation of value (Aghina et al. 2018).

#### Interactive question 15: Best Approach

**Using the information from example 8. Use the case facts to explain the approach to strategy NYT management has used.**

**Requirement:**

**Evaluate whether it was the best approach they could have used.**

- a) **Analyse how BuzzFeed's strategic approach to developing their news service has differed from NYT's strategic approach**
- b) **Analyse BuzzFeed's relative competitive strengths and weaknesses against NYT as it has developed from a start-up.**
- c) **Evaluate whether BuzzFeed could fend off copycat behaviour by NYT, using the Teixeira (2019) checklist.**
- d) **Evaluate how each of these organisations appear to be positioned to take advantage of future opportunities that arise due to technological developments.**

See Answer at the end of this chapter

## 10.8 LEADERSHIP AND MANAGEMENT DEVELOPMENT

Current and future leaders and managers will need to work within an environment of unprecedented change and the ongoing emergence of new business models that both create and respond to those changes. Changing external conditions, new strategic priorities, and different types of organisation call for new approaches to management and leadership. The traditional role of the CEO as peak decision-maker may no longer be feasible, let alone desirable. As organisations and their environments become increasingly complex, the CEO is no longer able to access or synthesise the information necessary to be effective as a peak decision-maker. Contemporary perspectives on leadership place less emphasis on the role of executives as decision-makers and more on their role in guiding organisational evolution.

Gary Hamel (2009) suggests:

"Leaders must be recast as social-systems architects who enable innovation...leaders will no longer be seen as grand visionaries, all-wise decision-makers, and ironfisted disciplinarians. Instead, they will need to become social architects, constitution writers, and entrepreneurs of meaning. In this new model, the leader's job is to create an environment where every employee has the chance to collaborate, innovate, and excel."

McKinsey & Company (Feser et al. 2015) identified leaders with the willingness to see different perspectives and the ability support others as key attributes that differentiate strong and weak organisations in terms of leadership effectiveness.

Senior managers require different knowledge and skills. Research into the psychological and demographic characteristics of successful leaders has identified few consistent or robust relationships – successful leaders come in all shapes, sizes, and personality types. However, research using competency modelling methodology points to the key role of emotional intelligence. This comprises:

- self-awareness – the ability to understand oneself and one's emotions

- self-management – control, integrity, conscientiousness, and initiative
- social awareness – particularly the capacity to sense others' emotions (empathy)
- social skills – communication, collaboration, and relationship building.

A similar transformation is likely to be required throughout the hierarchy. The informal structures and self-organisation associated with new business models have also transformed the role of middle managers from being administrators and controllers into entrepreneurs, coaches and team leaders.

It is crucial therefore that everyone in an organisation – top leadership, middle management, staff – develop a portfolio of skills and attributes that encompasses both technical skills and 'soft skills' such as communication and collaboration. Indeed, leadership development itself should take place at all levels of the organisation to embed the innovative thinking, individual initiative-taking, problem solving and collaboration that is necessary to build dynamic capabilities that will allow the organisation to thrive in the context of environmental dynamism.

### 10.8.1 Formal Leadership Development

Interestingly, a variety of research has found that most senior leaders believe their organisations' investment in traditional talent development programs fail to develop the organisational skills and capabilities their organisation requires (see, for example, Moldoveanu & Narayandas 2019). In essence, while financial analysis and strategy development are critical skills for managers, it is the ability to combine these skills with interpersonal skills (such as communication, persuasion and collaboration skills) that distinguishes the successful leaders of present and future organisations. Individuals and organisations need to focus on development that:

- teaches people effective interpersonal skills
- integrates interpersonal skills with technical skills
- teaches and enables individual to apply this 'classroom' development to the real world – to the work they do (Moldoveanu and Narayandas 2019).

Moldoveanu and Narayandas suggest the ability and willingness to apply newly learned skills is largely determined by how closely the environment in which those skills are learned resembles the environment in which they will be applied. This insight has key consequences:

- development efforts should be personalised
- development of interpersonal skills should occur in an interactive social environment
- development efforts should take place in the work environment.

Moldoveanu and Narayandas suggest therefore that customisable learning that can be accessed from within the organisation (including online access) supported by interactivity and online social platforms/discussion groups may help effectively address the gap between the acquisition of skills and the application of those skills. Rather than substantial one-off or periodic efforts, development should be ongoing. Designing learning materials in a granular, modular and easily consumable format, and combining them with robust assessment of learning outcomes, supports this approach. An array of 'microcredentials', based on carefully curated modular content, may then replace traditional qualifications such as the multi-year MBA as the most desirable development approach for individuals and organisations.

Complementing the approach described above with personal coaching and tuition for the development of the most affective aspects of leadership, communication and motivation provides for a comprehensive approach. This coaching and tuition can take place face-to-face or online taking advantage of sophisticated technologies such as eye-tracking and facial expression analysis in order to overcome the limitations that have until now constrained tele-coaching.

### 10.8.2 Informal Leadership Development

Leadership and management are long-established disciplines with an enormous body of knowledge. Formal leadership development is thus highly valuable to aspiring and practising

leaders and managers. Informal approaches to development are also important and, in particular, offer ways to network and to stay abreast of developments in a more immediate way than formal development programs allow. One especially valuable approach is to capitalise on network intelligence.

Hoffman, Yeh and Casnocha (2019) emphasise the importance for leaders to learn from interactions and one-on-one discussions with members of their professional networks. They refer to the collective knowledge of these networks of people as network intelligence. It is not only the most conventionally successful people in a person's network that can help a person develop; everyone has experiences and perspectives that help build understanding.

Indeed, an organisational leader or a person with ambitions to take on informal or formal leadership roles should as much as possible ensure they interact with, ask questions or and listen to people throughout their organisation and organisations in their business ecosystem. This will build a true understanding of how the organisation works and how the people in it relate to each other and the organisation's vision, values and strategy. It will also encourage two-way communication, thus promoting the role of network intelligence and knowledge sharing at all levels of the organisation.

Learning from network intelligence is not a substitute for learning from formal education, but nor does formal education provide the everyday development and building of knowledge and skills that is available from interactions with other people.

The key points covered in section 10, and the learning objective they align to, are as follows.

#### KEY POINTS

##### **Evaluate how the roles of management and leadership drive the organisational strategy foremerging business models.**

- Leaders of organisations pursuing business model innovation must find ways to innovate alongside their existing business model and may need to maintain multiple business models during a transition period.
- Leaders of organisations implementing business model innovation need to encourage knowledge sharing, overcome social and behaviour barriers to change, encourage organisational learning, support creativity and experimentation, allocate sufficient resources, provide legitimacy to the process and ensure decision makers throughout the organisation are aligned to the organisation's strategy.
- Leaders seeking a digital transformation should establish goals before choosing technology, integrate internal and external expertise, involve customers in decisions, manage the impact on employees and adopt aspects of a start-up culture.
- Business model innovation is often best achieved by replacing top-down management approaches with teams empowered to make decisions at lower levels of the organisation. The leader's role focuses more on culture and shared vision.
- Leaders must decide whether developing a new business model or copying another's innovation is the best approach.
- Leaders of start-up ventures often face higher uncertainty and risk, fewer resources and less experience than those of established businesses and thus need particularly strong problem-solving abilities, the ability to think and act quickly and high tolerance for risk.
- The pace of change and innovation requires practising and aspiring leaders to undertake ongoing development through formal and informal channels in order to develop the skills and knowledge to make strategic decisions.

# Summary

Tick off

Roles of management and leadership for crafting organizational strategy in the contemporary business environment.	<input type="checkbox"/>
Identify and analyze different leadership styles in strategy implementation	<input type="checkbox"/>
Identify and evaluate the communicating role of leaders in the strategy process and the responsibility of leaders for strategic decisions	<input type="checkbox"/>
The role of an ACA in the discipline of strategic analysis and strategic decision making.	<input type="checkbox"/>
Leadership and Management roles in strategic alignment.	<input type="checkbox"/>
The dimensions of an entrepreneurial orientation and intrapreneurship	<input type="checkbox"/>
Strategic innovation : strategising, entrepreneuring, changing and investment processes	<input type="checkbox"/>
Intrapreneurship : Importance of intrapreneurship for creation of an organisation-wide innovation management system	<input type="checkbox"/>
Open innovation and value creation : Leaders and managers have to develop an open-innovation capability within the organisation, which comprises the value processes	<input type="checkbox"/>
Leadership and Management roles in strategy for emerging business model: Current and future leaders and managers can continue to develop their portfolio of skills	<input type="checkbox"/>

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	What are roles of management and leadership for crafting organizational strategy in the contemporary business environment? (Topic 1)
2.	How can you Identify and analyze different leadership styles in strategy implementation? (Topic 2)
3.	How can you assess the communicating role of leaders in the strategy process and the responsibility of leaders for strategic decisions? (Topic 3)
4.	How can you assess the role of an ACA in the discipline of strategic analysis and strategic decision making? (Topic 4)
5.	Are you able to identify and analyze the Leadership and Management roles in strategic alignment? (Topic 5)
6.	Are you aware of the dimensions of an entrepreneurial orientation and intrapreneurship ? (Topic 6)
7.	Can you explain the Strategic innovation : strategising, entrepreneuring, changing and investment processes.(Topic 7)
8	Are you able to explain the Importance of intrapreneurship for creation of an organisation-wide innovation management system? (Topic 8)
9	Are you aware of the Open innovation and value creation within the organisation, which comprises the value processes? (Topic 9)
10	Can you explain the Leadership and Management roles in strategy for emerging business model ? (Topic 10)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed to the next chapter.

Question	Learning benefit from attempting this question
17-Eleven	The question tests your knowledge of the ethical issues to rational decision-making. It is important that you don't simply re-write syllabus content, instead you should explain your points in the context of the scenario.
3 High-rise apartment developer	The question tells you that they have created a vision and it is understood (therefore communicated). It is important that you don't simply re-write syllabus content, instead you should explain your points in the context of the scenario.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries.

# Technical reference

## 1 IFRS Practice Statement: *Management Commentary - A Framework for Presentation*

- Management Commentary is a narrative report that provides a context within which to interpret the financial position and performance of an entity. It also provides management with an opportunity to explain its objectives, and its strategies for achieving those objectives.

## 2 Business Strategy texts

Although this Workbook is designed to provide you with comprehensive coverage of the material you need for your SBM&L exam, if you wish to undertake further reading around the areas of business strategy discussed in this chapter, we recommend the following texts:

Rothschild, WE, 1993, *Risktaker, Caretaker, Surgeon, Undertaker: The Four Faces of Strategic Leadership*, John Wiley & Sons, New York.

Lynch, R. (2018) *Strategic Management* (8th edition), Harlow: Pearson Education.

## 3 Website article

If you wish to understand more about this area, we recommend you look at the article: Johnson M, Christensen C & Kaggerman H, 2008, 'Reinventing your business model', *Harvard Business Review*, December, [www.innosight.com/insight/reinventing-your-business-model-form](http://www.innosight.com/insight/reinventing-your-business-model-form).

# Self-test questions

1. Russell Withers and 7-Eleven failed to adhere to ethical business practices. Context example 04 discusses how senior management at 7-eleven failed to lead as role models for the behaviour of employees and how they treated their franchisees.

How the ethical issues in this case link to rational decision-making?

2. Considering context example 03 on Japan Airlines, describes the leadership approaches Inamori took to turn around the fortunes of the company.
3. The CEO of a high-rise apartment developer must lead a transformational change after the company was found guilty of building two blocks with serious defective construction issues. They were prosecuted by regulators and spent millions of dollars rectifying issues and paying for short-term accommodation for renters. The Executive team reported back that although the new values and direction of the company was well understood, employees still felt apprehensive about raising quality and design issues for fear of retribution.

What should the CEO do to move past this hurdle?

Answers to Interactive questions

## Answer to Interactive question 1

The core tasks in strategic leadership are: making things happen; setting goals that direct and shape; championing the organisation's strategy and direction; making complex decisions and identifying the right business model. Once a rehabilitation plan was agreed (it is not clear from the case that Mr Inamori led this, but it is reasonable to assume that he did), he implemented the plan (which involved significant cuts to the company) and put in place the structures and processes to enable staff to drive the turnaround of the company, using a style and approach that was quite different to traditional management approaches in Japan. The facts from the case that demonstrate the role of strategic leadership have been summarised in the table as follows.

Core task in strategic leadership	Mr Inamori's action/s
Making things happen	<ul style="list-style-type: none"> <li>• A rehabilitation plan was approved for JAL late in 2010, requiring the company to terminate almost one-third of its workforce and reduce salaries by up to 30%.</li> <li>• Mr Inamori introduced his managerial accounting system known as 'amoeba management' to enable change.</li> <li>• The amoeba management system uses profit centres (such as manufacturing or sales units) as its basic unit of operation – these consist of 5 to 50 people.</li> </ul>

Setting goals that direct and shape	<ul style="list-style-type: none"> <li>• To avert an economic disaster for Japan by ensuring JAL did not become bankrupt.</li> <li>• To protect the jobs of the remaining JAL staff.</li> <li>• To maintain fair competition in the airline market and thus benefit the public.</li> </ul>
Championing the organisation's strategy and direction	<ul style="list-style-type: none"> <li>• Mr Inamori's goal was to create a company that every employee is proud to work for and put people before profit.</li> <li>• One of his approaches involved having a few drinks with employees working late so they could talk informally.</li> </ul>
Making complex decisions	<ul style="list-style-type: none"> <li>• Mr Inamori brought an analytical mind to understanding the company's figures and exhibited confidence and commitment.</li> </ul>
Identifying the right business model	<ul style="list-style-type: none"> <li>• Each amoeba is tasked with improving revenues and lowering costs.</li> <li>• Shifting the way staff view their jobs from 'serving bosses' to 'contributing to the company's performance.'</li> </ul>

**Answer to Interactive question 2 :**

Transformational leaders have the ability to transform and lead major change. Mr Inamori:

- implemented a change plan that involved terminating almost one-third of its workforce and reduce salaries by up to 30%
- broke away from the semi-government style of management that had long been in place to establish motivation and commitment among JAL's staff
- changed the management structure and roles and responsibilities of staff in distinct business management (amoeba) groups to establish common values among employees and make their welfare the number one priority
- placed responsibility on staff and gave them a sense of ownership of outcomes, and at the same established transparency and accountability – a very different approach to traditional Japanese management.

**Answer to Interactive question 3 : (1) & (2)**

Corporate transformation was required at JAL to deal with the crisis situation the company was in. This involved major changes to the whole organisation.

To support a corporate transformation, initially a coercive style was used – that is, the implementation of the agreed rehabilitation plan in exchange for a loan and write off of some debts, but involving significant staff and cost reductions. The coercive style is appropriate when an organisation is in crisis and has limited time and resources. Top-down leadership has to make decisions in the short-term to get through the immediate crisis, and often involves retrenchments and downsizing.

Later, the leadership style changed to a more collaborative style, where there was significant participation from employees in important decisions related to the future and organisational change. Mr Inamori also delegated responsibility and accountability to staff with specific knowledge of the functional (amoeba) group they belonged to, as they had knowledge relevant to the change within their group.

**Answer to Interactive question 4 :**

During his time leading JAL, Mr Inamori had to use different styles of leadership. At the



beginning he had to be directive to implement difficult decisions that were the condition of JAL being able to continue operations. He then moved through the different leadership styles so that, ultimately, he could step back and delegate leadership to others.

Leadership style	Description	Application by Mr Inamori
Directing	An authoritarian style characterised by specific instructions and close supervision	Implemented a rehabilitation plan that was approved for JAL late in 2010, requiring the company to terminate almost one-third of its workforce and reduce salaries by up to 30%. In return it was given a ¥900 billion loan and some of its debts were written off
Coaching	While specific instructions and supervision are still provided, there are also clear explanations of what is occurring, and suggestions offered by employees may be accepted; coaching is still regarded as being authoritarian but takes tentative steps towards collaboration	Inamori adapted the management philosophy he had developed at Kyocera (previous company) and introduced his managerial accounting system known as 'amoeba management' to break down the rigid, bureaucratic corporate culture at JAL, establish common values among employees and make their welfare the number one priority. The system also helps identify and develop leaders.
Supporting	Employee efforts are facilitated, and employees share decision-making responsibility	Placed responsibility on staff and gave them a sense of ownership of outcomes, establishing transparency and accountability. Shifted the way staff viewed their jobs from 'serving bosses' to 'contributing to the company's performance'.
Delegating	Responsibility for both decision making and problem solving is transferred to employees	He stood down from the CEO role to an advisory position once the transformation was completed, leaving the structures that he put in place intact.

#### Answer to Interactive question 5

According to the Rothschild model, to ensure future success or to fight against current problems, surgeons have an ability to prune or sever parts of the organisation that, although they may once have been valuable, have become a hindrance. The main evidence that supports Mr Inamori as demonstrating the leadership style of a 'surgeon' is the implementation of the rehabilitation plan which required the company to terminate almost one-third of its workforce and reduce salaries by up to 30% as a condition of being able to continue operating.

#### Answer to Interactive question 6

The culture of any social unit includes group norms, shared perceptions, espoused values, and consensus around goals and objectives. It includes the way people interact with each other, how they solve problems, and how they justify themselves.

A significant cultural challenge for Mr Inamori was to move the company and its employees away from the semi-government style of management that had long been in place, establish motivation and commitment, and instil a sense of personal accountability and responsibility for company performance across all staff.

Another challenge was that the amoeba approach he introduced was very different to traditional Japanese business practice whereby decisions are made by the senior management

and handed down to staff to be implemented. This is a reflection of the distribution of power in Japanese society (power distance) and the typically collective decision-making preferences Japanese people have and the importance of relationships in their culture.

Through the amoeba approach, Mr Inamori was able to identify leaders and trust staff to deliver, although there would be little way to conceal underperformance, which could have been challenging.

#### **Answer to Interactive question 7**

The key initiative that Mr Inamori took to empower others to act was to put in place amoeba groups. The amoeba management system uses profit centres (such as manufacturing or sales units) as its basic unit of operation – these consist of 5 to 50 people – and has responsibility for planning, decision making and administration. Each amoeba is tasked with improving revenues and lowering costs. This ‘management by all’ approach places responsibility on staff and gives them a sense of ownership of outcomes, and at the same time establishes transparency and accountability. Staff become more aware of the connection between their work performance and the company’s profitability, shifting the way they view their jobs from ‘serving bosses’ to ‘contributing to the company’s performance’.

#### **Answer to Interactive question 8**

There is limited information as to how Mr Inamori’s strategy was communicated. The key action discussed in the case is that one of his approaches involved having a few drinks with employees working late so they could talk informally. This would have provided staff with the opportunity to:

- express their feelings in an open and protected manner
- raise concerns.

Communication is also non-verbal. Mr Inamori’s decision to not take a salary would have been a very powerful message to all staff that he was committed to turning the company around and was not in it for the money but to:

- avert an economic disaster for Japan by ensuring JAL did not become bankrupt

#### **Answer to Interactive question 9**

There were two main types of decision-making styles needed for the turnaround at JAL. Initially, a command style was needed. This was because difficult decisions about downsizing the company and reducing costs had to be made. It is unlikely that the decisions would have been made (especially in a timely manner) through any other means.

Command decisions are decisions that are made by leaders without consultation with their team. This occurs in organisations where things are moving quickly, and there is no time for consultation. When a crisis arises, it is often unexpected and requires immediate attention to avert damage. It is here when command decisions are most utilised and the most effective.

Once initial decisions had been implemented, Mr Inamori was able to move to a collaborative style of decision making. This leadership style allows the team to provide opinions, insight and knowledge. The leader can consider each perspective and is then well-informed to make the final decision. This was achieved through the amoeba group structure whereby each amoeba group had responsibility for finding ways to improving revenues and lowering costs. This ‘management by all’ approach placed responsibility on staff and gave them a sense of ownership of outcomes, and at the same established transparency and accountability.

#### **Answer to Interactive question 10**

Mr Inamori came to JAL with a reputation for putting people ahead of profit. The values that guided his process of change was to make staff happy (not shareholders) and create a company that every employee is proud to work for. He demonstrated his commitment and values by not taking a salary.

### Answer to Interactive question 11

7-Eleven and Cotton On have very different approaches to organisational value and ethics. 7-Eleven takes a much more classical approach in that it exists to make money for its key shareholders. While Milton Friedman states this should be achieved without fraud or deception, it is clear that 7-Eleven has transgressed in this regard. Leadership decisions at 7-Eleven have supported behaviours that have been shown to exploit members of society in order to pursue the goal of making a profit. Employees are seen as a cost to the business. In terms of the welfare of employees (including franchise owners) and the impact on society, this has had extremely detrimental and exploitative impacts. No information has been provided on environmental impacts.

On the other hand, Cotton On takes a socio-economic view of ethics, using its role as a large company to try and make a positive impact on the society within which it operates. It has chosen education as a focus, noting that education is a key mechanism to ending extreme global poverty. Leadership decisions at Cotton On have established mechanisms to drive a culture of support for people in society that are less fortunate through a global education focus. This has had a very positive impact on employees and society more broadly with significant funds invested in the purpose and goals of the Cotton On Foundation, and partner organisations involved in supporting the organisation's activities. There is no information provided about Cotton On's approach to the environment.

### Answer to Interactive question 12

The key source of information to answer this question is the material that compares and contrasts the roles of management and leadership and the role of finance professionals in strategy. There are many possible actions to choose from to answer this question. Options are summarised in the following table.

Leading and managing	Characteristics	Actions that drive strategy for managers and leaders
Managing (stability)	<ul style="list-style-type: none"> <li>Plan, allocate resources and assign tasks</li> <li>Performance reporting and control</li> <li>Communicate</li> <li>Coordinate</li> <li>Make decisions</li> <li>Evaluate</li> <li>Accept the status quo</li> <li>Do not ask difficult questions</li> <li>Rely on control</li> <li>A short-range view</li> </ul>	<ul style="list-style-type: none"> <li>Gather finance, enterprise and big data</li> <li>Provide support in business modelling</li> <li>Support implementation, analysis of interim performance, and strategic project re-scoping efforts if these are necessary</li> <li>Analyse results and performance metrics (e.g. SWOT, ROI) from an organisational context and trend perspective</li> <li>Ensure the sound management of large volumes, varieties, and velocities of data with a focus on veracity (ensure data validity and reliability) <ul style="list-style-type: none"> <li>Manage and mitigate risk effectively</li> <li>Ensure the decisions are made across the organisation are based on sound judgement</li> </ul> </li> <li>Act as an intermediary between the finance, technology and information functions of the organisation</li> </ul>

L e a d i n g (change)	<ul style="list-style-type: none"> <li>• Inspire and influence</li> <li>• Build confidence and enthusiasm</li> <li>• Develop future leaders</li> <li>• Promote culture</li> <li>• Role model</li> <li>• Communicate <ul style="list-style-type: none"> <li>• Establish networks and relationships</li> </ul> </li> <li>• Catalyst for change</li> <li>• Challenge the status quo</li> <li>• Ask what and why questions</li> <li>• Inspire trust</li> <li>• A long-range strategic view</li> </ul>	<ul style="list-style-type: none"> <li>• Champion change and plan for contingencies</li> <li>• Offer insights, collaborate to develop ideas, produce forecasts, have an active role in business modelling, and complete business case generation and analysis <ul style="list-style-type: none"> <li>• Challenge assumptions in business models, conceptualise ideas, anticipate future trends, develop strategic options and help develop budgets</li> </ul> </li> <li>• Help identify if and when the strategic plan and business model(s) of the organisation need to be changed</li> <li>• Be a role model for change, drive and lead the change and any project re-scoping efforts if and when required</li> <li>• Identify strategic and business model issues, and consult with the organisation's leaders to identify through consensus the next logical steps to ensure the organisation is to remain relevant</li> </ul>
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### Answer to Interactive question 13

The following table shows how NYT has shifted resources and built capability

Resource shifting	Capability building
Replacement of Jill Abramson, who was opposed to digital integration with Dean Baquet	Launched New York Times Digital as a separate entity with new people, systems and culture
Elimination of 100 newsroom jobs	Promoting and bringing in talent with digital and mobile communication skills
Reorganisation of newsroom leadership around four deputy editors	Establishment of Beta Group – an in-house digital development group, developing mainly apps for mobile platforms (e.g. NYT Now and NYT Cooking)
Integration of journalism and technology	Development of digital skills with all journalists
User subscription-based business model introduced	Wirecutter acquired providing reviews of consumer products
	Established T Brand Studio to create 'native' advertising and other marketing and creative services
	T Brand studio acquired Hello Society, a leader in influencer marketing and Fake Love, and experiential design studio (including virtual and augmented reality)

The difficulties faced included the following.

- Not competitive with digital native start-ups – lacked innovation and feature development.
- Not competitive with the digital giants – Apple, Amazon, Microsoft and Netflix.
- Digital platform attracted visitors but initially struggled to attract advertisers.
- Initial online subscription offer was unsuccessful.

- Metered access model was more successful in attracting subscribers and advertisers, but advertising revenue still not able to offset the decline in advertising in print media and growth remains modest.

#### Answer to Interactive question 14

Using IBM's Emerging Business Organisation (EBO) model, NYT leadership has responded to the challenges of the internet in the following ways.

Business Horizons	Leadership response
Mature business	<ul style="list-style-type: none"> <li>- Changing the executive editor and removing 100 positions in the newsroom to defend and increase the profitability of the existing print business</li> <li>- Training reporters to work with technology to better integrate journalism and technology</li> </ul>
Growth business	<ul style="list-style-type: none"> <li>- Establishing a digital platform</li> <li>- Introducing a user subscription-based, metered access business model</li> <li>- Re-organising the newsroom around four deputy editors</li> <li>- Promoting and bringing in reporters with digital communication skills</li> <li>- Establishing an in-house technology development unit to develop apps for mobile platforms</li> </ul>
Future business	<ul style="list-style-type: none"> <li>- Investing in emerging opportunities by:               <ul style="list-style-type: none"> <li>(a) Establishment of an in-house marketing and creative services unit</li> <li>(b) Acquisition of other complementary services such as Wirecutter to provide consumer reviews, Hello Society for influencer marketing and Fake Love, specialising in experiential design</li> </ul> </li> </ul>

#### Answer to Interactive question 15

1. (a) NYT management have used the following approach to strategy.
  - Leaders of organisations pursuing business model innovation must find ways to innovate alongside their existing business model and may need to maintain multiple business models during a transition period.
    - NYT management maintained the traditional business model while also establishing a new digital platform with its own subscription-based business model.
  - Leaders of organisations implementing business model innovation need to encourage knowledge sharing, overcome social and behaviour barriers to change, encourage organisational learning, support creativity and experimentation, allocate sufficient resources, provide legitimacy to the process and ensure decision makers throughout the organisation are aligned to the organisation's strategy.
    - NYT management began by replacing the executive editor who was seen as a barrier to change.
    - Journalism and technology was integrated to remove further social and behavioural barriers.
    - Reporters with digital communication skills were promoted and hired to increase their digital capabilities.
    - Reporters were trained in technology to encourage organisational learning.
  - Leaders seeking a digital transformation should establish goals before choosing technology, integrate internal and external expertise, involve customers in decision,

manage the impact on employees and adopt aspects of a start-up culture.

- New York Times Digital was established as a separate entity with the people, systems and culture of a dot com start-up.
- Decisions were made based on an innovation report designed to rethink their digital strategy. - Internal and external expertise was integrated through the promoting and hiring of reporters with digital skills and the integration of journalism and technology.
- There is no evidence that customers were involved in any of the strategic decisions.
- It also does not appear that the impact on employees was managed very well, with 100 people leaving in one day described as 'the most extraordinary collection of talent, of human knowledge, that has ever left the New York Times in a single day'.
- Business model innovation is often best achieved by replacing top-down management approaches with teams empowered to make decisions at lower levels of the organisation. The leader's role focuses more on culture and shared vision.
  - The newsroom was re-organised around four deputy editors.  
Leaders must decide whether developing a new business model or copying another's innovation is the best approach.
  - NYT leaders developed the metered access subscription model for their online users.
- Leaders of start-up ventures often face higher uncertainty and risk, fewer resources and less experience than those of established businesses and thus need particularly strong problem-solving abilities, the ability to think and act quickly and high tolerance for risk.
  - While it's true that NYT leaders faced high uncertainty and risk in the digital space, they had the advantage of being well resourced and also had many years of experience in the news industry.
  - This did not negate the need for problem-solving which was often achieved through the commissioning of reports.
  - Leaders in a traditional business seldom have a high tolerance for risk. This may have been somewhat addressed with the replacement of the CEO and executive editor.
  - The leaders in the new division NYT Digital were set up to think and act quickly and more like a start-up.
- The pace of change and innovation requires practicing and aspiring leaders to undertake ongoing development through formal and informal channels in order to develop the skills and knowledge to make strategic decisions.
  - There is no evidence of this in the example given.

(b) The following represent some of the key differences in the strategic approach of BuzzFeed versus NYT.

BuzzFeed	NYT
BuzzFeed is free to its customers and relies on advertisers.	NYT's main revenue stream is from subscribers
BuzzFeed employees are all digital.	NYT is currently integrating journalism and technology through training and hiring.
BuzzFeed source their content from existing news sources, collating and redistributing them.	NYT rely on their own reporters and content.

BuzzFeed has a global perspective due to variety of sources used.	NYT rely on their reporters to source information on global issues.
BuzzFeed uses analytics to choose their content based on popularity, ensuring that the content remains customer focused.	NYT rely on their reporters to supply relevant content. Analysis of its value is done after its release.
BuzzFeed utilises various communication channels in social and mobile platforms.	NYT is building capabilities in technology for various platforms
BuzzFeed have expanded into video, as well as written content, based on consumer demand.	NYT rely on written content.
BuzzFeed content is grouped according to key customer themes.	NYT acknowledge the need to group content in relevant themes and is working towards this end.
BuzzFeed utilises new technology to improve customer relationships, customise offerings and create opportunities.	NYT have established and acquired a number of new technology players to build their own technical capabilities.

The competitive strengths and weaknesses of BuzzFeed and NYT include the following.

Company	Strengths	Weaknesses
BuzzFeed	<ul style="list-style-type: none"> <li>• Customer/user focused</li> <li>• Strong customer relationships</li> <li>• Strong relationships with partners</li> <li>• Digital natives</li> <li>• Committed to social and mobile platforms</li> <li>• Utilises analytics</li> <li>• Utilises cutting-edge technology</li> <li>• Diversity of contents</li> <li>• Global perspective</li> <li>• Low cost structure</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertain revenue stream</li> <li>• Relies on external content</li> <li>• Relies on external R&amp;D/technology</li> <li>• Quality assurance/reliability of contents</li> </ul>
NYT	<ul style="list-style-type: none"> <li>• Certain revenue stream</li> <li>• Owns contents</li> <li>• Quality/reliability of contents</li> <li>• Establishment and acquisition of technology and R&amp;D</li> </ul>	<ul style="list-style-type: none"> <li>• More local than global in perspective</li> <li>• High cost structure</li> <li>• Low customer engagement</li> </ul>

(c) The following will help evaluate whether Buzzfeed could fend off copycat behaviour by NYT.

- The established player has a major strength that it relies on for its success. NYT's major strength is the quality and reliability of its content, which is written and owned in-house.
- There is a product offering of value to a market segment that the dominant player's major strength works against. The market values diversity of content with a global perspective, social media presence and interaction all factors that are weaknesses for NYT
- Imitating the offering would negatively impact on the established player's main business. Offering free, global news and entertainment content has a significant impact on NYT's main business. - If the offering succeeds, the established

player could only copy it or compete directly with it by giving up their main strength. Although NYT do not have to give up their key strength, they have had to significantly build new capabilities in order to compete.

In summary, BuzzFeed are well placed to fend off copycat behaviour by NYT. Their customer relationships, analytic capabilities and diversity of content and sources are difficult for NYT to emulate or compete with, particularly on social and mobile platforms.

- (d) Both companies have taken a different approach to staying ahead of technical developments. While BuzzFeed utilises new technology from third parties to improve their customer relationships, service offerings and to create opportunities, NYT has chosen to establish or acquire businesses to develop and utilise new technology opportunities. Whether or not either business take full advantage of these opportunities will be more dependent on how well they interpret market and customer trends and behaviours, and the foresight of leaders and managers to take action on opportunities as they are identified.

### **Answers to Self-test questions**

1. Context example 04 explains that 7-Eleven created binding contracts with provisions and royalty fees that meant that franchisee owners would be lucky to make \$40,000 per year. Therefore, desperate owners looked for any way to reduce costs and labour was the easiest to manipulate. It can be argued that 7-Eleven did not factor in their decision making the causal relationship between their business model and how individual franchisee employees might be affected.
2. At the start, Inamori used a coercive or directive style (Stacey and Dunphy) to get change happening very quickly. After that he could move to phase 2 of transformational leadership where he had to break down the government style culture and embed new ways of working, like the amoeba management system.
3. The question tells us that they have created a vision and it is understood (therefore communicated). But employees don't feel empowered to act. They are not raising the issues about quality which we can infer the company must address and will be part of its vision for change. The CEO needs to eliminate the obstacle of being scared to report and empower them to act or they won't implement the change successfully.



# Chapter 19

# Treasury and working capital management

## Introduction

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Chapter study guidance

## Learning topics

- 1 Treasury management function
- 2 Global treasury management
- 3 Working capital management

Summary

Further question practice

Self-test questions

Answers to Interactive questions

Answers to Self-test questions



# Introduction

## Learning outcomes

- Demonstrate and explain the role and responsibilities of the treasury management function
- Demonstrate and explain the role of treasury management in short-term finance, short-term investment and liquidity risk
- Appraise and evaluate the contribution of working capital management to short term and long term financing
- Evaluate the risks arising from working capital management and how these may be mitigated
- Evaluate and explain working capital requirements for a range of different organisations and circumstances
- Demonstrate and explain the nature and role of working capital management within financial management
- Appraise, evaluate and advise with respect to working capital management techniques
- Appraise and explain global treasury organisation and international liquidity management

## Syllabus links

Decisions about the autonomy of the treasury function and its objectives will not be taken in isolation but in the context of the wider decisions about organisational structure as discussed in the chapter "Strategic implementation". The activities and autonomy of an international treasury function will depend on the extent and needs of overseas operations and the form these take.

## Examination content

In an exam question, working capital management may be a significant issue for a business with other concerns; for example, a small business trying to raise finance or a business in financial trouble that is facing reconstruction. Working capital management may also be an important issue in the wider context of a business building relationships with its customers or suppliers.

## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>Treasury management focus</b></p> <p>Treasury activities encompass all aspects of financing, so inevitably an accountant will have involvement in treasury activities.</p> <p>Economies of scale and complexities involved in, for example, extensive currency risk management activities, mean that larger companies will operate a separate treasury function. The degree of control exercised over this function can have important implications for the business. In practice, board members may not understand all the activities that the treasury function carries out, which can result in a dangerous lack of effective scrutiny.</p>	<p><b>Approach</b></p> <p>For the treasury function, focus on the key decisions that the organisation has to make (degree of centralisation, cost or profit centre).</p> <p><b>Stop and think</b></p> <p>At what stage does a business need to establish a treasury function staffed by treasury specialists?</p>	<p>In the exam you may be required to discuss the advantages and disadvantages of different treasury management arrangements and explain the risks associated with treasury management policies.</p>	<p><b>IQ1: Profit centre</b></p> <p>This question asks you to consider some of the issues associated with operating the treasury function as a profit centre.</p>
2	<p><b>Global treasury management</b></p> <p>The tasks that treasury departments have to undertake domestically, for example efficient cash and liquidity management, will also be relevant for international management.</p>	<p><b>Approach</b></p> <p>Remember that the treasury policies applied internationally need to be congruent with the ways in which the organisation is operating in foreign countries.</p> <p><b>Stop and think</b></p> <p>What are some of the issues affecting global treasury management?</p>	<p>In the exam you may be asked to explain the risks associated with treasury management policies in a multinational company.</p>	<p><b>IQ2: Global treasury management</b></p> <p>This question asks you to think about the potential benefits of treasury centralisation.</p>

Topic	Practical significance	Study approach	Exam approach	Interactive questions
3	<p><b>Working capital management</b></p> <p>Working capital management is something that you have studied extensively before. In recent difficult economic circumstances businesses have been re-appraising their policies, partly in the light of a shortage of finance from other sources. Improving liquidity, by shortening the</p>	<p><b>Approach</b></p> <p>The final section looks at working capital management, where the aim is to achieve a balance between minimising the risk of insolvency (liquidity) and maximising the return on assets (profitability).</p> <p>Different business sectors will have different working capital requirements, and</p>	<p>In the exam you may be required to:</p> <ul style="list-style-type: none"> <li>• evaluate the working capital requirements of businesses</li> <li>• analyse the working capital management policies adopted by businesses</li> <li>• recommend improvements to working capital management</li> <li>• evaluate the impact of</li> </ul>	<p><b>IQ4: Working capital policy</b></p> <p>This is a good question covering conservative and aggressive working capital policies. This is revision of what you would have covered in your Professional studies.</p>
	<p>operating cycle through improved operations management, is an important theme here.</p>	<p>therefore working capital management policies can vary. The section also considers how businesses are dealing with the effects of economic slowdown and adopting their working capital policies to cope, and how the cash operating cycle can be made shorter or more efficient.</p> <p><b>Stop and think</b> In what circumstances should businesses not aim to minimise working capital?</p>	<p>different methods of managing working capital on short- and long-term financing.</p>	

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 Treasury management function



## Section overview

- Treasury management in a modern enterprise covers a number of areas, including liquidity management, funding management, currency management and corporate finance.
- Centralising the treasury management function allows businesses to employ experts, deal in bulk cash flows and hence take advantage of lower bank charges and avoid a mix of surpluses and deficits. However, decentralised cash management can be more responsive to local needs.
- The treasury department is usually run as a cost centre if its main focus is to keep costs within budgeted spending targets. It may be run as a profit centre if there is a high level of foreign exchange transactions, or the business wishes to make speculative profits.
- Globalisation, information technology and pressures to add value are significant catalysts for changes in the role of the treasury function.

## 1.1 Treasury policy



### Definition

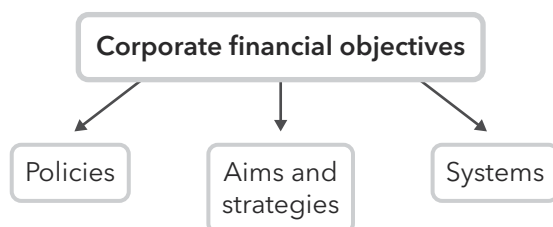
**Treasury management:** ‘the corporate handling of all financial matters, the generation of external and internal funds for business, the management of currencies and cash flows, and the complex strategies, policies and procedures of corporate finance’. (The Association of Corporate Treasurers)

Large companies rely heavily for both long- and short-term funds on the financial and currency markets. To manage cash (funds) and currency efficiently, many large companies have set up a separate **treasury department**.

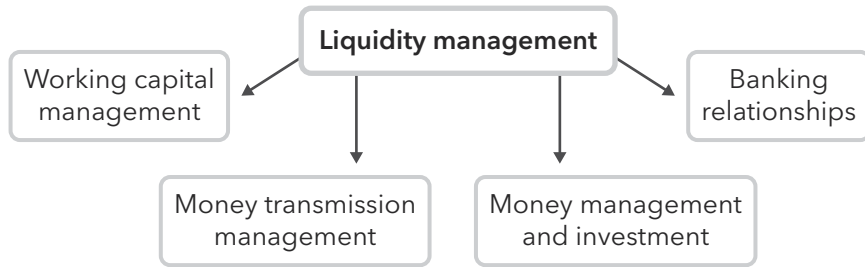
## 1.2 The role of the treasurer

The diagrams below are based on the Association of Corporate Treasurers’ list of experience required from its student members before they are eligible for full membership of the Association.

(a) Corporate financial objectives

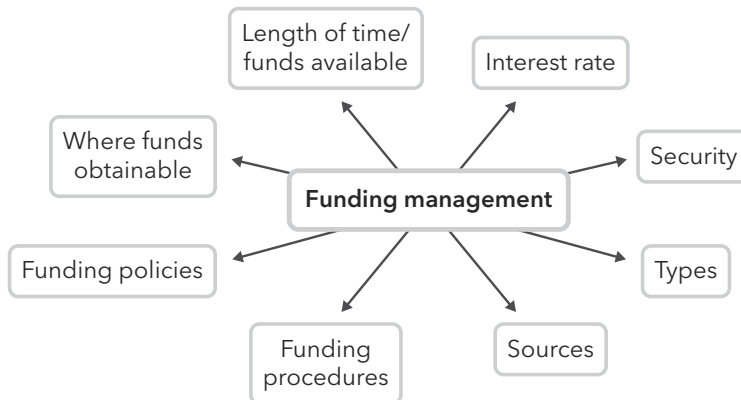


(b) Liquidity management



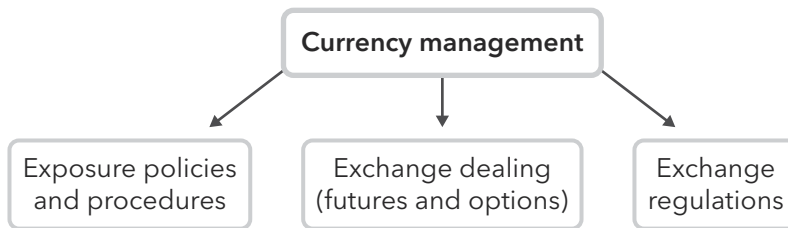
Liquidity management makes sure that the company has the liquid funds it needs, and invests any surplus funds, even for very short terms.

(c) Funding management



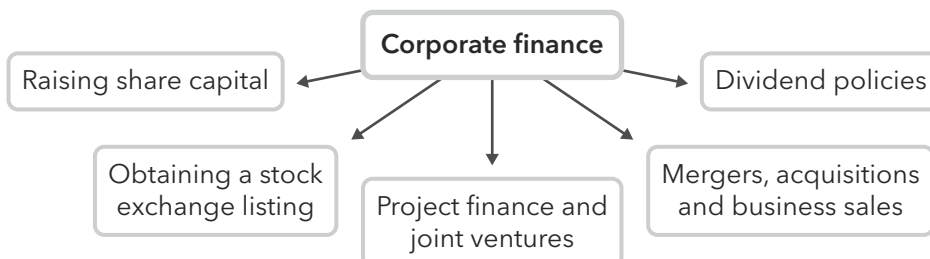
Funding management is concerned with all forms of borrowing, and alternative sources of funds, such as leasing and factoring.

(d) Currency management



Currency dealings can save or cost a company considerable amounts of money, and the success or short comings of the corporate treasurer can have a significant impact on the profit or loss of a company which is heavily involved in foreign trade.

(e) Corporate finance



The treasury department has a role in all levels of decision-making within the company. It is involved with **strategic** decisions such as dividend policy or the raising of capital, **tactical** decisions such as risk management, and **operational** decisions such as the investment of surplus funds.

### 1.3 Advantages of a separate treasury department

Advantages of having a treasury function which is separate from the financial control function are as follows:

- (a) Centralised liquidity management avoids mixing cash surpluses and overdrafts in different localised bank accounts.
- (b) Bulk cash flows allow lower bank charges to be negotiated.
- (c) Larger volumes of cash can be invested, giving better short-term investment opportunities.
- (d) Borrowing can be agreed in bulk, probably at lower interest rates than for smaller borrowings.
- (e) Currency risk management should be improved, through matching of cash flows in different subsidiaries. There should be less need to use expensive hedging instruments such as option contracts.
- (f) A specialist department can employ staff with a greater level of expertise than would be possible in a local, more broadly based, finance department.
- (g) The company will be able to benefit from the use of specialised cash management software.
- (h) Access to treasury expertise should improve the quality of strategic planning and decision-making.

### 1.4 Outsourcing

Because of the specialist nature of treasury management, a number of businesses outsource the function to specialist institutions. The company receives the benefit of the expertise of the specialist's staff, which may be able to fill resource or skills gaps otherwise absent from the internal team.

Outsourcing operational functions may enable the internal team to concentrate on strategic functions. It may also give the organisation access to better systems solutions. The specialists can deal on a large scale and pass some of the benefit on in the form of fees that are lower than the cost of setting up an internal function would be.

However, whether the same level of service could be guaranteed from the external institution as from an internal department is questionable. The external institution may not have as much knowledge of the needs of the business as an internal department.

If treasury activities are to be outsourced, contract documentation needs to be clear and management and reporting procedures must be established.

Other mechanisms may achieve the cost savings of outsourcing, but be more responsive to an organisation's needs. These include shared service centres (separate legal entities owned by the organisation and acting as independent service providers), which can be used to obtain economies of scale by concentrating dispersed units into one location. These may not necessarily be located near head office; in fact, many are located where they can obtain tax advantages.

## 1.5 Centralised or decentralised cash management?

### 1.5.1 The centralisation decision

A large company may have a number of subsidiaries and divisions. In the case of a multinational, these will be located in different countries. It will be necessary to decide whether the treasury function should be centralised.

With centralised cash management, the central treasury department effectively acts as the bank to the Group. The central treasury has the job of ensuring that individual operating units have all the funds they need at the right time.

### 1.5.2 Advantages of a specialist centralised treasury department

- (a) Centralised liquidity management avoids having a mix of cash surpluses and overdrafts in different local bank accounts and facilitates bulk cash flows, so that lower bank charges can be negotiated.
- (b) Larger volumes of cash are available to invest, giving better short-term investment opportunities (for example, money market deposits, high interest accounts and Certificates of Deposit).
- (c) Any borrowing can be arranged in bulk, at lower interest rates than for smaller borrowings, and perhaps on the eurocurrency or Eurobond markets.
- (d) Foreign currency risk management is likely to be improved in a Group of companies. A central treasury department can match foreign currency income earned by one subsidiary with expenditure in the same currency by another. In this way, the risk of losses on adverse exchange rate changes can be avoided without the expense of forward exchange contracts or other 'hedging' (risk-reducing) methods.
- (e) A specialist treasury department will employ experts with knowledge of dealing in futures, eurocurrency markets, taxation, transfer prices and so on. Localised departments would not have such expertise.
- (f) The centralised pool of funds required for precautionary purposes will be smaller than the sum of separate precautionary balances which would need to be held under decentralised treasury arrangements.
- (g) Through having a separate profit centre, attention will be focused on the contribution to Group profit performance that can be achieved by good cash, funding, investment and foreign currency management.
- (h) Centralisation provides a means of exercising better control through use of standardised procedures and risk monitoring. Standardised practices and performance measures can also create productivity benefits.

### 1.5.3 Possible advantages of decentralised cash management

- (a) Sources of finance can be diversified and matched with local assets.
- (b) Greater autonomy can be given to subsidiaries and divisions because of the closer relationships they will have with the decentralised cash management function.
- (c) The decentralised treasury function may be able to be more responsive to the needs of individual operating units.

However, since cash balances will not be aggregated at Group level, there will be more limited opportunities to invest such balances on a short-term basis.



### 1.5.4 Centralised cash management in the multinational firm

If cash management within a multinational firm is centralised, each subsidiary holds only the minimum cash balance required for transaction purposes. All excess funds will be remitted to the central treasury department.

Funds held in the central pool of funds can be returned quickly to the local subsidiary by telegraphic transfer or by means of worldwide bank credit facilities. The firm's bank can instruct its branch office in the country in which the subsidiary is located to advance funds to the subsidiary.

## 1.6 The treasury department as a cost centre or profit centre

### 1.6.1 Treasury department as a cost centre

A treasury department might be managed either as a cost centre or as a profit centre. For a Group of companies, this decision may need to be made for treasury departments in separate subsidiaries as well as for the central corporate treasury department.

In a cost centre, managers have an incentive only to keep the costs of the department within budgeted spending targets. The cost centre approach implies that the treasury is there to perform a service of a certain standard to other departments in the enterprise. The treasury is treated much like any other service department.

### 1.6.2 Treasury department as a profit centre

However, some companies (including BP, for example) are able to make significant profits from their treasury activities. Treating the treasury department as a profit centre recognises the fact that treasury activities such as speculation may earn revenues for the company, and as a result may make treasury staff more motivated. It also means that treasury departments have to operate with a greater degree of commercial awareness in, for example, the management of working capital.



#### Professional skills focus: Assimilating and using information

One of the professional skills assessed in the CA exams is the ability to demonstrate an understanding of the business context, using the scenario information and exhibits. You will therefore need to be able to suggest appropriate treasury management policies to meet the needs of the entity presented in the exam.



#### Interactive question 1: Profit centre

Suppose that your company is considering plans to establish its treasury function as a profit centre. Before reading the next paragraph, see if you can think of how the following issues are of potential importance to these plans.

#### Requirements

- 1.1 How can we ensure that high-quality treasury staff can be recruited?
- 1.2 How might costly errors and overexposure to risk be prevented?
- 1.3 Why will the treasury team need extensive market information to be successful?
- 1.4 Could there be a danger that attitudes to risk in the treasury team will differ from those of the board? If so, how?

1.5 What is the relevance of internal charges?

1.6 What problems could there be in evaluating performance of the treasury team?

See **Answer** at the end of this chapter.

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## 1.7 Control of treasury function

### 1.7.1 Statement of treasury policy

All treasury departments should have a formal statement of treasury policy and detailed guidance on treasury procedures. A treasury policy should enable managers to **establish direction, specify parameters** and **exercise control**, and also **provide a clear framework and guidelines for decisions**.

The guidance needs to cover the **roles** and **responsibilities** of the **treasury function**, the **risks** requiring management, **authorisation** and **dealing** limits. Guidance on **risks** should cover:

- **identification** and **assessment** methodology
- **criteria** including tolerable and unacceptable levels of risk
- **management guidelines**, covering risk elimination, risk control, risk retention and risk transfer
- reporting guidelines

The guidance must also include guidance on **measurement of treasury performance**. Measurement must cover both the **management of risk** and the financial **contribution** the department makes.

### 1.7.2 Planning and review

As with other areas, there should be proper **forecasts** and **contingency arrangements**, with funds being made available by the bank when required. Because treasury activities have the potential to cost the organisation huge amounts of money, there ought to be a clear policy on **tolerated risk** and **regular review of investments**.

### 1.7.3 Controls over operations

The following issues should be addressed.

(a) **Competence of staff**

Local managers may not have sufficient expertise in the area of treasury management to carry out speculative treasury operations competently. Mistakes in this specialised field can be costly. It may only be appropriate to operate a larger **centralised** treasury function as a profit centre, and additional specialist staff may need to be recruited.

(b) **Controls**

Adequate controls must be in place to **prevent costly errors and overexposure to risks** such as foreign exchange risks. It is possible to enter into a very large foreign exchange deal over the telephone.

(c) **Information**

A treasury team that trades in futures and options or in currencies is competing with other traders employed by major financial institutions who may have better knowledge of the market because of the large number of customers they deal with. In order to compete effectively, the team needs to have **detailed and up to date market information**.

(d) **Attitudes to risk**

The more aggressive approach to risk taking which is characteristic of treasury professionals may be difficult to reconcile with a more measured approach to risk within the board of directors. The

recognition of treasury operations as profit-making activities may **not fit well with the main business operations of the company**.

(e) **Internal charges**

If the department is to be a true profit centre, then **market prices** should be charged for its services to other departments. It may be difficult to put realistic prices on some services, such as arrangement of finance and general financial advice.

(f) **Performance evaluation**

Even with a profit centre approach, it may be difficult to measure the success of a treasury team for the reason that successful treasury activities sometimes involve **avoiding incurring costs**, for example when a currency devalues.

#### 1.7.4 **Audit of treasury function**

Auditors must ensure that the **risk is managed in accordance with company procedures**. They need to **review forecasts** and **contingency arrangements** for adequacy and examine **investment reviews**. The auditors also need to see evidence that the board is fully aware of the treasury activities that are being carried out.

### 1.8 **Current developments in the treasury function**

#### 1.8.1 **The changing role of the treasury function**

A predictable consequence of the wide-ranging scope of the treasurer's role is that it is constantly evolving. Partly, this is in response to changes in the financial world such as the development of different types of capital instruments. It is also due to a changing emphasis on the relative importance of different aspects of the treasury role.

#### 1.8.2 **Risk prevention**

We have already stressed that risk control is an integral part of the treasury management function. More accurate forecasting techniques are being used to help other departments mitigate and avoid risks.

#### 1.8.3 **Working capital management**

Many businesses are placing increased emphasis on constant working capital improvement to minimise funding requirements. This means greater treasury involvement in supplier and inventory management.

#### 1.8.4 **Tax management**

Consequences of global developments such as European Union harmonisation need to be considered carefully. However, in many businesses limitation of tax liabilities must be seen in the context of optimum liquidity management.

#### 1.8.5 **Information and technology management**

Inefficiencies and weaknesses that may expose the treasury function to risk include the following:

- duplication of effort, such as the re-input of information
- tasks which take too long to complete, or are frequently delayed

- poorly functioning links with older ('legacy') systems or those of other departments
- management reports incomplete, inaccurate, late or in the wrong format
- inaccurate cash flow forecasts
- credit risk not properly identified
- difficulty in complying with accounting standards

There is a variety of technological tools available to improve the efficiency of treasury operations in such areas as cash management, investment and debt management, and foreign exchange capabilities. Many systems are now integrated with trading platforms and bank portals, and include customised reporting tools. When applied to addressing difficulties such as those listed above, technology can bring benefits in many areas of treasury management.

- Cash and liquidity management - with improved visibility of cash flows around the business, a greater understanding of pooled cash positions and improved cash flow forecasts can be achieved
- Virtual accounts - companies can minimise bank account fees and improve accounts receivable processes by maintaining a single account with many associated virtual accounts. Virtual accounts make it easier for a company to establish automated reconciliation processes
- Transactions - speedier settlements, confirmation of deals and timely reporting will result from improved interfaces between trading systems
- Debt management - understanding of the company's debt position in terms of its outstanding loans, mortgages and lease finance
- Greater control over financial risk management - foreign exchange risk, interest rate risk and the management of specific instruments for associated hedging strategies can be more tightly controlled
- Automated foreign exchange conversions - companies can make payments in a foreign supplier's local currency by using a bank's automated forex conversion service. Paying a supplier in its local currency can eliminate the premium foreign suppliers typically add to the cost of goods. An automated forex service also enables a company to pay in multiple currencies from a single account, eliminating the expense of maintaining multiple foreign currency accounts. This tool helps corporations avoid maintaining idle balances in a range of currencies while accessing competitive forex rates
- General risk management - understanding of exposure limits, credit limits, authorisation levels and the undertaking of scenario and sensitivity analysis should help to reduce risk exposure and ensure compliance with company procedures
- Access controls - resulting in improved security, clear audit trails and tracking of transactions

#### **1.8.6 Software as a service (SaaS)**

In addition to employing technology in-house, there is growing use of SaaS (software as a service). SaaS solutions employ internet technology and remote servers, enabling users to access software online from anywhere, using a device with an internet connection. The software does not need to be installed on hardware in the company's offices. There are several advantages to this for a treasury function:

- It could remove the need for an internal IT capability.
- The supplier is responsible for all updates and maintenance, so the user gets access to

these as part of its subscription fee.

- Costs can be adjusted according to the company's own requirements (for example, number of transactions or number of licensed users).

### 1.8.7 Cyber security

In general, cyber attacks will target money or information (such as credit card details). A firm's systems may also be targeted as an entry to another firm that it has dealings with. It is therefore critical that all firms are aware of the potential for cyber risk, and to put appropriate measures in place.

As the use of technology increases exponentially, new weaknesses are identified and the overall level of cyber threat increases. Cyber threats can include the following.

- stealing of confidential data/information
- fraudulent payments
- denial of service attacks - flooding a server with information requests so that it crashes
- ransomware - malware that blocks system access, or disrupts it until a ransom fee is paid

It is important to identify the most critical company information, data and processes in its treasury function that may come under attack, so that cyber security efforts can be prioritised and appropriate policies developed. Companies need to ensure that treasury processes that attract cybercrime, such as payment processing, are reviewed and controls embedded including segregation of duties, enforcement of approval limits, and daily reconciliations. As well as appropriate technical measures (such as encryption and anti-virus software), cyber security policies should take account of human factors:

- directors must understand the effects that a cyber security breach could have - strong corporate governance and clear policies must be in place
- the Board should be aware of the guidance issued by government agencies, and all employees trained in cyber and information security
- there should be appropriate restrictions around sensitive data, and the company should have clear computer use policies
- insurance policies should cover the effects of a cyber breach
- incident response plans should be in place, well-rehearsed and understood

### 1.8.8 Cyber security and fraud mitigation

While investment in Treasury Management Systems (TMS) has increased, many companies still manage a significant proportion of their work using spreadsheets, leaving them open to both operational and fraud risks. Of the companies using a TMS, the implementation of cloud applications and managed services solutions has increased. This trend is expected to increase as vendors move to 'cloud only' offerings, and treasury teams seek to outsource IT support to external suppliers.

The investment in technology needed to combat fraud shows no signs of decreasing. To mitigate the risk, corporations need to consider:

- Governance – strong corporate governance, in the form of global policies
- Culture – corporations need to create a culture that recognises shared responsibility for preventing cyber-crime
- Technology – technology must include the latest encryption/security features

- Training – ongoing training for all employees, coupled with job-specific training for certain teams
- Process – companies need to ensure that processes that attract cybercrime, such as payment processing, are reviewed regularly and that controls are embedded in new processes including segregation of duties, multiple levels of approval, and daily reconciliation of all transactions

### 1.8.9 Relationship management

The wider scope of treasury's role implies strengthening of relations with other functions, and co-operation in tasks such as establishment of terms and payment methods for customers.

### 1.8.10 Cooperation between treasuries

Treasury functions of different organisations sometimes pass aspects of their operations to a single independent supplier. This enables the organisations to share processes, information and knowledge. Treasury functions also cooperate together in payment systems harmonisation, supplying information to rating agencies, and presenting a common front to suppliers and regulators.

## 2 Global treasury management



### Section overview

- The treasury functions of multinational companies (MNCs) often operate on a regional basis, since this balances control and availability of expertise with responsiveness to local needs.
- An MNC's treasury function will oversee pooling and netting arrangements and try to find ways of limiting the organisation's overall tax burden.

### 2.1 Issues affecting global treasury management

Any company involved in international trade must assess and plan for the different risks it will face. As well as physical loss or damage to goods, there are also cash flow problems and the risk that the customer may not pay either on time or at all. The tasks that treasury departments have to undertake domestically, for example efficient cash and liquidity management, will also be relevant for international management. However, issues such as arranging funds to move cross-borders may complicate these tasks. As also indicated above, the treasury function will be responsible for currency management. The following issues may be particularly significant for the treasury function.

#### 2.1.1 Cash flow issues

The treasury department in a multinational company (MNC) will be dealing with cash flows from customers, suppliers and Group companies based in perhaps many different countries. The treasury department will be dealing with a variety of different banking and payment systems. As mentioned above, the situation may also be complicated by many transactions crossing borders.

### 2.1.2 Legal issues

The treasury department of an international company will need to be aware of the laws that affect financial transactions and assets, and the power of authorities in different jurisdictions to impose restrictions. A big risk area may be laws relating to bribery or money laundering, particularly the fact that behaviour that is legal (or at any rate not illegal) in some countries is prohibited in others. If the parent company is based in a jurisdiction where these activities are prohibited, it may be liable if its employees or agents breach these laws even if this takes place in other jurisdictions.

### 2.1.3 Political issues

An MNC's treasury department will have to deal with issues such as blocked funds and restrictions on ownership that some foreign governments may impose.

### 2.1.4 Tax issues

Treasury departments will have to cope with a variety of tax laws and taxes. These are discussed further below.

## 2.2 Structure of treasury operations

The question of the extent of centralisation may be particularly difficult for MNCs with extensive foreign operations.

### 2.2.1 Extent of centralisation

For some MNCs, increasing globalisation may be an impetus towards centralisation and concentration on control frameworks, decision support and improved business performance.

In some instances, the decision will follow how the MNC operates. If the MNC purely operates overseas sales offices, centralisation is more likely. If it operates subsidiaries that carry out full business operations, it is more likely to operate a decentralised structure with guidelines, a formal reporting system and assurance procedures.

Many MNCs resolve the centralisation vs decentralisation issue by operating treasury centres on a regional basis. This enables them to use staff who are well informed about global requirements, but also sympathetic to local stipulations. A regional structure allows some decisions, for example the extent of outsourcing, to be taken region by region.

The degree of centralisation is also important when the MNC is considering its banking as well as its treasury arrangements. Businesses will be concerned about whether their banks have the ability to provide global treasury services. However, the services of the global bank need to be matched with regional needs.

### 2.2.2 Shared service centre

A shared service centre (SSC) may be the best method of achieving efficiencies and cost savings through some centralisation, while allowing overseas operations some autonomy in their treasury operations. The company can take a selective approach, centralising operations where there is no advantage in local management. An SSC may allow the company to operate global management systems and centralised databases, taking advantage of the most recent technology and standardised information management. Tax considerations and the availability of expert staff may be important determinants of where the SSC is based – perhaps it will not be located in the same country as the parent company.

### 2.2.3 In-house banking

The activities of a shared service treasury function may extend to providing in-house banking services. This means financial institutions have a single point of contact and should help

the business obtain discounts by aggregating some transactions and undertaking some operations in bulk. An in-house banking arrangement would oversee netting and pooling arrangements (discussed below).

## 2.3 Treasury management

### 2.3.1 Pooling

Pooling means asking the bank to pool the amounts of all its subsidiaries when **considering interest levels and overdraft limits**. It requires all the Group companies to maintain accounts at the same bank. Banks normally require credit facilities to support debit balances in the Group.

Pooling should **reduce the interest payable, stop overdraft limits being breached** and **allow greater control by the treasury department**. It also gives the company the potential to take advantage of **better rates of interest** on **larger cash deposits**.

### 2.3.2 Netting



#### Definition

**Netting:** A process in which credit balances are netted off against debit balances so that only the reduced net amounts remain due to be paid by actual currency flows.

Many **multinational Groups** of companies engage in **intragroup trading**. Where related companies located in different countries trade with one another, there is likely to be intercompany indebtedness denominated in different currencies.

In the case of **bilateral netting**, only two companies are involved. The lower balance is netted off against the higher balance and the difference is the amount remaining to be paid.



#### Worked example: Bilateral netting

A and B are respectively UK- and US-based subsidiaries of a Swiss-based holding company. At 31 March 20X5, A owed B SFr300,000 and B owed A SFr220,000.

#### Solution

Bilateral netting can reduce the value of the intercompany debts: the two intercompany balances are set against each other, leaving a net debt owed by A to B of SFr80,000 (SFr300,000 – 220,000).

**Multilateral netting** occurs when several companies within the same Group interact with the central treasury department to net off their transactions. The arrangement might be coordinated by the company's own central treasury or, alternatively, by the company's bankers.

The process involves establishing a '**base**' currency to record all intragroup transactions. All subsidiaries inform the central treasury department of their transactions with each other. Central treasury will then inform each subsidiary of the outstanding amount payable or receivable to settle the intragroup transactions.

This procedure has the advantages of **reducing the number of transactions** and thus **transaction costs**, including foreign exchange purchase costs and money transmission costs. There will also be less loss of interest through having money in transit. However, it requires strict control procedures from central treasury. In addition, there are countries with severe restrictions on, or even prohibition of, netting because it is seen as a means of tax avoidance. There may also be other legal and tax issues to consider.





## Worked example: Multilateral netting

A Group of companies controlled from the US has subsidiaries in the UK, South Africa and Denmark. Below, these subsidiaries are referred to as UK, SA and DE respectively.

At 30 June 20X5, intercompany indebtedness is as follows:

Debtor	Creditor	Amount
UK	SA	1,200,000 South African rand (R)
UK	DE	480,000 Danish kroner (Kr)
DE	SA	800,000 South African rand
SA	UK	£74,000 sterling
SA	DE	375,000 Danish kroner

It is the company's policy to net off intercompany balances to the greatest extent possible. The base currency is the US\$ and the central treasury department is to use the following exchange rates for this purpose.

US\$1 equals R 6.1260 / £0.6800 / Kr 5.8800.

### Requirement

Calculate the net payments to be made between the subsidiaries after netting-off of inter company balances.

### Solution

The first step is to convert the balances into US dollars as a common currency.

Debtor	Creditor	Amount in US dollars
UK	SA	$1,200,000 \div 6.1260 = \$195,886$
UK	DE	$480,000 \div 5.8800 = \$81,633$
DE	SA	$800,000 \div 6.1260 = \$130,591$
SA	UK	$74,000 \div 0.6800 = \$108,824$
SA	DE	$375,000 \div 5.8800 = \$63,776$

Receiving subsidiaries	Paying subsidiaries			Total
	UK	SA	DE	
	\$	\$	\$	\$
UK	-	108,824	-	108,824
SA	195,886	-	130,591	326,477
DE	81,633	63,776	-	145,409
Total payments	(277,519)	(172,600)	(130,591)	580,710
Total receipts	108,824	326,477	145,409	
Net receipt/(payment)	(168,695)	153,877	14,818	

The UK subsidiary should pay \$153,877 to the South African subsidiary and \$14,818 to the Danish subsidiary.

### 2.3.3 Multicurrency accounts

Treasury departments may also negotiate multicurrency account arrangements with banks. These arrangements allow customers to receive or make international payments in a range of currencies from one account of the company. Multicurrency arrangements generally specify:

- the base currency of the account
- the currencies accepted
- the spread or margin over the spot rate when exchanging other currencies back to the base currency
- the value date for each transaction currency and type

### 2.3.4 Other arrangements

Treasury departments may also supervise arrangements designed to limit exposure to foreign exchange risk, including:

- (a) **Leading and lagging** – cross-border payments ahead of or behind the scheduled payment date, depending on how exchange rates are expected to move.
- (b) **Reinvoicing** – the reinvoicing centre purchases goods from an exporting subsidiary, which is selling the goods to an internal subsidiary. It improves foreign exchange rates available by allowing larger trades and improves liquidity management by allowing flexibility in intercompany payments.
- (c) **Factoring** – buying accounts receivable from exporting subsidiaries and collecting monies from importing business.

## 2.4 Taxation issues

The treasury department may have to deal with complex global tax issues and also conflicting demands from different jurisdictions. In-house or external expertise will be needed to support treasury operations.

### 2.4.1 Capital tax

Treasury functions will need to be alert for the different ways in which some jurisdictions levy capital taxes. The initial capital used and subsequent investments may be subject to tax. In other jurisdictions the tax point may be when the capital is repatriated at the conclusion of the investment.

### 2.4.2 Asset tax

Even if an investment does not produce any profits, the assets used may be subject to an asset tax. The MNC may be subject to tax on the value of property or financial assets.

### 2.4.3 Sales tax

In many jurisdictions, an MNC will be subject to some form of turnover tax. It may simply be levied on sales of goods and services. Alternatively, it may be a value-added tax, where the tax is charged at each stage of production or distribution on the increased value occurring at that stage.

### 2.4.4 Withholding tax

As we have seen in investment appraisal, companies may be required to pay tax when moving any funds (not just capital) from a foreign country.



### Professional skills focus: Applying judgement

One of the professional skills assessed in the CA exams is the ability to identify assumptions or faults in arguments. You may therefore need to apply judgement when appraising a company's existing treasury function and concluding on an appropriate global treasury management policy.

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### Interactive question 2: Global treasury

Touten is a US-registered multinational company with subsidiaries in 14 countries in Europe, Asia and Africa. The subsidiaries have traditionally been allowed a large amount of autonomy, but Touten is now proposing to centralise most of the Group treasury management operations.

#### Requirement

Acting as a consultant to Touten, prepare a memo suitable for distribution from the Group finance director to the senior management of each of the subsidiaries explaining:

- (1) the potential benefits of treasury centralisation
- (2) how the company proposes to minimise any potential problems for the subsidiaries that might arise as a result of treasury centralisation

See **Answer** at the end of this chapter.

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### Interactive question 3: Treasury matters

The board of SFR has agreed to establish a corporate treasury department, with a full-time Treasurer who will be appointed to deal with the cash flows, supported by a small staff who will undertake the associated administration. None of SFR's existing employees are suitably qualified for any of these posts and so all will have to be appointed externally. The Chief Accountant is concerned that this team of new employees will have a great deal of discretion over making payments which will increase the risk of fraud. The Finance Director feels that the Internal Audit department can monitor the Treasury department on a day to day basis. The Finance Director also feels that the new Treasury department will give SFR the opportunity to profit from currency movements by actively taking positions in currencies that are going to appreciate in value.

#### Requirements

- 1.1 Discuss the merits of the suggestion that SFR should control its planned Treasury department by having the Internal Audit department monitor its routine activities.
- 1.2 Discuss the merits of SFR attempting to earn profit from speculating on currency movements.

See **Answer** at the end of this chapter.

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## 3 Working capital management



### Section overview

All entities need **liquid resources** to fund working capital needs. Short-term financial strategy involves planning to ensure enough day to day cash flow and is determined by **working capital management**. It involves achieving a balance between the requirement to minimise the **risk** of insolvency and the requirement to **maximise profit**.

### 3.1 Working capital and value creation

Working capital is technically the excess of current assets over current liabilities. In practice, it represents the resources required to run the daily operations of a business. You covered the techniques for managing working capital in detail in the Management Information syllabus, and may wish to refresh your memory of the most significant issues.

- working capital ratios
- the cash operating cycle
- overtrading
- methods of managing inventory
- the Economic Order Quantity model
- using trade credit
- credit control finance and management
- cash management
- cash budgets

This section provides an overview of some of the strategic issues.

In the context of strategic business management, the two main objectives of working capital management are to ensure that a company has **sufficient liquid resources** to meet its short and long term requirements (servicing debt and covering operational expenses) and to **increase its**

**profitability**. This involves achieving a balance between the requirement to minimise the risk of insolvency (liquidity) and the requirement to maximise the return on assets (profitability).

Different businesses will have different working capital characteristics. There are three main aspects to these differences:

- (a) holding inventory (from its purchase from external suppliers, through production and warehousing of finished goods, up to the time of sale)
- (b) taking time to pay suppliers and other accounts payable
- (c) allowing customers (accounts receivable) time to pay

As a general guide, the requirement of working capital for different industries can be ranked as follows:



This is because many service businesses do not require large inventories.

Supermarkets and other retailers receive much of their sales in cash, via credit card or debit card. Typically, however, they will buy from their suppliers on credit. They may, therefore, have the advantage of significant cash holdings, which they could invest. A company that supplies to other companies (for example, a wholesaler) is likely to be selling and buying mainly on credit.

Coordinating the flow of cash may be quite a problem. Such a company may make use of short-term borrowings (such as an overdraft) to manage its cash. Smaller companies with a limited trading record may face particular problems, such as difficulty in getting credit from suppliers. At the same time, their customers will expect to receive the length of credit period that is normal for the particular business concerned.

### 3.1.1 Managing the operating cycle

Companies that are more efficient at generating cash are better able to implement strategic plans, such as realising their growth ambitions. The effective management of a company's inventory, customer accounts, cash resources and suppliers' accounts will therefore be a source of competitive advantage and thus corporate and shareholder value. Good control over inventory can be important in ensuring that there are items on hand when customers want them and they are in good condition. Well-handled supplier accounts are part of good supply chain management, and help in the objective of ensuring that costs and delivery times are minimised.

While initiatives such as delaying payments to suppliers, or reducing inventory, are short term actions that can be taken, managing the operating cycle for sustained competitive advantage will involve a longer term approach and engagement from departments across the business involved in procurement, sales, inventory management and finance.

Effective working capital management can also comprise a key element of the **value chain**. The management of inventories, supplier relationships and customer relationships are closely related to operations, supply chain and logistics management. **Enterprise resource planning (ERP)** systems were described in the chapter "Information strategy". They integrate an entity's systems and facilitate the flow of information between all business functions within an organisation, as well as managing connections to outside stakeholders (such as suppliers). In this way they help managers coordinate production, resources, procurement, inventory, customer orders and sales, enabling the elements of the operating cycle to be integrated in a series of modules which might cover:

- initial recording of sales order
- procurement of necessary parts or components
- production planning and resource utilisation
- work-flow automation
- real-time order status updates, including delivery and billing information
- electronic invoicing
- electronic payment interfaces with customers and suppliers
- credit management

A great deal of working capital management affects the customer interface and deserves a business manager's attention as it can be a significant source of customer satisfaction. Improved customer satisfaction through effective response to customer demand can enable the shortening of credit periods. Customers have grown accustomed to the time between order and delivery being very short: companies that focus upon shortening the period between order and invoice (and by extension, the eventual collection of cash) are better placed to meet customer expectations.

### 3.2 The working capital requirement

**Determining the working capital requirement** is a matter of calculating the value of current assets less current liabilities, perhaps by taking averages over a one-year period.



#### Context example: Determining the working capital requirement

The following data relate to Corn, a manufacturing company.

Sales revenue for the year	\$1,500,000
Costs as percentages of sales	%
Direct materials	30
Direct labour	25
Variable overheads	10
Fixed overheads	15
Selling and distribution	5

On average:

- (a) debtors take 2.5 months before payment
- (b) raw materials are in inventory for three months
- (c) work-in-progress represents two months' worth of half-produced goods
- (d) finished goods represent one month's production
- (e) credit is taken as follows:

Direct materials	2 months
Direct labour	1 week
Variable overheads	1 month
Fixed overheads	1 month
Selling and distribution	0.5 months

Work-in-progress and finished goods are valued at material, labour and variable expense cost.

Compute the average working capital requirement of Corn assuming the labour force is paid for 50 working weeks a year.

Working capital is defined for the purpose of this exercise as inventories (raw materials, work in progress and finished goods) plus receivables minus current liabilities.

Note that in this example, turnover periods are given in months rather than days, and the turnover ratios therefore use ' $\times 12$ ' (months) rather than ' $\times 365$ ' (days).

## Solution

The annual costs incurred will be as follows:			<b>\$</b>
Direct materials	30% × \$1,500,000		450,000
Direct labour	25% × \$1,500,000		375,000
Variable overheads	10% × \$1,500,000		150,000
Fixed overheads	15% × \$1,500,000		225,000
Selling and distribution	5% × \$1,500,000		75,000

The average value of current assets will be as follows:

		<b>\$</b>	<b>\$</b>
<b>Raw materials</b>	$3/12 \times \$450,000$		112,500
<b>Work-in-progress</b>			
Materials (50% complete)	$1/12 \times \$450,000$	37,500	
Labour (50% complete)	$1/12 \times \$375,000$	31,250	
Variable overheads (50% complete)	$1/12 \times \$150,000$	12,500	
		<hr/>	81,250
<b>Finished goods</b>			
Materials	$1/12 \times \$450,000$	37,500	
Labour	$1/12 \times \$375,000$	31,250	
Variable overheads	$1/12 \times \$150,000$	12,500	
		<hr/>	81,250
Receivables	$2.5/12 \times \$1,500,000$		312,500
			<hr/>
			587,500

Average value of current liabilities will be as follows:

		<b>\$</b>	<b>\$</b>
Materials	$2/12 \times \$450,000$	75,000	
Labour	$1/50 \times \$375,000$	7,500	
Variable overheads	$1/12 \times \$150,000$	12,500	
Fixed overheads	$1/12 \times \$225,000$	18,750	
Selling and distribution	$0.5/12 \times \$75,000$	3,125	
		<hr/>	116,875
Working capital required is	$(\$587,500 - 116,875)$		<hr/>
			470,625

Investment in working capital is related to the length of the cash cycle. Management of working capital therefore involves controlling the turnover cycles, and avoiding excessively slow inventory turnover and allowing customers an excessive amount of time to pay.

If a company invests in excessive inventories, has a large amount of accounts receivable and cash, and very few accounts payable, there is an over-investment in current assets. Working capital will be excessive and the company is over-capitalised. Some indicators of **over-**

### capitalisation are:

- sales/working capital ratio reduced compared with previous years, or less than similar companies
- high level of liquidity, indicated by high current ratio (perhaps >2:1) and high quick ratio (perhaps >1:1)
- long turnover periods for inventory and accounts receivable

#### 3.2.1 Management of inventory

Inventory days can be reduced by minimising the holding of raw materials and finished goods and engineering production processes to maximise efficiency and reduce work-in-progress.

Modern manufacturing techniques encourage inventory and work in progress reductions through just-in-time policies, flexible production facilities and improved quality management. Some manufacturing companies have sought to reduce their inventories of raw materials and components to as low a level as possible. Just-in-time procurement is a term which describes a policy of obtaining goods from suppliers at the latest possible time (ie, just as they are needed) and so avoiding the need to carry any significant materials or components inventory. This is extended into a complete production philosophy where business systems are engineered such that finished goods are produced to customer order rather than being stockpiled in the warehouse.

However, one of the concerns with regard to reducing inventory in this way is the potential impact on customers and their orders – if there are problems, it could lead to cancelled orders and lower sales. Developing relationships with customers to better understand their likely demand levels will improve service levels, ensuring that sufficient inventory is available while at the same time making sure that inventory levels are not too high.

#### 3.2.2 Management of accounts receivable

Offering credit has a cost: the value of the interest charged on an overdraft to fund the period of credit, or the interest lost on the cash not received and deposited in the bank. It is also likely to lead to an increase in bad debts which do not arise if all sales are for cash. An increase in profit from extra sales arising as a result of offering credit could offset this cost. Insurance, particularly of overseas debts, can also help reduce the risk of bad debts.

A business must find the least costly balance between enticing customers, whose use of credit entails costs, and refusing opportunities for profitable sales.

If offering credit generates extra sales, then those extra sales will have additional repercussions on:

- (a) the amount of inventory maintained in the warehouse, to ensure that the extra demand must be satisfied
- (b) the amount of money the company owes to its accounts payable (as it will be increasing its supply of raw materials)

Early settlement discounts may be employed to shorten average credit periods, and to reduce the investment in accounts receivable and therefore interest costs. The benefit in interest cost saved should exceed the cost of the discounts allowed.

Businesses will often enter into arrangements with a factor or invoice discounter to improve cash flow and shorten the cash cycle.



### 3.2.3 Management of accounts payable

Taking credit from suppliers is a normal feature of business, and managing supplier payment terms in order to pay as late as possible is a common working capital management activity. However, it is important that this is managed in a way that does not affect the supplier, and adversely impact relationships within and the smooth functioning of the supply chain. Nearly every company has some trade accounts payable waiting for payment. It is particularly important to small and fast growing firms. Trade credit is a source of short-term finance because it helps to keep working capital down. It is usually a cheap source of finance, since suppliers rarely charge interest. The costs of making maximum use of trade credit include the loss of suppliers' goodwill, and the loss of any available cash discounts for the early payment of debts.

If a supplier offers a discount for the early payment of debts, a company must consider whether the benefits of accepting the discount (in terms of reduced purchase price) outweigh the finance cost of having to pay earlier.

## 3.3 Aggressive and conservative working capital management

As has been emphasised already, the volume of working capital required will depend on the nature of the company's business. A manufacturing company will require more inventory than a company in a service industry. As the volume of output by a company increases, the volume of current assets required will also increase.

Ideally, a business should aim to minimise the length of its cash operating cycle, consistent with the need for sufficient liquidity. This can be achieved by managing the various components of working capital, but even assuming efficient inventory holding, debt collection procedures and cash management, there is still a certain degree of choice in the total volume of current assets required to meet output requirements. Policies of low inventory-holding levels, tight credit and minimum cash holdings may be contrasted with policies of high inventory (to allow for safety or buffer inventory), easier credit and sizeable cash holdings (for precautionary reasons).

Organisations have to decide what the most important risks are relating to working capital and, therefore, whether to adopt a conservative or aggressive approach.

### 3.3.1 Conservative working capital management

A conservative working capital management policy aims to reduce the risk of system breakdown by holding high levels of working capital.

Customers are allowed generous payment terms to stimulate demand, finished goods inventories are high to ensure availability for customers, and raw materials and work in progress are high to minimise the risk of running out of inventory and consequent downtime in the manufacturing process. Suppliers are paid promptly to ensure their goodwill, again to minimise the chance of stock-outs.

However, the cumulative effect of these policies can be that the firm carries a high burden of unproductive assets, resulting in a financing cost that can destroy profitability. A period of rapid expansion may also cause severe cash flow problems as working capital requirements outstrip available finance. Further problems may arise from inventory obsolescence and lack of flexibility to customer demands.

### 3.3.2 Aggressive working capital management

An aggressive working capital investment policy aims to reduce this financing cost and increase profitability by cutting inventories, speeding up collections from customers and delaying payments to suppliers.

The potential disadvantage of this policy is an increase in the chances of system breakdown through running out of inventory or loss of goodwill with customers and suppliers. However, as stated earlier, modern manufacturing techniques encourage inventory and work in progress reductions through just-in-time policies, flexible production facilities and improved quality management. Improved customer satisfaction through quality and effective response to customer demand can also mean that credit periods are shortened.



#### Interactive question 4: Working capital policy

Autobitz is a components manufacturer in the automotive industry. In the past, it has operated a very conservative policy in respect of the management of its working capital. Customers have been allowed generous payment terms, inventory of finished goods is high to ensure availability, and raw materials and work in progress are high to minimise the risk of running out of inventory and consequent downtime in the manufacturing process. Suppliers are paid promptly to ensure their goodwill, again to minimise the chance of stock-outs.

Autobitz management is considering introducing some changes to the way that working capital is managed, in order to reduce the length of its operating cycle. They want to introduce a just in time procurement system to reduce the levels of materials inventory, along with a redesign of processes in order to produce components to customer order rather than being stockpiled in the warehouse. It is expected that this flexible response to customer demand will lead to increased sales. They also want to reduce customers' payment terms in return for this more responsive service, and take better advantage of the payment terms offered by suppliers.

The following information is available concerning the company's forecast end-of-year figures. The company's year end is in six months' time.

	<b>\$'000</b>
Receivables	2,500
Inventory	2,000
Cash at bank	500
Current assets	5,000
Non-current assets	1,250
Current liabilities	1,850
Forecast sales for the full year	8,000
Cost of sales (60% of sales)	4,800
Forecast operating profit (18% of sales)	1,440

The finance director wishes to evaluate the likely effect on the company if it introduced these changes to its working capital policy, and believes that the figures will be affected as follows.

	New policy
Receivables	15%
Inventory	20%
Cash	Reduced to \$250,000
Non-current assets	No change
Current liabilities	+10%
Forecast sales	+5%

No change in percentage  
Forecast profits profit/sales

### Requirements

4.1 Using the information available, calculate the cash operating cycle, return on net assets, current ratio and quick ratio under each of the scenarios if:

- the company continues with its present policy
- the company adopts the revised policy

Assume a 365 day year.

4.2 Make a recommendation on a proposed course of action for Autobitz, based on the evaluation above.

See **Answer** at the end of this chapter.

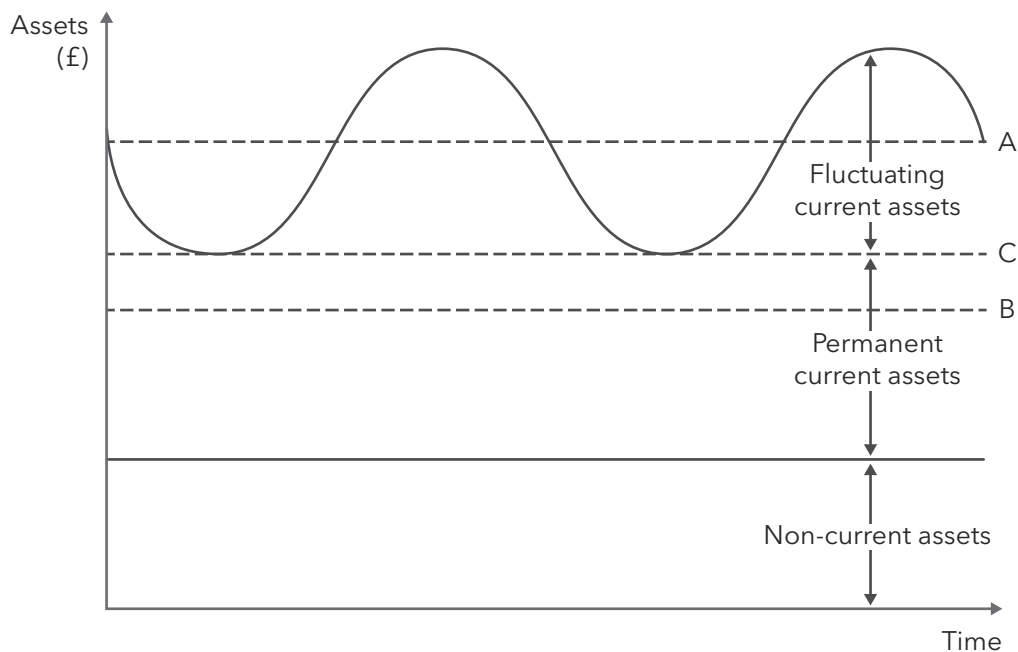
## 3.4 Working capital financing

There are different ways in which the funding of the current and non-current assets of a business can be achieved by employing long- and short-term sources of funding.

Short-term finance is usually cheaper than long-term finance (under a normal yield curve).

The diagram below illustrates three alternative types of policy A, B and C. The dotted lines A, B and C are the cut-off levels between short-term and long-term financing for each of the policies A, B and C respectively: assets above the relevant dotted line are financed by short-term funding while assets below are financed by long-term funding.

Figure 18.1: Working capital financing policy



Fluctuating current assets together with permanent current assets (the core level of investment in inventory and receivables) form part of the working capital of the business,

which may be financed by either long-term funding (including equity capital) or current liabilities (short-term funding). This can be seen in terms of policies A, B and C. A conservative approach can be followed.

- (a) Policy A can be characterised as a conservative approach to financing working capital. All non-current assets and permanent current assets, as well as part of the fluctuating current assets, are financed by long-term funding. There is only a need to call on short-term financing at times when fluctuations in current assets push total assets above the level of dotted line A. At times when fluctuating current assets are low and total assets fall below line A, there will be surplus cash which the company will be able to invest in marketable securities.
- (b) Policy B is a more aggressive approach to financing working capital. Not only are fluctuating current assets all financed out of short-term sources, but so are some of the permanent current assets. This policy represents an increased risk of liquidity and cash flow problems, although potential returns will be increased if short-term financing can be obtained more cheaply than long-term finance. It enables greater flexibility in financing.



### Professional skills focus: Structuring problems and solutions

A balance between risk and return might be best achieved by the **moderate approach** of policy C, a policy of maturity matching in which long-term funds finance permanent assets while short-term funds finance non-permanent assets.

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One of the professional skills assessed in the CA exams is the ability to identify creative and pragmatic solutions in a business environment. For example, you could be asked to identify solutions to short-term liquidity problems or suggest an appropriate working capital financing policy.

## 3.5 Other factors

Overall working capital management will be complicated by the following factors.

### 3.5.1 Industry norms

These are of particular importance for the management of receivables. It will be difficult to offer a much shorter payment period than competitors.

### 3.5.2 Products

The production process, and hence the amount of work in progress, is obviously much greater for some products and in some industries.

### 3.5.3 Management issues

How working capital is managed may have a significant impact on the actual length of the working capital cycle, whatever the overall strategy might be. Factors to consider include the degree of centralisation (which may allow a more aggressive approach to be adopted, depending though on how efficient the centralised departments actually are).

Differences in the nature of assets also need to be considered. Businesses adopting a more conservative strategy may well hold permanent safety inventory and cash balances, whereas there is no safety level of receivables balances.

## 3.6 Working capital management in a recession

In a recession, the finance available to all companies will be affected. There are plenty of examples of well-established companies struggling with funding.

Businesses, particularly SMEs, will find it difficult to attract funding. When bank lending is reduced, SMEs tend to be more vulnerable than larger companies and credit sources tend to dry up more rapidly. Companies have to draw on their own accumulated funds and look very carefully at working capital levels.

### 3.6.1 Inventory levels

Managing inventory becomes a balancing act between meeting the demands of customers and limiting inventory levels. Businesses will look carefully at slow-moving or surplus items to see if certain lines can be discontinued. They will also examine reorder levels to see if just-in-time policies can be introduced.

### 3.6.2 Credit control

This is another balancing act. Chasing customers too hard at a time when their liquidity is under pressure may risk customer goodwill. However, at some point the finance cost of the outstanding debt and the collection costs may mean slow payers become uneconomical.

### 3.6.3 Supplier payments

Using supplier finance to alleviate liquidity problems may be risky. Suppliers may come to regard the business as a poor credit risk and reduce permitted orders or stop offering credit. New sources of supply, that do not offer discounts for a long-established relationship, may be significantly more expensive. If the business is considering changing its supply arrangements, the cost of buying supplies from lower-cost overseas sources will have to be weighed against the increased difficulty of introducing just-in-time arrangements.

### 3.6.4 Renegotiate loan finance

Some companies may renegotiate their borrowing so that the loans are over a longer period and are ultimately more expensive, but have lower payments now. Adding more debt will have long-term consequences, but refinancing is worth doing if it means companies are able to reach the long term.

Other possible steps include credit protection insurance and rationalisation of bank accounts to avoid account and loan charges.

Management information systems will also require review. Possibly cash flow forecasts should be prepared more frequently, and performance indicators need to be refocused around cash collection and working capital management.

### 3.6.5 Cash hoarding

Concerns about short-term finance have led some companies to hoard cash.



### Context example: Current practices

A recent report from PwC on working capital management, which looked at the financial performance of the largest global listed companies over the last five years, concluded that if all companies in the study were to improve their working capital efficiency, this would represent a cash release of €1.2 trillion. The report described three trends:

(a) Deterioration in ROCE

Whilst profitability is high, borrowing has dramatically increased. Improved working capital management could reduce debt and improve returns.

(b) Reduced investment

CAPEX (as a % of revenues) has plummeted – companies appear to be managing operating cash flows by cutting investment, posing a threat to growth. Again, through improved working capital management companies could release cash to fund investment while managing operating cash flows.

(c) Working capital days

Whilst working capital days did not change significantly in the last five years, having deteriorated by 0.8 days, receivables days and inventory days have both worsened, with payables days dramatically increasing. This lengthening of the time to pay creditors may not be sustainable in the long term. A greater focus on receivables and inventory may be needed as a means of releasing cash. Efforts to optimise payables should consider the impact on the supply chain and supplier relationships.

Source: 'Working Capital Report 2017/18 – Pressure in the system' <https://www.pwc.com/gx/en/services/advisory/deals/business-recovery-restructuring/working-capital-opportunity.html> [Accessed 9 August 2018]

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## 3.7 Working capital management and exporters

One of the main problems facing exporters is cash flow. In order to win customers, exporters will normally have to offer credit facilities, but at the same time need liquid funds to finance investment. There are several finance options available for this purpose. Some of these – such as factoring and documentary credits – you will have met before, but we briefly mention them here.

### 3.7.1 Factoring

Factoring involves passing debts to an external party (the factor) which will take on the responsibility for collecting the money due. The factor advances a proportion of the money it is due to collect, meaning that the exporter will always have sufficient funds to pay suppliers and finance growth.

Sometimes the factor will also take on a percentage of the non-payment risk, which is known as 'non-recourse' factoring. This means that the factor will not come back to the exporter in the event of default on the part of the customer.

### 3.7.2 Documentary credits

A documentary credit (or letter of credit) is a fixed assurance from the customer's bank in the customer's own country. This basically says that payment will be made for the goods or services provided the exporter complies with all the terms and conditions established by the credit contract. The exporter's own bank may be willing to advance a short-term loan for a percentage of the documentary credit prior to goods being shipped, to cover the temporary shortfall of cash. The bank will then collect the loan from the proceeds of the transaction.

### 3.7.3 Forfaiting

Forfaiting – or medium-term capital goods financing – is used for larger projects and involves a bank buying 100% of the invoice value of an export transaction at a discount. The exporter is then free from the financial risk of not receiving payment and the resultant liquidity problems – the only responsibility the exporter has and is liable for is the quality of the goods or services being provided.

Three elements make up the price of a forfaiting transaction.

- (a) The **discount rate**, which is the interest element and is usually quoted as a margin over SONIA.
- (b) **Grace days**, which are added to the actual number of days to maturity to cover the number of days' delay that usually occurs in the transfer of payment. The number of days depends on the customer's country.
- (c) **Commitment fee**, which is applied from the date the forfaiter assumes responsibility for the financing to the date of discounting.

Forfaiting enhances the competitive advantage of the exporter, who will be able to provide financing to customers, thus making the products or services more attractive. By having the assurance of knowing that they will receive the money owed to them, exporters will also be more willing to undertake business in countries whose risks would normally prohibit them from doing so.

#### 3.7.4 Credit insurance

Exporters may also make use of credit insurance facilities to ease liquidity problems. This involves assigning credit-insured invoices to banks who will offer up to 100% of the insured debt as a loan. These instruments may also carry the guarantee of the customer's home Government.



#### Context example: Pittards

Pittards is a global brand supplying premium leather and leather products. A key objective for the company is to build its exports, and develop new markets through new products. Two growth areas are its newly developed leather goods range and its manufacturing capabilities overseas. The latter includes a tannery in Ethiopia, and glove making factories in Addis Ababa. An ethical employer, Pittards is heavily involved in the communities surrounding their manufacturing sites, including investing in local education and healthcare.

Its credit insurance policy gives Pittards security in a market that can be exposed to unforeseen risk. As the finance director explains: "We work with a natural product and are faced with risks that manufacturers working with non-natural materials need never consider. We also export to a wide range of countries... when moving into a new market, we usually apply for a credit limit early - at the sample stage, when supplying potential buyers with examples of our leathers. This means that we can respond quickly when the customer places their first bulk order.

"Credit insurance is there in the background as we grow. Although it is not necessary for our relationship with our bankers, it adds an additional comfort level where our banks don't worry about debts. The credit insurance also supports us as we branch out to work with new customers."

Source <https://atradius.co.uk/products/case-study/credit-insurance-for-the-leather-goods-sector-.html> [Accessed 8 August 2018]



#### Interactive question 5: Working capital management

It is currently May 20X6.

MNO is a private toy distributor situated in the US with a US customer base and local suppliers. There is a central manufacturing base and several marketing units spread across the US. The marketing units are encouraged to adapt to local market conditions, largely acting independently and free from central control. These units are responsible for all

aspects of local sales, including collecting sales revenues, which are paid across to Head Office on a monthly basis. Funding is provided by Head Office as required.

Figures for last year to 31 December 20X5 were:

Revenue	\$10 million
Gross profit margin	40% of revenue
Accounts receivable days	Minimum 20, maximum 30 days
Account payable days	Minimum 40, maximum 50 days
Inventories	Minimum 50, maximum 80 days
Non-current assets	\$8 million

Accounts receivable, accounts payable and inventories can all be assumed to be the same on both 31 December 20X4 and 31 December 20X5, but fluctuate between those dates.

The Financial Controller is carrying out an analysis of MNO's working capital levels, as requested by the Treasurer. He is assuming that the peak period for accounts receivable coincides with the peak period for inventories and the lowest level of accounts payable.

MNO is currently in consultation with a potentially significant new supplier in Asia, that will demand payment in its local currency.

### Requirements

- 5.1 Calculate the minimum and maximum working capital levels based on the Financial Controller's assumption regarding the timing of peaks and troughs in working capital variables and discuss the validity of that assumption.
- 5.2 Discuss the advantages and disadvantages of an aggressive financing policy and advise whether or not such a policy would be appropriate for MNO.

See **Answer** at the end of this chapter.



### Professional skills focus: Concluding, recommending and communicating

You are expected to be able to make evidence-based recommendations which can be justified by reference to supporting data and other information. A recommended working capital policy must therefore be based on the information provided in the question.



# Summary

Tick off

Treasury functions may be operated in-house or outsourced. Key decisions are the degree of centralisation and whether the treasury function should be run as a cost or profit centre.	<input type="checkbox"/>
Treasury functions that are part of global companies must be aware of legal and tax issues. They will supervise pooling and netting arrangements to enhance cash management and lower costs of finance.	<input type="checkbox"/>
A firm's decision on whether to pursue conservative or aggressive working capital management policies may be complicated by strategic considerations and the need to ensure liquidity during a recession	<input type="checkbox"/>

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	Can you suggest appropriate controls that should be in place within the treasury department? (Topic 1)
2.	Can you explain the advantages of having a centralised treasury department? (Topic 2)
3.	Can you apply multilateral netting to overseas subsidiaries? (Topic 2)
4.	Can you explain the advantages and disadvantages of an aggressive and conservative approach to working capital management? (Topic 3)
5.	Can you calculate the operating cycle and make suggestions for improvement? (Topic 3)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed.

Question	Learning benefit from attempting this question
1 Megatrade plc	This is a good introductory question covering the functions of a central treasury department. Work through this question carefully before attempting exam standard questions.
2 JRLH	This question looks at the management of working capital. You are asked to consider if maintaining a centralised UK function is preferable to managing working capital separately overseas.
3 GG	Multilateral netting is the focus of this question. You are required to perform some calculations and discuss the advantages and disadvantages of offsetting balances using multilateral netting.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.

# Self-test questions

Answer the following questions.

## 1 Megatrade plc

Megatrade plc is a large international organisation that has a central treasury department, which is a separate profit centre within the Megatrade group of companies. The responsibilities of this department include the management of business risk and market risk for the Megatrade group as a whole.

### Requirements

- 1.1 Describe the functions of Megatrade's central treasury department.
- 1.2 Describe the information that the treasury department needs, from inside and outside Megatrade, to perform its functions.

## 2 JRLH

JRLH is a manufacturer of specialist components for the motor trade. Most of the entity's business is 'to order'; very little is manufactured for inventory. The components are sold to customers worldwide but, to date, have been manufactured solely in the UK. The directors of JRLH are reviewing the opportunity to establish a manufacturing base in Asia. There would be some loss of productivity, especially in the first year of operations, but the long-term cost savings would outweigh this.

### Requirement

Advise the directors of JRLH whether or not the management of working capital should be carried out in the Asian country compared with maintaining a centralised function in the UK.

## 3 GG

GG is a multinational professional services company. Many of GG's clients are also multinational companies. Each client is assigned to a specific engagement partner who is generally based in the client's home country. Client work overseas is frequently referred to the local GG office to avoid the travel and accommodation costs associated with sending consultants from the home country. It also ensures that the work is undertaken by a local consultant who understands the business culture.

All billings are made to the client's home office. If work is undertaken by an overseas office of GG then the overseas office invoices the engagement partner, who includes the cost of that work in the total invoice. The engagement partner then agrees to pay the local office out of the proceeds of the client's settlement of that invoice.

GG has so many clients that there can be substantial inter-office payments. GG's treasurer has decided to experiment with multilateral netting to reduce the overall number of inter-office payments. The treasurer plans to undertake this experiment for herself rather than involve a netting centre.

The net inter-office balances as at 31 October 20X1 were agreed at:

Paying office	UK (GBP)	France (EUR)	US (USD)	Japan (JPY)
Receiving office				
<b>UK (GBP)</b>	-	GBP 0.9 million	-	-
<b>France (EUR)</b>		-		EUR 1.1 million
<b>US (USD)</b>	USD 3.1 million	USD 2.7 million	-	-
<b>Japan (JPY)</b>	JPY 180.0 million	-	JPY 190.0 million	-

At the same date GG's treasury department set the following indicative exchange rates.

	France (EUR)	US (USD)	Japan (JPY)
GBP 1 =	1.13	1.61	135.5

#### Requirements

- 3.1 Calculate the net payments that will be required in order to settle all inter-office balances, assuming that the process is managed by GG's London-based treasury department.
- 3.2 Advise GG of the advantages and disadvantages of offsetting balances using multilateral netting.

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

Answer to Interactive question 1

## 1.1 If a profit centre approach is being considered, the following issues should be addressed.

### Recruitment of competent staff

Local managers may not have sufficient expertise in the area of treasury management to carry out speculative treasury operations competently. Mistakes in this specialised field can be costly. It may only be appropriate to operate a larger centralised treasury as a profit centre, and additional specialist staff demanding high salaries may need to be recruited.

## 1.2 Controls

Adequate controls must be in place to prevent costly errors and overexposure to risks such as foreign exchange risks. It is possible to enter into a very large foreign exchange deal over the telephone.

## 1.3 Information

A treasury team which trades in futures and options or in currencies is competing with other traders employed by major financial institutions who may have better knowledge of the market because of the large number of customers they deal with. In order to compete effectively, the team needs to have detailed and up to date market information.

## 1.4 Attitudes to risk

The more aggressive approach to risk taking which is characteristic of treasury professionals may be difficult to reconcile with the more measured approach to risk which may prevail within the board of directors. The recognition of treasury operations as profit-making activities may not fit well with the main business operations of the company.

## 1.5 Internal charges

If the department is to be a true profit centre, then market prices should be charged for its services to other departments. It may be difficult to put realistic prices on some services, such as arrangement of finance and general financial advice.

## 1.6 Performance evaluation

Even with a profit centre approach, it may be difficult to measure the success of a treasury team, for the reason that successful treasury activities sometimes involve avoiding the incurring of costs, for example when a currency devalues. For example, a treasury team which hedges a future foreign currency receipt over a period when the domestic currency undergoes devaluation (as sterling did in 2016 following the Brexit vote) may avoid a substantial loss for the company.

Answer to Interactive question 2

Memorandum

**To:** Directors of all foreign subsidiaries

**From:** Consultant

**Date:** 1 July 20X0

### **Centralisation of treasury management operations**

At its last meeting, the board of directors of Touten made the decision to centralise Group treasury management operations. A further memo giving detailed plans will be circulated shortly, but my objective in this memo is to outline the potential benefits of treasury centralisation and how any potential problems arising at subsidiaries can be minimised. Most of you will be familiar with the basic arguments, which we have been discussing informally for some time.

#### **What it means**

Centralisation of treasury management means that most decisions on borrowing, investment of cash surpluses, currency management and financial risk management will be taken by an enhanced central treasury team, based at head office, instead of by subsidiaries directly. In addition, we propose to set most transfer prices for intercompany goods and services centrally.

The potential benefits

The main benefits are:

- (1) cost savings resulting from reduction of unnecessary banking charges
- (2) reduction of the Group's total taxation charge
- (3) enhanced control over financial risk

Reduction in banking charges will result from:

- (1) Netting off intercompany debts before settlement. At the moment, we are spending too much on foreign exchange commission by settling intercompany debts in a wide range of currencies through the banking system.
- (2) Knowledge of total Group currency exposure from transactions. Amounts receivable in one subsidiary can hedge payables in another, eliminating unnecessary hedging by subsidiaries.
- (3) Knowledge of the Group's total cash resources and borrowing requirement. This will reduce the incidence of one company lending cash while a fellow subsidiary borrows at a higher interest rate and will also eliminate unnecessary interest rate hedging. It will also facilitate higher deposit rates and lower borrowing rates.

Reduction in the Group's tax charge will be made possible by a comprehensive centrally set transfer pricing policy.

Enhanced control over financial risks will be possible because we will be able to develop a central team of specialists who will have a clear-cut strategy on hedging and risk management. Many of you have requested help in this area.

This team will be able to ensure that decisions are taken in line with Group strategy and will also be able to provide you with enhanced financial information to assist you with your own decision-making.

## Potential problems for subsidiaries and their solution

Our Group culture is one of decentralisation and enablement of management at individual subsidiary level. There is no intention to change this culture. Rather, it is hoped that releasing you from specialist treasury decisions will enable you to devote more time to developing your own business units.

However, the system can only work properly if information exchange between head office and subsidiaries is swift and efficient. Enhanced computer systems are to be provided at all centres to assist you with daily reports. It is also important that you keep head office informed of all local conditions that could be beneficial to the treasury function, such as the availability of local subsidised loans, as well as potential local risks, such as the threat of exchange control restrictions.

You will find that movements in your cash balances will be affected by Group policy, as well as reported profitability. Any adjustments made by head office will be eliminated when preparing the performance reports for your own business units and we will ensure that joint venture partners are not penalised by Group policy.

Please contact me with any further comments that you may have on our new treasury policy.

### Answer to Interactive question 3

## 3.1 Responsibilities

The responsibilities of operational managers of the treasury department should include **management of risk**. This should mean that they are **responsible for day to day monitoring**. The Finance Director and Chief Accountant should be responsible for **overseeing the treasury department**, rather than delegating this role to internal audit. Internal auditors should provide

assurance and review of the treasury department's activities. They should observe the control systems rather than be part of them.

Involvement in commercial decisions

By being involved in day to day operations, there is a risk that internal auditors will have some responsibility for **approving commercial decisions**. This goes against the principle that internal audit should **not be involved in operational decision-making**.

### Expertise

Internal audit may **not have the expertise required** to carry out the day to day review of complex treasury transactions.

### Independence and familiarity

If internal auditors become involved with the treasury department, there is a risk that they become **too friendly** with members of the department. This could mean that they become too willing to take on trust explanations from treasury staff rather than verifying them.

### Self review

Part of internal audit's brief ought to be reviewing the effectiveness of day to day monitoring of the treasury department. However, their position will be compromised if they themselves are carrying out the monitoring, since they will be **reviewing their own work**.

### Other Priorities

Day to day monitoring of the treasury department may mean that internal audit has **insufficient time and resources** to carry out other audit work. There may be other risky areas of the business that require substantial internal audit work.

## 3.2 Strategic objectives

SFR's main strategic objective is to **develop its retail activities**. Its main strategic risks will be linked to that objective. The company's strategy is **not to speculate on the foreign exchange markets**. Instead, it should be using the markets to reduce the risks of the commercial transactions it undertakes.

### Profits available

The markets for major currencies are generally efficient. It is therefore **difficult to make profits over time** by anticipating the market. SFR may have to invest substantial resources to gain the market intelligence it needs to have a chance of outperforming the market. SFR may have greater opportunities for speculation in the currencies of developing economies, since the markets for these are less mature, and SFR's commercial activities may give it the insights it needs to gain an advantage in these currencies. However, this speculation may carry greater risks than dealing in more stable major currencies.

### Risk appetite

Speculating on the treasury markets may involve a **higher degree of risk** than SFR's current activities. These risks may be higher than SFR's board or shareholders wish to tolerate. There is no certainty that the currencies in which SFR's treasury function takes positions will appreciate in value.

### Motivation of team members

Involving the treasury department in speculative activities may mean that SFR attracts individuals who are **seeking to take high risks in return for high returns**. However, SFR's main purpose in setting up the treasury department is not to seek high returns, but to improve the efficiency of its cash management.

### Answer to Interactive question 4

#### 4.1 Operating cycle and ratio analysis

Policy:	Present policy	Change	Revised policy
	\$'000	%	\$'000
Receivables	2,500	-15	2,125
Inventory	2,000	-20	1,600

Policy:	Present policy	Change	Revised policy
	\$'000	%	\$'000
Cash at bank	500		250
Current assets	5,000		3,975
Current liabilities	(1,850)	10	(2,035)
Net current assets	3,150		1,940
Non-current assets	1,250		1,250
Net assets	4,400		3,190
Forecast sales	8,000	5	8,400
Operating profit margin	18%		18%
Forecast operating profit	1,440		1,512
Cash operating cycle	125 days		61 days
Return on net assets	33%		47%



Current ratio	2.70	1.95
Quick ratio	1.62	1.17

### Notes

Return on net assets = Operating profit / Net assets

	Current policy	Revised policy
Receivables days	114 days	92 days
Inventory days	152 days	116 days
Payables days	141 days	147 days
Operating cycle	125 days	61 days

Recommended course of **action** The conclusion to be drawn from the figures is that substantial funds can be released by moving from the present working capital policy to the new policy (\$4.40m - \$3.19m = \$1.21m).

These funds could be repaid to shareholders, invested or used to reduce borrowings, depending on the company's situation.

The length of the cash operating cycle would be more than halved.

The company should attempt to move towards this new working capital position by, as it has proposed, tightening up its debt collection procedures, buying inventory of materials on the proposed just in time basis, making components to order and negotiating longer credit periods from suppliers.

These changes will also result in a significant increase in return on net assets, and maintain acceptable current and quick ratios.

The changes proposed by Autobitz management are centred on the adoption of modern supply chain and manufacturing techniques. It is expected that these will enable Autobitz not only to reduce working capital, but also to improve flexibility, and increase customer demand.

A comprehensive study of key business processes may need to be undertaken to ensure that the working capital objectives of Autobitz can be met in this way.

### Answer to Interactive question 5

#### 5.1

<b>Max level of working capital</b>	= Peak accounts receivable + Peak inventories - Lowest accounts payable
	= 0.82 + 1.32 - 0.66 = \$1.48m
<b>Min level of working capital</b>	= Lowest accounts receivable + Lowest inventories - Peak accounts payable
	= 0.55 + 0.82 - 0.82 = \$0.55m

The Financial Controller has assumed that the peak period for accounts receivable coincides with the peak period for inventories and the lowest level of accounts payable. However, if sales have been **particularly high** resulting in accounts receivable peaking, it is likely that inventories will be lower. If inventories are high it is likely that there has been increased spending on purchases and accounts payable will be higher.

Working capital levels will be affected by many factors and monitoring the fluctuations over a year in order to identify any **relationships** and **cyclical patterns** would produce a more **accurate** forecast.

#### WORKING

	<b>Minimum</b>	<b>Maximum</b>
	<b>\$m</b>	<b>\$m</b>
Accounts receivable	$20/365 \times 10 = 0.55$	$30/365 \times 10 = 0.82$
Accounts payable (Cost of sales 60% × 10 = 6)	$40/365 \times 6 = 0.66$	$50/365 \times 6 = 0.82$
Inventories	$50/365 \times 6 = 0.82$	$80/365 \times 6 = 1.32$

**5.2** The **advantages** of an aggressive financing policy are that it carries the greatest returns. It aims to reduce the financing costs, as short-term financing is cheaper than long-term, and to increase profitability by cutting inventories, speeding up collections from customers and delaying payments to suppliers. It also enables greater flexibility in financing.

However, there is an increased risk of **illiquidity** and managers will need to spend a significant amount of time managing and renewing short-term sources of finance. Short-term finance may not always be easily available.

MNO is likely to have **large** fluctuations in its levels of working capital requirements and would therefore find the flexibility of an aggressive financing policy beneficial.

# Answers to Self-test questions

## 1 Megatrade plc

### 1.1 Management of cash

The central treasury department will have the responsibility for the **management of the Megatrade group's cash** flows and borrowings. Subsidiaries with surplus cash will be required to submit the cash to the treasury department, and subsidiaries needing cash will borrow it from the treasury department, not from an external bank.

#### Borrowing

Central treasury will be given the **responsibility for borrowing** on behalf of the Megatrade group. If a subsidiary needs capital to invest, the treasury department will borrow the money required, and lend it on to the subsidiary. The subsidiary will be responsible for **paying interest** and **repaying the capital** to the treasury department which will, in turn, be responsible for the interest and capital payments to the original lenders.

#### Risk management

Another function of the treasury department will be to **manage the financial risk** of the Megatrade group, such as currency risk and interest rate risk. Within broad guidelines, the treasurer might have authority to decide on the balance between fixed rate and floating rate borrowing, and to use swaps to adjust the balance. The department would also be responsible for arranging forward exchange contracts and other hedging transactions.

#### Taxation

The central treasury department could be responsible for the **tax affairs** of the Megatrade group, and an objective would be to minimise the overall tax bill. To accomplish this effectively, the treasury must have **authority to manage transfer prices** between subsidiaries in the group, as a means of transferring profits from high-tax countries to lower-tax countries.

### 1.2 The treasury function needs information from within and outside Megatrade to carry out its tasks.

- (1) From each subsidiary within the group, it will need figures for future cash receipts and **payments**, making a distinction between definite amounts and estimates of future amounts. This information about cash flows will be used to **forecast the cash flows of the group**, and identify any future borrowing needs, particularly short-term and medium-term requirements. Figures should be provided regularly, possibly on a daily basis.
- (2) Information will also be required about **capital expenditure requirements**, so that long-term capital can be made available to fund it.
- (3) Subsidiary finance managers should be encouraged to **submit information** to the **treasury department** about local market and business conditions, such as prospects for a change in the value of the local currency, or a change in interest rates.
- (4) From outside the group, the treasury will need a **range of information** about current market prices, such as exchange rates and interest rates, and about which banks are offering those prices. Large treasury departments will often have a link to one or more information systems such as Reuters and Bloomberg.

- (5) The treasury department should be alert to any **favourable market opportunities** for raising new debt capital. The treasurer should maintain regular contact with several banks, and expect to be kept informed of opportunities as they arise.
- (6) Where the treasury is responsible for the group's tax affairs, information will be needed about **tax regulations** in each country where the group operates, and changes in those regulations.

## 2 JRLH

### Management of working capital

The management of working capital involves ensuring that the company has the liquid funds that it needs and maximises its profitability. It involves the management of receivables, payables and inventory levels, as well as either the investment of surplus funds or ensuring there are sufficient cash resources.

### Centralised function in the UK

A centralised function in the UK would be able to achieve **economies of scale** by, for example, obtaining better borrowing rates or netting off balances.

The difference in inflation rates between Asia and the UK will result in changing exchange rates which will need to be planned for and hedging techniques used. A centralised function in the UK is more likely to have the **exchange rate management expertise** required.

**Management of receivables** would probably be better achieved in the UK as there will again be experience and expertise in dealing with the particular type of motor trade customers.

### Management of working capital in Asia

**Management of inventory** would be easier if undertaken in the Asian country. The geographical distance involved in managing inventory from the UK would make it much more difficult, especially as very little is manufactured for inventory. The aim should be for minimum holdings to maximise profitability and this requires careful control and management locally.

**Management of payables** will depend on where the necessary parts are sourced from. Local sourcing in the Asian country could help to avoid exchange rate issues and then local knowledge would again make payables management more efficient.

### Government restrictions

JRLH will need to undertake research to determine if there are any **restrictions on funds** being taken out of the Asian country or any **property taxes** on inventory holdings. This may affect the strategy chosen for working capital management.

## 3 GG

### 3.1

#### Convert the balances to sterling £m

					Total receipts (add across)	Total payments (add down)	Net receipt/ (payment)
Paying	UK	France	US	Japan			
Receiving							
	UK	0.90			0.90	(3.26)	(2.36)

France			0.97	0.97	(2.58)	(1.61)
US	1.93	1.68		3.61	(1.40)	2.21
Japan	1.33		1.40	2.73	(0.97)	1.76

As all transactions are being handled in London, therefore: France will pay the UK £1.61 million

The UK will pay the US £2.21 million and Japan £1.76 million

### 3.2 Advantages

#### Transaction costs

Netting will reduce the number of transactions that subsidiaries need to make. This will **reduce the transaction costs** that their banks charge, as they will not need to convert cash or pay bank charges

#### Administration

There will be time, and potentially cost, savings from the reduced need for administration and invoicing through implementing multilateral netting.

#### Exchange risk

A **reduction in the amount of currency** flows should reduce exchange risk, by reducing the maximum losses that can arise from currency movements.

#### Disadvantages

Costs of treasury function

Maintaining a central treasury function to carry out this and other tasks can be **expensive. Legal and taxation issues**

GG may be liable to regulations that limit or prohibit multilateral netting. It may **also face cross-border taxation complications**. Tax authorities may question the commercial logic of the transactions, particularly if the country is operating exchange controls. GG will need to demonstrate that payments relate to a binding commitment.

#### Weakness of £1

If the £ is weak against the other currencies for a long time, the results of the offices could be

#### Significantly distorted.

#### Exchange rate used

Some Group companies may **question the exchange rate** being used, if they feel that they are losing out compared with companies in other countries.

#### Cash flow problems

If one of the offices is having **liquidity problems**, the London treasury department may have to arrange for it to have additional funds to settle its liabilities. This will **increase the number of transactions**, and hence the amount of transaction costs, and may also mean that GG incurs more exchange losses.



# Chapter 20

## Ethics

### Introduction

Learning outcomes  
Introduction and syllabus links  
Examination context  
Chapter study guidance

### Learning topics

- 1 Ethics and ethical issues
- 2 Ethical principles and ethical dilemmas
- 3 Ethical safeguards
- 4 Ethics and strategy

Summary

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Answers to Self-test questions



# Introduction

## Learning outcomes

In the assessment, candidates may be required to:

- Recognise and explain ethical, business trust and professional conduct issues
- Explain the relevance, importance and consequences of ethical issues
- Evaluate the ethical implications of an organisation's selection, capture, analysis and use of data
- Evaluate the impact of ethics on an entity, its stakeholders and the scope of its strategies and operations, considering the public interest
- Recommend and justify appropriate actions where ethical dilemmas arise in a given scenario
- Design and evaluate appropriate ethical safeguards

## Introduction and syllabus links

The Business Strategy & Technology syllabus (at Professional Level) covered ethics, sustainability and corporate responsibility, and at Professional Level you were expected to consider ethical issues in the context of different business scenarios.

At Advanced Level, ethics, sustainability and corporate responsibility are integrated into technical areas of the syllabus, and could involve you considering ethical issues as well as strategic ones when recommending courses of action for an entity.

## Examination context

Between 5% and 10% of marks in Strategic Business Management will be allocated to the appropriate discussion of ethical issues. This could be in the context of the professional accountant working in business and/or the ethics of an organisation. It may also include ethics in an assurance context.

Scenarios might include topics such as:

- conflict between the accountant's professional obligations and the responsibilities to the organisation
- lack of professional independence, eg, personal financial interest in business proposals
- conflicts of interest among stakeholders
- attempts to intentionally mislead key stakeholders (by disclosure or non-disclosure of information)
- doubtful accounting or commercial business practice
- facilitation of unethical strategies
- inappropriate pressure to achieve a result
- actions contrary to law, regulation and/or technical and professional standards



## Chapter study guidance

Use this schedule and your study timetable to plan the dates on which you will complete your study of this chapter.

Topic	Practical significance	Study approach	Exam approach	Interactive questions
1	<p><b>Ethics and ethical issues</b> Businesses are frequently under</p>	<p><b>Approach</b> This chapter addresses ethical issues in two</p>	<p>Ethical issues and dilemmas will be present in every exam. You may be</p>	<p><b>IQ1: Ethics and CSR</b> This brief introductory question asks you to</p>
	<p>pressure to find ways of out-performing their competitors. However, they must do so without acting unethically (or illegally), because such actions can very quickly damage an entity's brand and reputation, and with them its competitive position. Professional accountants must ensure that not only do they behave ethically themselves, but also they do not support any unethical behaviour in their organisations.</p>	<p>different contexts; the importance of ethical issues in relation to an entity's strategy; and the ethical issues which could be faced by an accountant in business. Section 1 looks at the importance of ethics to business highlighting the need to consider the ethical consequences of business decisions (and - equally importantly - the potential consequences of not acting ethically). Stop and think What particular complications might a multinational company face in relation to acting ethically?</p>	<p>required to identify and explain the ethical issues or dilemmas facing an entity or individual, and potential significance and consequences of those issues or dilemmas.</p>	<p>explain the difference between business ethics and corporate social responsibility.</p>

Topic	Practical significance	Study approach	Exam approach	Interactive questions
2	<p><b>Ethical principles and ethical dilemmas</b> Ethical dilemmas are, by their very nature, complex areas with many potential responses available. Professional accountants are bound by the Code of Ethics to identify and evaluate the significance of threats, applying safeguards where necessary to reduce the threat.</p>	<p><b>Approach</b> Section 2 looks specifically at ethical issues in relation to an Chartered Accountant. Whilst it is important that you know the fundamental principles of Code of Ethics, and the potential threats to those principles, it is equally important that you can apply them to a scenario context. <b>Stop and think</b> How should an entity respond when it faces a conflict between acting</p>	<p>Exam questions may require you identify ethical dilemmas before recommending appropriate actions to address them. The I Code of Ethics will help you to identify and respond to the threats present in the scenario.</p>	<p><b>IQ2: Ashdene Homes</b> This scenario-based question requires you to explain the ethical responsibilities of an accountant as both an employee and a professional. Ensure you apply your answer to the scenario rather than giving a theoretical 'textbook' response.</p>
		ethically and pursuing its business interests?		
3	<p><b>Ethical safeguards</b> Professional accountants must ensure that they introduce safeguards to mitigate threats to the fundamental principles. Where effective safeguards are not possible, professional accountants should refrain from the activity in question.</p>	<p><b>Approach</b> Having looked at potential threats in section 2, section 3 then looks at the safeguards which can help to counter threats to ethical behaviour, and the actions required to address ethical conflicts. <b>Stop and think</b> How can an organisation ensure that employees abide by the company's ethical values and commitments?</p>	<p>SBM&amp;L is a practical exam requiring you to recommend pragmatic responses to business problems. With regard to ethical safeguards, you may be asked to recommend appropriate safeguards or to evaluate safeguards which are already in place.</p>	

Topic	Practical significance	Study approach	Exam approach	Interactive questions
4	<p><b>Ethics and strategy</b> Strong ethical policies can have a role in strategy and business management. For example, clear ethical principles can add value to a brand and result in sustainable competitive advantage. However, concerns about the unethical nature of how data is managed by an organisation can also have an adverse impact.</p>	<p><b>Approach</b> This section returns to ethics in a strategic context, encouraging you to consider what impact ethics can have on an entity's strategy, and, in particular, its business sustainability. Sustainability and corporate responsibility are becoming increasingly important issues for businesses, meaning it is also important that you consider them when evaluating potential business strategies. It is important to understand the ways that bias can creep into data-driven decisions. The section concludes with a</p>	<p>In the exam you may be asked to evaluate the impact which ethics has on an entity's strategy and operations, as well as on its dealings with different stakeholders</p>	<p><b>IQ3: DEF airport</b> This scenario based question requires you to evaluate the extent to which the company's mission statement encourages a sustainable business model. Ensure you examine the arguments in favour of and against the statement in the question. <b>IQ4: Flimsy plc</b> In this short question you are asked to analyse the ethical issues present in the scenario. Use ethical language and the Code of Ethics to help generate points.</p>
	<p>useful overview of how to deal with ethical issues in the exam, outlining a suggested approach as well as common candidate weaknesses when dealing with ethical questions. <b>Stop and think</b> Can you think of any recent examples of organisational reputation damage caused by a failure to uphold ethical standards?</p>		<p><b>IQ5: Electrical manufacturer</b> IQ5 asks you to advise the business on whether its ethical policy could cause concerns for its shareholders. To answer the question properly you must apply your answer to the scenario.</p>	

Once you have worked through this guidance you are ready to attempt the further question practice included at the end of this chapter.

# 1 Ethics and ethical issues



## Section overview

In this section we review the factors you need to consider if any questions in your exam include ethical issues. This section therefore deals with the accountant in business. Further ethical issues are covered in an auditing context in the Corporate Reporting learning materials. Corporate social responsibility and sustainability issues, which could be related to ethical issues, have been covered earlier in this Workbook.

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### 1.1 Business ethics

**Ethics** refers to notions of 'right' and 'wrong'. In a business context, the impact of a company's strategic decisions will have an ethical implication (eg, child labour, pollution, wage rates, dealing openly and fairly with stakeholders, suppliers and customers).

Business ethics can be defined as the expected standards of behaviour in the conduct of business.

Business life is a fruitful source of ethical dilemmas because its whole purpose is material gain, and the making of profit. Moreover, success in business requires a constant search for potential advantage over others and business people are under pressure to do whatever yields such an advantage. However, they need to achieve this advantage without acting unethically.

While acting ethically does not necessarily give an organisation a competitive advantage over its rivals, acting unethically is likely to damage an organisation's brand and reputation and could thereby damage its competitive position. As a result, organisations have become increasingly under pressure to act and **be seen to be acting ethically**. In recent years many have demonstrated this by publishing **ethical codes**, setting out their values and responsibilities towards stakeholders.

Similarly, there is increasing public demand for external assurance to support the fact that firms are acting ethically: for example, there is greater scrutiny of public competitions and telephone voting, and the draws for the National Lottery ('Lotto') in the UK are supervised by 'an independent adjudicator'.

The concept of 'corporate social responsibility' (CSR) which we considered earlier in the chapter Finance awareness could also be relevant in relation to ethics, and the issues of ethics and CSR are often interlinked. However, some commentators note that the primary goal of CSR is to 'do good' whereas business ethics programmes focus more on 'preventing harm'.

#### Point to note

This chapter primarily considers ethics in business, and the ethical issues which could be faced by an accountant in business. We also consider ethics in an assurance context; in particular, considering the need for companies to assess (and gain assurance over) their ethical procedures.

#### Ethics and business decisions

Ethics and business are inextricably linked, because management decisions can regularly involve a trade-off between economic and social performance. For example, if a manager decides to recall a potentially dangerous product this might compromise profits in the short

term, for the sake of consumer protection. By contrast, a manager who decides to delay the installation of pollution control equipment and its attendant costs could, at least in the short term, increase shareholder value.

Even ethical managers face challenges trying to do the right thing in a complex business environment. Management faces intense pressure to produce consistently improving results. However, although lowering ethical operating standards could produce more favourable outcomes in the short term, these outcomes are not sustainable.

We have already looked at the case example of BP and Deepwater Horizon in the chapter Business risk management in the context of risk management. But the issues raised there are also relevant here - in the context of the longer-term consequences of short-term decisions.



### Context example: BP and Deepwater Horizon

The White House oil commission, investigating the oil spill in the Gulf of Mexico following the fatal blow-out on the Deepwater Horizon drilling rig in April 2010, concluded that this was 'an avoidable disaster caused in part by a series of cost-cutting decisions made by BP and its partners'.

The commission's report argued that 'systemic management failure' at BP, Halliburton and Transocean was ultimately to blame for the blow-out, and many of the poor decisions taken on the drilling rig were made in order to save time and money.

'Whether purposeful or not, many of the decisions that BP, Halliburton, and Transocean made that increased the risk of the Macondo oil well blow-out clearly saved those companies significant time (and money),' the report said.

Moreover, investors claimed that BP executives and directors breached their fiduciary duties to the company by ignoring safety and maintenance for years before the well exploded on 20 April 2010. The investors' lawyers argued that, despite warnings about the safety of the well, BP continued to systematically cut budgets.

The investors (who had filed a claim against BP claiming diminished share value) claimed that in addition to the tragic loss of life which resulted from the blow-out, the disaster will cost the company billions of dollars in damages\*, permanent reputational harm and intense government scrutiny.

The claimants argued that, despite existing concerns raised by federal safety regulators, BP had cut operational costs by 15% in 2009 alone (the year before the disaster). In their opinion, 'This reduction in budgets and manpower further undermined the company's ability to operate safely, as personnel were stretched even thinner, and resources that should have been devoted to maintenance, monitoring and addressing crucial safety failures in every aspect of the company's operations were diverted.'

(Cronin Fisk, M. and Brubaker Calkins, L. (2011) 'BP's Pursuit of Cost-Cutting Led to Gulf Spill, Lawyers Say'. Available at: [www.bloomberg.com](http://www.bloomberg.com), 5 February 2011)

**Note:** BP agreed a settlement, in September 2014, to pay damages of \$18.7 billion, but over time, this amount has risen as fresh claims are agreed by the relevant judicial systems set up in the wake of the explosion. By January 2018 it had revised its estimate of the total cost of the explosion to \$65 billion.

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This case example infers the importance of the distinction between the **short-** and **long-term** impacts of decision making. This distinction is important in the context of ethics too because, while acting ethically may sometimes reduce short-term profits, it should enhance longer-term shareholder value. Consequently, we could suggest that, in the long run, good business ethics is actually synonymous with good business overall.

Conversely, unethical behaviour can damage reputations, in addition to bottom lines, as companies lose customers and employees and see their brands tarnished. All these impacts destroy shareholder value, therefore companies need to appreciate the linkage between long-term, sustainable performance and the company's behaviour in relation to customers, employees, investors and the communities in which it does business.



### Context example: Volkswagen - Emissions scandal

In September 2015, Volkswagen (VW) admitted that up to 11 million diesel-powered vehicles worldwide - manufactured between 2009 and 2015, and including the company's other brands such as Audi, SEAT and Skoda - might be fitted with so-called 'defeat devices' which enabled them to meet emissions standards during laboratory tests (but meant that the test results weren't indicative of the vehicles' emissions in everyday use).

VW's chief executive resigned after the company admitted the deception, and in November 2015 the ratings firm Moody's Investor Service downgraded some of VW's corporate debt, citing increased risks to the company's reputation and future earnings in the wake of the emissions crisis.

Moody's concerns appear to be supported by data showing Volkswagen's market share of the European car market. Figures from the European Automobile Manufacturers' Association showed that sales of new VW cars fell by 4% in January 2016 (compared to the previous year), while there was a 6.3% increase in industrywide sales overall.

By February 2016, the company's value had dropped by more than 20 billion euros since the scandal became public.

(Based on: Bloomberg (2016) 'VW loses European Market share to Fiat in wake of Scandal'. [Online]. Available at: [www.bloomberg.com/news/articles/2016-02-16/vw-loses-european-market-share-to-fiatgm-in-wake-of-scandal](http://www.bloomberg.com/news/articles/2016-02-16/vw-loses-european-market-share-to-fiatgm-in-wake-of-scandal), 26 February 2016)

(Reuters (2015) 'Hit by scandal, VW posts first quarterly loss in at least 15 years'. [Online]. Available at: [www.in.reuters.com/article/volkswagen-results-idINKCN0SM0UZ20151028](http://www.in.reuters.com/article/volkswagen-results-idINKCN0SM0UZ20151028))



### Interactive question 1: Ethics and CSR

Briefly explain the differences between business ethics and corporate social responsibility (CSR).

See **Answer** at the end of this chapter.

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#### Ethics and marketing

In relation to ethics and marketing, Schlegelmilch points out that: 'If customers did not trust a particular company, they might not buy its products, fearing that product claims would be untrue. The market place is built on trust between the company and the consumer. Any breakdown in this trust will have a detrimental effect on the company's sales.'

For example, if a company makes a claim about its products, it must be able to substantiate the basis for any claim or comparison with competitors' products. The rise and fall of the soft drink Sunny Delight highlights the importance of not making false or misleading claims in advertising material.



## Context example: Sunny Delight

Sunny Delight was one of the marketing successes of the 1990s in the UK, such that by the end of the decade it had become the third biggest selling soft drink, behind Coca-Cola and Pepsi. (It had only been launched in 1998.)

Part of the reason for Sunny Delight's initial success was that its marketing campaign led parents to believe it was an orange juice drink which offered a healthy alternative to sugary soft drinks.

Consequently, they encouraged their children to drink it.

However, the Food Commission, an independent consumer organisation, then began to question what was actually in Sunny Delight, and they realised that the product was more similar to a Coca-Cola type product than a fruit juice. In particular, the Commission's investigation highlighted that the healthy attributes given to the product in its marketing campaign were not justified, because it contained only a very small amount of fruit juice.

As a result, consumers began to lose faith in the product, feeling that they had been misled by claims that Sunny Delight was a healthy drink. Sales halved by 2001, and Procter & Gamble (its manufacturer) was forced to redesign the drink and relaunch it (as 'Sunny D') in 2003.

This illustration, again, raises the question of the short-term vs long-term consequences of acting ethically (or unethically), and shows that any short-term gain from acting unethically is likely to be far less than the potential long-term damage of doing so. Conversely, any perceived short-term 'costs' of acting ethically are likely to be lower than the potential long-term costs of not doing so.

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### Ethics and decision making

In effect, every time managers make decisions they are influenced by a variety of internal and external moral pressures.

These can be categorised into five different levels.

- (a) **Individual** - relating to a manager's personal ethical code
- (b) **Organisational** - guided by the corporate procedures, policies, codes of ethics or codes of conduct of the manager's organisation
- (c) **Associational** - referring to the guidelines and codes of conduct of a professional body, such as ICAB or the IFAC (see section 2.2 below)
- (d) **Societal** - concerned with the laws, cultures and traditions which determine the acceptability of actions in the manager's native country
- (e) **International** - focusing on the laws, customs and traditions of foreign countries, in the context of multinational organisations



## Context example: Company codes of conduct

The German-based home care, cosmetics and adhesive technologies group, Henkel, publishes a series of behavioural guidelines that determine how all its staff should act every day. These guidelines are based on the company's vision, mission and values, and are specified in a series of codes, including a Code of Conduct.

These Codes provide all Henkel staff with a set of practical guidelines for their relationships with customers as well as with their co-workers.

The Code of Conduct reminds staff:

'Henkel's image and reputation, as a company that operates in an ethically and legally appropriate manner, is inseparable from the conduct of each of us as we perform our work, every day. We, the employees of Henkel, are expected to respect laws and regulations, avoid conflicts of interest, protect the company's assets, and show consideration and appreciation for the local customs, traditions and social mores of the various countries and cultures in which Henkel conducts business. In fulfilling our responsibilities within Henkel, we do not take ethical shortcuts. Improper conduct will never be in Henkel's interest.

'Should you have any questions, or if you are uncomfortable with a decision or a course of action being undertaken, take the issue to a higher level within the Henkel organisation. Make sure you get good advice. But what is most important: Observe our Code of Conduct and never accept that others will violate it. We should be aware that our values define us to the world. Therefore, Henkel's image and reputation rests in each of our hands, every day.'

## 1.2 Ethical stances of organisations

Ethics can be defined as the moral principles that determine individual or business conduct, or behaviour that is deemed acceptable in the society or context.

An organisation can adopt a range of ethical stances.

- (a) Meet minimum legal obligations and concentrate on short-term shareholder interests.
- (b) Recognise that long-term shareholder wealth may be increased by well-managed relationships with other stakeholders.
- (c) Go beyond minimum legal and corporate governance obligations to include explicitly the interests of other stakeholders in setting mission, objectives and strategy. In this context, issues such as environmental protection, sustainability of resources, selling arms to tyrannical regimes, paying bribes to secure contracts and using child labour would be considered when evaluating strategic choices and implementing strategies.
- (d) In public sector organisations, charities, etc the interests of shareholders are not relevant (because there are no shareholders).

# 2 Ethical principles and ethical dilemmas



## Section overview

The ethical dilemmas which will be presented in your examination at Advanced Level will be more complex than those at Professional Level. For example, at Advanced Level, the ethical issue and the appropriate course of action involve multiple considerations. Nevertheless, much of the basic guidance (for example around the fundamental ethical principles, threats and safeguards) still applies.

## 2.1 Regulating ethical behaviour

Ethical business regulation operates in two ways.

- (a) **Forbidding or constraining certain types of conduct or decisions:** eg, most organisations have regulations forbidding ethically inappropriate use of their IT systems. Similarly, many will forbid the offering or taking of inducements in order to secure contracts.



- (b) **Disclosure of certain facts or decisions:** eg, because the board sets its own pay it is disclosed, and sometimes the reasons behind the awards, to shareholders in the final accounts.

The following codes are potentially binding on you as a trainee chartered accountant.

Ethical Standards requires that auditors shall conduct the audit of the financial statements of an entity with integrity, objectivity and independence.

## 2.2 The ICAB Code of Ethics for members

The Code of Ethics establishes the fundamental ethical principles for professional accountants and provides a conceptual framework that accountants should apply to:

- (a) identify threats to compliance with the fundamental principles
- (b) evaluate the significance of the threats identified
- (c) apply safeguards, when necessary, to eliminate the threats or reduce them to an acceptable level

Fundamental principles

The Code of Ethics establishes five fundamental principles.

- (a) **Integrity:** Being straightforward and honest in business and professional relationships. This means that an accountant shall not knowingly be associated with reports which are materially false or misleading; which contain statements or information 'furnished recklessly'; or which omit information whose absence is misleading.
- (b) **Objectivity:** Not allowing bias, conflict of interest or influence of others to override professional or business judgement.
- (c) **Professional competence and due care:** Attain and maintain professional knowledge and skill at the level required to provide a client or employer with competent professional service, based on current technical and professional standards, and to act diligently and in accordance with applicable technical and professional standards.

This principle also highlights that a professional accountant should take reasonable steps to ensure that people working under their authority in a professional capacity also have appropriate training and supervision.

- (d) **Confidentiality:** Respect the confidentiality of information acquired as a consequence of professional or business engagements. Do not disclose that information to third parties without specific authority, unless there is a legal or professional duty to do so. Do not use the information for personal advantage.
- (e) **Professional behaviour:** Comply with laws and regulations and do not discredit the profession. Behave with courtesy and consideration towards everyone they come into contact with when performing their work.

**Note:** In 2018 the International Ethics Standards Board for Accountants (IESBA) issued a revised code of ethics. As a member of the International Federation of Accountants, ICABis committed to adopt the provisions of the IESBA Code and as such issued a revised Code of Ethics in 2020 which is examinable from 2021 onwards.



### Professional skills focus: Assimilating and using information

One of the skills tested in the ICAB exams is the ability to identify ethical issues, including public interest and sustainability issues, in a range of business situations. Read the scenario detail carefully and use ethical language and relevant professional principles to help frame your response. Wider business reading can help you to understand the many ethical dilemmas that businesses face and the actions they take to manage them.



## Worked example: Ethical issues

DDD is an international company based in Europe which trades principally in Asia and Europe. It has a published Code of Ethics, in which it commits itself to being 'a company that will trade fairly and sustainably'.

Recently, DDD has been pursuing an expansion strategy which has led to the following two situations occurring.

### Situation 1

At a recent presentation to investment analysts and financial journalists, DDD's Chief Executive Officer (CEO) presented a very optimistic forecast for the company's future, suggesting that revenue would double over the next three years and profits and dividends would increase by 50%.

However, the CEO had prepared his forecast in a hurry and had not had it confirmed by anybody else within DDD. He did not mention that the Government in DDD's home country was considering taking legal action against the company for underpayment of excise duties and had made a claim for large damages. If this claim was successful it would materially affect DDD's profit in the next year.

### Situation 2

In connection with the legal case in Situation 1, DDD's home Government had obtained a court order that all documents relating to DDD's export trade should be made available to the Government's lawyers.

However, many of the documents covered by the court order were the subject of confidentiality agreements between DDD and various entrepreneurs. These documents included details of patents and processes with a high commercial value and if knowledge of these became public it would destroy some of DDD's competitive advantage.

### Requirement

Considering both situations in turn, advise whether the situations are in conflict with Code of Ethics.

### Solution Situation 1

**Integrity** - This situation could be in conflict with the fundamental principle of integrity.

Code of Ethics highlights that the principle of integrity requires accountants to be 'honest, straightforward and truthful' in all business relationships. The principle of integrity also implies that accountants should not be associated with any information which they believe contains a materially false or misleading statement, or which is misleading by omissions.

**Contains a materially false or misleading statement** - The CEO has presented a very optimistic forecast for DDD's profits, but this could be misleading if the Government's claim for damages against the company is successful.

**Omits information where such omission would be misleading** - Although the Government's claim for damages would 'materially affect' DDD's profit for the next year if it was successful, the CEO did not mention the claim in his presentation to the analysts and journalists. This omission is misleading, because it prevents the audience from being aware that DDD's profit for the next year might be materially lower than the figure given in the forecast.

**Disassociation** - The principle of integrity also requires professional accountants to disassociate themselves from statements or information which have been 'provided recklessly'.

**Contains statements or information provided recklessly** – The CEO prepared his forecast in a hurry, and did not check the figures with anyone else in DDD. Given that DDD is an international company, the CEO could be seen as reckless for presenting a forecast without asking anybody else in the company to confirm it. Such actions suggest the CEO has perfect knowledge of the company and its prospects, but that seems very unlikely. This could also be seen to be falling short of the **professional competence and due care** that would be appropriate in this instance.

#### Advice

The CEO's forecast and presentation demonstrate the characteristics of communications which conflict with the principles of integrity and professional competence and due care. The CEO has not

been honest in his dealings with the analysts and the journalists, and therefore Situation 1 represents a conflict with the principle of integrity.

#### Situation 2

**Confidentiality** – The principle which could be jeopardised here is confidentiality. The Code requires professional accountants and firms to refrain from disclosing, outside a firm, confidential information which has been acquired as a result of business relationships with that firm.

Many of the documents which the Government's lawyers have requested contain confidential information, which suggests there could be a conflict with the principle of confidentiality if they are handed over.

**Exception: Legal proceedings** – However, the Code makes an exception to the principle of confidentiality in the context of legal proceedings. In other words, the principle of confidentiality is not breached if confidential information is disclosed when it is required in the course of legal proceedings.

This is the case in Situation 2. DDD has been required to produce the documents as a result of the court order obtained by the Government.

#### Advice

Although the documents contain confidential information, Situation 2 does not represent a conflict with the Code of Ethics.



### Interactive question 2: Ashdene Homes

Ashdene Homes is a regional house builder, having considerable knowledge and experience in the South of England where the current UK housing shortage is centred. The company caters for the mid to lower end of the market, with prices normally below £500,000, on relatively small and individual sites which tend to be too large for the resources of local builders but too small for the high-volume national house builders. Any mass release of land for development in the South East due to government initiatives is likely to be centred in one area. The development of any such land would take many years given delays within the planning process.

The company, worth £67 million, has looked like a takeover target for a while but, unfortunately, the company's reputation for internal control has been damaged somewhat by a qualified audit opinion last year (over issues of compliance with financial standards) and an unfortunate internal incident which concerned an employee expressing concern about the compliance of one of the company's products with an international standard on

fire safety. She raised the issue with her immediate manager but when she failed to obtain a response, she decided to report the lack of compliance to the press. This significantly embarrassed the company and led to a substantial deterioration in its reputation, especially as there have been more press releases about the company's failure to adhere to the high welfare, health and safety, financial, marketing and ethical standards that the founder practised when he started Ashdene Homes.

### Requirement

Explain, with reference to Ashdene Homes as appropriate, the ethical responsibilities of an accountant both as an employee and as a professional.

See **Answer** at the end of this chapter.

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## 2.3 Code of Ethics for professional accountants working in business

Investors, suppliers, employers, the business community, the Government and the public may **rely** on the work of professional accountants in business in the context of:

- preparation and reporting of financial and other information
- providing effective financial management
- competent advice on a variety of business-related matters

The more senior the position held, the greater the ability and opportunity to influence events, practices and attitudes.

A professional accountant in business is expected to **encourage an ethics-based culture** in an employing organisation, which emphasises the importance that senior management places on ethical behaviour.

### 2.3.1 Threats

The Code outlines areas where there may be **conflict** for professional accountants in business between furthering the legitimate aims of their organisation and their absolute duty to comply with the fundamental principles.

(a) **Self-interest** - The threat that a financial interest or other personal interest will influence the professional accountant's judgement or behaviour inappropriately.

Such threats might include:

- holding a financial interest in an employing organisation, receiving a loan or guarantee from that organisation
  - participating in incentive compensation arrangements
  - inappropriate personal use of corporate assets
  - being offered gifts or special treatment by suppliers to their employing organisation
- (b) **Self-review** - Business decisions or data being subject to review and justification by the same professional accountant in business responsible for making those decisions or preparing that data.
- (c) **Advocacy** - The threat here is that the professional accountant will promote a client or employer's position to the extent that the accountant is no longer objective.

However, when furthering the legitimate goals and objectives of their employing organisations, professional accountants in business may promote the organisation's position, provided any statements made are neither false nor misleading.

- (d) **Familiarity** - The threat that due to a family or other long-standing relationship with a person of significant influence in the employing organisation, the accountant will make inappropriate decisions.

Accepting a gift or preferential treatment, unless the value is trivial and inconsequential, may also create a familiarity threat.

- (e) **Intimidation** - The threat that the accountant will be deterred from acting objectively due to actual or perceived pressure, or attempts by dominant personalities to exert undue influence over the accountant.

The threat of dismissal over a disagreement about the application of an accounting principle or the way in which financial information is to be reported may also represent an intimidation threat.

### 2.3.2 Ethical issues and assurance engagements

Throughout this Work book, we have identified a number of examples where assurance could be valuable in the context of strategic business management. For example, an accountant might be asked to undertake a financial due diligence engagement in relation to a possible acquisition.

However, as with any professional engagement, an accountant should consider Code of Ethics before accepting an assurance engagement.

**Independence** - Stakeholders want credible information they can trust. An expert providing an independent opinion on the reliability of information helps to reinforce trust. Independence is an essential characteristic of assurance engagements.

The accountant should consider any threats to independence before accepting an engagement. For example, providing assistance to a client in preparing a report may result in a **self-review threat** if the impact of the assistance on the matter being reported is material.

**Objectivity or confidentiality** - The accountant must consider the threat to their objectivity and confidentiality requirements if they perform services whose interests are in conflict, or if the clients are in dispute with each other in relation to the matter in question. For example, if there is a dispute over the profit-sharing arrangements in a joint venture, the accountant should not act for both parties.

In this respect, the accountant must ensure that they avoid any **conflicts of interest**.

**Professional competence and due care** - The accountant should only undertake an engagement for which they have the relevant skills and experience. In particular, the nature of some assurance engagements may demand specialist knowledge and skills to be available in the assurance team. For example, an engagement to provide assurance over the IT security and controls will require the presence of an IT specialist on the engagement team.

Equally, in relation to a potential acquisition, there may be a need to consider the extent of a pension fund deficit in the company being acquired. The complexity of the estimates and assumptions relating to investment returns, mortality, wage inflation and future interests mean that this work should be referred to a qualified actuary, rather than being undertaken by the accountant.

## 2.4 Inducements and bribery in UK

In relation to the threat of 'familiarity' identified by ICAEW's Code of Ethics, we noted that accepting a gift or preferential treatment could create a familiarity threat.

In more extreme cases, accountants, or their immediate or close family, may be offered an inducement to support a particular course of action. Possible inducements include:

- gifts
- hospitality
- preferential treatment
- inappropriate appeals to friendship or loyalty

In addition to the ICAEW Code, accountants operating in businesses linked to the UK should be aware of the Bribery Act 2010.

Bribery is an intention to encourage or induce improper performance by any person, in breach of a duty or expectation of trust or impartiality. Bribery may be an offence for the person making a bribe ('active bribery') and the person accepting a bribe ('passive bribery').

Under the Bribery Act 2010, there are four categories of criminal bribery offences:

- offering, promising or giving a bribe to another person (including officials)
- requesting, agreeing to receive or accepting a bribe from another person
- bribing a foreign official
- failing to prevent bribery. This is a corporate offence. If companies fail to prevent bribes being paid on their behalf, the company is deemed to have committed an offence which is punishable by an unlimited fine.

The only defence available for a company against a charge of failing to prevent bribery is for it to prove it had 'adequate procedures' in place for the prevention of bribery.

The Act itself doesn't define what constitutes 'adequate procedures', but organisations should consider the following principles when implementing anti-bribery procedures:

- Procedures should be clear and practical, and proportionate to the organisation's activities and the risks it faces, depending on both the industry and the geographical locations of the markets in which it operates.
- Top level management should be involved in developing bribery prevention procedures and should promote a culture of integrity in the organisation whereby staff realise that bribery is never acceptable. Producing a statement of ethics, or a code of conduct, could be an appropriate way to demonstrate this; while it is also important that an organisation's reward and bonus structure does not encourage a corruption culture.
- Bribery policies and procedures need to be communicated throughout the organisation so that they are understood by all employees. This could be supplemented by training and testing for staff. The communications also need to inform staff of what they should do if they have any concerns that a bribery offence is taking place (for example, calling a confidential helpline to discuss their concerns).
- Clear policies on gifts, hospitality, promotional expenditure and charitable donations should be communicated to employees and business associates. Financial and audit controls should be adequate to identify any unusual payments and their origin.
- Organisations need to monitor and regularly review their anti-bribery procedures to ensure they work effectively and are being consistently followed. Depending on the level of risk involved, it may be appropriate for an organisation to seek an external verification of their procedures.

If a bribery offence is committed by a company (or partnership) any director, manager or similar officer will also be guilty of the offence if they consented or were involved with the activity which took place.

One particular point to note is that the Bribery Act has a very wide judicial reach: it applies to any persons with a 'close connection' to the UK. This is defined to include:

- British citizens
- individuals ordinarily resident in the UK
- businesses incorporated in the UK
- any business which conducts part of its business in the UK, even though it is not incorporated in the UK

Improper performance will be judged in accordance with what a reasonable person in the UK would expect. This applies even if no part of the activity took place in the UK and where local custom is very different.

Note, however, that reasonable and proportionate hospitality is not prohibited under the Act.

## 3 Ethical safeguards



### Section overview

Having acknowledged the fundamental ethical principles which accountants should adhere to, and the threats which impede their ability to do so, in this section we look at the safeguards which could be implemented to guard against those threats.

### 3.1 Safeguards

To comply with the Code of Ethics, professional accountants are required to consider whether their actions or relationships might constitute **threats** to their adherence to the fundamental principles. Where these are significant, they must implement **safeguards**.

These safeguards might be **generic**, created by the profession or regulation, or be developed in the **working environment** by the individual or their organisation.

If effective safeguards are not possible, professional accountants are required to **refrain** from the action or relationship in question.

#### 3.2.1 Generic safeguards

Generic safeguards include:

- education, training and experience requirements for entry into the profession
- requirements to undertake continuing professional development
- corporate governance regulations
- external review of reports, returns and communications or information by a legally empowered third party (eg, external audit)

#### 3.1.2 Safeguards in the work environment

The Code sets out the types of safeguards in the **work environment** which might be applied by the accountant's employing organisation to overcome these threats.

- Leadership that stresses the importance of ethical behaviour and the expectation that employees will act in an ethical manner.

- Policies and procedures to empower and encourage employees to communicate ethics issues that concern them to senior levels of management without fear of retribution.
- Policies and procedures to implement and monitor the quality of employee performance.
- Systems of corporate oversight or other oversight structures and strong internal controls.
- Recruitment procedures emphasizing the importance of employing high calibre competent personnel.
- Timely communication of policies and procedures, including any changes to them, to all employees, and appropriate training and education on such policies and procedures.
- Ethics and code of conduct policies.

## 3.2 Action required in unethical circumstances

In circumstances where a professional accountant in business believes that unethical behaviour or actions by others will continue to occur within the employing organisation, they should consider seeking **legal advice**.

In extreme situations, where all available safeguards have been exhausted and it is not possible to reduce the threat to an acceptable level, a professional accountant in business may conclude that it is appropriate to **disassociate** from the task and/or **resign** from the employing organisation.

Note, however, that resignation should be seen very much as a last resort.

### 3.2.1 Resolving ethical conflicts

The Code suggests that the following factors are relevant to resolving an ethical conflict.

- establish the relevant facts, and the relevant parties affected by the conflict
- establish the ethical issues involved
- identify the fundamental principles and any associated ethical threats related to the matter in question
- identify if there are any established internal procedures for dealing with the conflict
- evaluate the alternative courses of action available

If a professional accountant is unable to resolve the conflict, they may wish to consult other appropriate people within their firm for help in obtaining a resolution.

It is generally preferable for any ethical conflicts to be resolved **within** the employing organisation before consulting individuals outside the organisation. However, if such resolution cannot be reached, the accountant may consider obtaining professional advice from ICAB or from legal advisers.

### 3.2.2 The resolution process

The following process for resolving ethical issues could provide a useful guide if you identify that such a situation is relevant in a case study scenario in your exam.

<p><b>Relevant facts</b></p> <p>Do I have all the relevant facts? Am I making assumptions? Is it my problem or can anyone else help?</p>	<p>This may involve:</p> <ul style="list-style-type: none"> <li>• referring to the organisation's policy, procedures, code of conduct and previous history</li> <li>• discussing the matter with trusted managers and employees</li> </ul>
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<p><b>Relevant parties</b> Who are the individuals, organisations and key stakeholders affected? How are they affected? Are there conflicts between different stakeholders? Who are your allies?</p>	<p>These may include those directly affected, eg, shareholders, employees and employers but may also include the community at large.</p>
<p><b>Ethical issues involved</b> Would these ethical issues affect the reputation of the accountancy profession? Would they affect the public interest?</p>	<p>These include:</p> <ul style="list-style-type: none"> <li>• professional ethical issues</li> <li>• organisational ethical issues</li> <li>• personal ethical issues</li> </ul> <p>You could refer to the ICAB Code of Ethics for help.</p>
<p><b>Fundamental principles affected and any associated ethical threats</b> Which fundamental principles are affected? Which threats to compliance exist? Are there safeguards in place which can reduce or eliminate the threats?</p>	<p>This will involve reference to the relevant ethical guidance from the ICAB Code:</p> <ul style="list-style-type: none"> <li>• Section 110 for the fundamental principles</li> <li>• Section 120.6 A3 for threats to these fundamental principles</li> </ul> <p>Are any of these threats clearly insignificant?</p>
<p><b>Established internal procedures</b> Does your organisation have policies and procedures to deal with this situation? How can you escalate concerns within your organisation? Is there a whistleblowing procedure?</p>	<p>The professional accountant may find it useful to discuss ethical conflict issues with:</p> <ul style="list-style-type: none"> <li>• immediate superior</li> <li>• the next level of management</li> <li>• a corporate governance body</li> <li>• other departments, eg, legal, audit, human resources</li> </ul> <p>Consideration should also be given to the point at which help is sought from external sources, eg, ICAB. Generally it would be preferable for the conflict to be resolved <b>without external consultation.</b></p>
<p><b>Alternative courses of action</b> Have all the consequences been discussed and evaluated? Will the proposed course of action stand the test of time? Would a similar course of action be undertaken in a similar situation? Would the course of action stand scrutiny from peers, family and friends?</p>	<p>The following should be considered:</p> <ul style="list-style-type: none"> <li>• the organisation's policies, procedures and guidelines</li> <li>• applicable laws and regulations</li> <li>• universal values and principles adopted by society</li> <li>• long- and short-term consequences</li> <li>• symbolic consequences</li> <li>• consequences</li> </ul> <p>Whenever considering an ethical issue, thought processes, discussions and decisions should all be recorded and can be referred to if you need to justify your actions in future.</p>

### Alternative courses of action

Have all the consequences been discussed and evaluated?

Will the proposed course of action stand the test of time?

Would a similar course of action be undertaken in a similar situation?

Would the course of action stand scrutiny from peers, family and friends?

The following should be considered:

- the organisation's policies, procedures and guidelines
- applicable laws and regulations
- universal values and principles adopted by society
- long- and short-term consequences
- symbolic consequences
- consequences

Whenever considering an ethical issue, thought processes, discussions and decisions should all be recorded and can be referred to if you need to justify your actions in future.



### Professional skills focus: Structuring problems and solutions

Ethics requirements in the exam can be difficult to answer due to the lack of clarity inherent in ethical problems. A framework or approach can help to provide some structure although the suggested resolution process (above) should be tailored to the scenario rather than being followed rigidly.



### Worked example: Inventory valuation (ICAEW)

The Consultative Committee of Accountancy Bodies has prepared some illustrative case studies (which are accessible via the ICAEW website) showing potential ethical threats which could be faced by accountants in business. One of these case studies is included below for you to work through.

#### Inventory valuation

You have been the Finance Director of a clothing retailer for 10 years. The company's year end is 31 March, and you are finalising the year-end accounts.

You have recently been advised by the Warehouse Manager of a significant level of slow-moving inventory. The inventory in question is now more than nine months old and would normally have been written down some months previously.

The shareholders are trying to sell the company, and the Managing Director (the majority shareholder) has told you that it is not necessary to write down the inventory in the year-end accounts. You are sure that the Managing Director wants the financial statements to carry an inflated inventory valuation because he has found a prospective buyer. The Managing Director has indicated to you that, if the proposed deal is successful, all employees will keep their jobs and you will receive a pay increase.

#### Requirement

How should you respond to the Managing Director's instruction?

#### Solution

First, consider which of the **key fundamental principles** are relevant in the scenario.

**Integrity:** In the light of the information you have, you must ensure that you act honestly, and that you are open and straightforward towards those with whom you come into contact.

**Objectivity:** Can you act without bias, despite the significant threats in the form of self-interest and intimidation?

**Professional competence and due care:** You must act diligently. Do you have sufficient information to be able to determine the appropriate value of the inventory to be included in the accounts?

**Professional behaviour:** You are required to account for the inventory in accordance with relevant accounting standards. Would any of the actions you are considering discredit the profession in the opinion of an informed third party?

### **Considerations Identify relevant facts**

You are receiving conflicting information from the Warehouse Manager and the Managing Director. The Managing Director is putting you under pressure to account for inventory at a higher value than that with which you feel comfortable. He proposes misrepresenting information about the company in the financial statements, which would be contrary to the fundamental principle of integrity.

A self-interest threat to your objectivity arises from the financial benefit that you are likely to receive if the company is sold under the proposed deal. You are also feeling intimidated by the Managing Director. He appears to be suggesting that the future employment of other employees depends on the proposed deal being successful and, therefore, on the results shown by the financial statements.

### **Identify affected parties**

Key affected parties are you, the Managing Director (and the other shareholders) and the potential purchaser of the company. Other employees of the company may also be affected, as it has been implied that their jobs are at risk if the proposed deal is unsuccessful.

Who should be involved in resolving the issue?

You should involve the Warehouse Manager, the Managing Director and, if necessary, your fellow board members.

### **Possible course of action**

You cannot simply do what has been asked of you, because the principle of integrity requires a professional accountant not to be associated with information that they believe to be false or misleading. Relying on the potential buyer's due diligence to identify the overvaluation is not appropriate. You are responsible for the honest presentation of the accounts, and you should not transfer that responsibility to either the buyer or the auditors.

The first step is to ensure that you have sufficient information. This would include establishing the basis of valuation of the company's inventory, investigating the system for counting and evaluating inventory, and discussing with the Warehouse Manager the reason why the inventory is slow moving. You may also need to discuss the realisable value with someone else, such as the Sales Director.

Once you are sure of the facts, you should discuss the matter with the Managing Director. If, in your opinion, the Managing Director continues to insist on an inflated inventory valuation being incorporated into the financial statements, you should consider how best to raise the issue with the other board members. Initially, you could suggest that both you and the Managing Director raise the matter with the other board members. If you feel it appropriate to discuss the matter with anyone else within the company, you must bear in mind the need for appropriate confidentiality and be clear about your reasons for raising the matter.

Discussions with the Managing Director may be made easier by reference to the company's own code of ethics, if it has one. If it does not, you should make the Managing Director

aware of the ethical requirements of your professional body. You could suggest that the company engages an independent expert to value the inventory.

At each stage, you should consider the need to follow meetings with email or other written correspondence to record your points of view. This would be particularly appropriate if you are of the opinion that the Managing Director or the board has not been sympathetic to your concerns.

You might have to consider raising the issue externally, for example alerting the auditors to the existence of the slow-moving inventory, or seeking advice from your professional body. If the situation remains unresolved, you may have to remove yourself from the conflict. The clearest way to disassociate yourself from misleading financial accounts would be to resign. However, this would only be an option to be exercised, as a last resort, in the most extreme circumstances. Resignation alone would not help to resolve the situation. It would be advisable to take legal advice before considering resignation.

You should document, in detail, the steps that you take in resolving your dilemma, in case your ethical judgement is challenged in the future.

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### 3.3 Ethics assurance in UK

On a number of occasions in this chapter so far we have referred to ICAEW's Code of Ethics, and we have also acknowledged that companies may have their own codes of ethics. (In section 1.1 we also included an extract from Henkel's Code of Conduct as an illustration of this.)

However, even if a company has a code of ethics, how can the board of that company be confident that the company (or more specifically, the staff) are adhering to the company's ethical values and commitments?

In this context, boards would benefit from an ethical assurance programme giving them confidence that their company does act ethically and, as a result, the integrity, reputation and sustainability of the company can be safeguarded.

However, there is no generally agreed framework for ethical assurance, so what would an ethics assurance programme actually mean in practice?

A short article in *Accountancy Magazine* ('Woolf at the door', April 2009; see next Case Study) identifies four key challenges which were highlighted by ICAEW's ethics team.

**Defining assurance** – a lack of understanding may create an expectation gap between providers and users of assurance services. Ethics assurance would be about adding credibility to an organisation's ethical behaviour; it is not ethics insurance, a source of recourse when something goes wrong with the business.

**Problems of measurement** – providers of assurance (in particular, professional accountants) may be experienced in auditing quantitative information, but ethics is a more subjective area, so it may prove difficult to identify any suitable criteria and evidence on which to base an assurance opinion.

As ICAEW's ethics manager points out: 'Even if controls and procedures can be verified and measured, this may not be enough. Ethics is ultimately about individual behaviour. Assessing and measuring individuals' ethical standards of behaviour as part of the assurance process is likely to be an onerous task.'

**Lack of agreed standards or frameworks** for ethical assurance – ISAE 3000 (Revised), *Assurance Engagements Other than Audits or Reviews of Historical Financial Information* is the internationally recognised standard on assurance engagements but it only includes

high-level principles in relation to ethical assurance. Therefore it will be left to individual practitioners to tailor the high-level principles of the ISAE to suit the needs of individual clients.

However, Account Ability's AA1000, *Assurance Standard* (which we discussed in the chapter Strategic performance management in relation to assurance over the reporting of environmental and social impacts) could be useful in helping organisations define their ethical goals and targets, measuring performance against those targets and then auditing and reporting on performance.

Equally, companies could seek external assurance from organisations as FTSE4Good, the Dow Jones Sustainability Index (DJSI) or the Global Reporting Initiative (GRI) to assess their ethical performance.

**Reporting** – how should information on ethical standards be reported, and to whom? Businesses must find a balance between providing a vast amount of information (because all of it is relevant to ethical assurance) and not producing enough to adequately address stakeholders' concerns. Equally, they must decide whether to report internally or externally.

Demand for internal assurance, presented to the board or to a Corporate Responsibility Committee, is likely to develop before ethical assurance is published externally, because companies will want to assess their own ethical procedures internally before exposing them to wider (external) scrutiny.

However, two possible forms that a publicly reported ethical assurance opinion could take have been suggested.

- The first is an assurance opinion as to whether the controls in place are appropriately structured to achieve the desired objectives.
- In the second, the assurance provider attests not only to the existence of controls but also that they work in practice.



### Context example: BAE Systems and the Woolf Report

Allegations of bribery and corruption in relation to the award of defence contracts led BAE Systems to appoint Lord Woolf, the former Lord Chief Justice, to chair an independent committee to scrutinise its ethical standards.

The Woolf Committee Report, published in May 2008, made 23 recommendations for managing BAE's ethical business conduct and its reputational risk.

The recommendations provided a route map for BAE to establish a global reputation for high standards of business conduct. The company committed to act on all the Report's recommendations and put in place a comprehensive three-year implementation plan to achieve this.

One of Lord Woolf's recommendations (made in 2008) was a call for the independent assurance of BAE's ethical behaviour.

To this end, BAE asked Deloitte to work with ISAE 3000 in preparing a corporate responsibility report and a 'reasonable assurance' statement on its implementation of the Woolf recommendations.

Extracts from Deloitte's independent assurance report (2011) on the implementation of the Woolf Recommendations are shown below:

'We planned and performed our work to obtain reasonable – not absolute – assurance as to whether the statements on the activities taken to address the 23 Woolf Report Recommendations are a fair description of the activities undertaken by BAE Systems. The qualitative and subjective nature of non-financial information poses a number of inherent limitations for assurance engagements [...]

'Considering the risk of material error, we planned and performed the work to obtain all the information and explanations considered necessary to provide sufficient evidence to support our assurance conclusion. The key procedures we carried out were:

- interviewing management at BAE Systems, including the Corporate Responsibility team and those with operational responsibility for the areas we are reporting on;
- visiting or undertaking discussions with a judgemental and non-statistical sample of line managers at operational sites;
- reading and analysing public information relating to BAE Systems' activities and performance during the year in relation to the Woolf Report recommendations;
- understanding, analysing and testing on a judgemental and non-statistical sample basis the key structures, systems, processes, procedures and controls relating to the activities described by BAE Systems within their response to the Woolf Report; and
- reviewing the statements made in the Response to the 23 Recommendations section of the Report against the findings of our work'

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## 4 Ethics and strategy



### Section overview

So far in this chapter we have looked primarily at the impact of ethics on the individual accountant. However, it is equally important to consider the impact that ethics can have on an organisation's strategy; in particular, ensuring that the strategic choices an organisation makes are perceived not to be unethical.

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As well as presenting possible threats to a professional accountant, ethics and ethical issues can have a role in strategy and business management more generally. For example, strong ethical policies - that go beyond simply upholding the law - can add value to a brand. Conversely, failing to act ethically can cause social, economic and environmental damage, and in doing so can undermine an organisation's long-term reputation and prospects.

In this respect, a social and environmentally ethical approach can assist an organisation's ability to thrive in the long run. In this respect, ethical behaviour can help contribute to **sustainable competitive advantage**.

The collapse of Enron (as a result of a massive fraud) clearly showed how unethical behaviour led to a failure to create a sustainable business model. It is also possible to argue that some other corporate failures - such as Lehman Brothers, Bear Stearns and Northern Rock - came about as a result of the organisations focusing too much on trying to pursue high short-term gains, and in doing so jeopardising their longer-term survival.

These examples highlight the importance of organisations not only understanding the **risks** they are taking in their business, but also focusing on long-term sustainability as well as short-term profitability.

Such considerations can be directly relevant in the context of strategic options. For example, how might a consideration of ethical behaviour affect an investment decision? In simple terms, if a project generates a positive net present value (NPV) it is likely to be accepted. If, however, the project involves exploiting cheap labour (or even child labour) it should not be accepted by an organisation; either on ethical grounds, or because of the potential risk to its reputation (and therefore future sales) if its labour practices became more widely known.

Consequently, it is important that ethics are embedded in an organisation's business model, organisational strategy and decision-making processes. Moreover, ethical issues are particularly important when considered alongside aspects of sustainability.

## 4.1 Impact of ethics on strategy

Ethics may impact on strategy in various ways.

- (a) In the formulation of strategic objectives, some firms will not consider certain lines of business for ethical reasons.
- (b) External appraisal will need to consider the ethical climate in which the firm operates. This will raise expectations of its behaviour.
- (c) Internal appraisal: management should consider whether present operations are 'sustainable', ie, consistent with present and future ethical expectations.
- (d) Strategy selection: management should consider the ethical implications of proposed strategies before selecting and implementing them.

The Business Strategy and Technology Workbook (at Professional Level) identified a range of contexts in which ethical issues could arise, and such contexts could equally be relevant to the scenarios in your exam.

- **Marketing and the marketing mix:** for example, there could be ethical issues relating to the products/services being sold, the price at which they are being sold, or the way in which they are being promoted.
- **Manufacturing:** for example, relating to pollution and environmental ethics, producing defective or inherently dangerous products (such as tobacco), the use of child labour, and product testing (eg, testing on animals).
- **Purchasing and procurement:** for example, relating to human rights and working practices with supplier firms; or adopting fair contracting terms and conditions with suppliers (eg, Fair Trade principles).



### Context example: Ethics and competitive strategy

Although the way a company manages its supply chain – and the working practices adopted by its suppliers – could potentially be a source of ethical issues, this does not necessarily mean companies charging low prices for their products are treating their suppliers unethically.

The value fashion chain, Primark, has a business model focussed on offering the lowest prices on the high street. It also faces constant questions around how it can consistently charge lower prices than its rivals even though it sources its products from the same suppliers and factories as its rivals.

However, the head of Primark's ethical trading team, Paul Lister, points out that there are a number of simple explanations:

- Primark makes a lower gross margin on its sales than competitors; in the region of 10–13% compared to their competitors making up to 20%.
- It does not run expensive advertising campaigns; and the 'savings' made in that respect can be translated directly into a lower price.
- Primark buys in bulk and buys relatively simple clothing, meaning that suppliers can use streamlined production processes to make clothes in the most cost-effective way possible. In addition, Primark sometimes orders its goods out of season to get a better price for them.

Mr Lister points out: 'The strength of a brand's ethics is not about a price point. It's about whether you're prepared to work hard at ethics and recognise that sourcing in the developing world carries with it associated risks. It's then having the expertise to know what to look for, as opposed to going into a factory, ticking a box, and saying you've done an audit.'

Primark employs more than 60 people to manage its ethical trade programme and to undertake supplier audits. In 2014, it carried out 2,412 of these audits. Following the building collapse at the Rana Plaza garment factory in Bangladesh in 2013, Primark's supplier audit team now also includes a structural surveyor.

However, Mr Lister adds a note of caution when he points out that overseeing a supply chain requires collaboration, and isn't something that one company can do single-handedly. As he says, 'We can sort out individual issues within our supplier factories, but what we can't do is sort out a minimum wage.'

(Based on: Russell, M. (2016) 'Building ethics into a competitive long-term financial strategy', in, ICAEW Finance & Management Faculty, Special Report 53, Financial Strategy: Forecasting issues, June 2016)

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#### 4.1.1 Ethical supply chains

As a result of large corporate scandals, consumer pressure and government legislation companies are increasingly working to become more sustainable. However, despite pledges to protect the environment and ensure fair labour practices many of these companies risk being exposed to financial and social risks by suppliers lower down their supply chain. Many cases of unacceptable working conditions in factories supplying large multinationals, such as Apple and Amazon, have hit the headlines in recent years.

Governments and charities around the world continue to take measures to improve the transparency of supply chains and put an end to 'modern slavery'. In the UK, the Modern Slavery Act was introduced in 2015 and makes human trafficking, as well as the use of child or forced labour, an offence. Section 54 of the Act requires organisations that reach a minimum turnover threshold to report annually on the steps they have taken during the year to ensure that slavery and human trafficking are not occurring in their own business or in their supply chains. The government has also created an online registry where businesses can upload their most recently published statement.



#### Context example: The National Trust

For the year ending 28 February 2020 the National Trust published its Modern Slavery Act statement on its website. According to the statement, the National Trust and National Trust Enterprises are committed to 'ensuring modern slavery does not exist in its organisation or supply chains. We

constantly strive to develop, policy and procedures to manage the way we obtain our goods and services to keep our supply chains robust. To date we have had no reports of modern slavery within our organisation nor our supply chains [...] The Trust continues to assess the modern slavery standards of our key suppliers having implemented, in early 2020 more formal, automated, risk- based supplier due diligence process.'

Source: National Trust (n.d) *Modern slavery statement* [Online] Available from: <https://www.nationaltrust.org.uk/features/modern-slavery-statement> [Accessed on 13 July 2021]



### 4.1.2 Ethical dilemmas and stakeholders

Often, the key issue facing organisations is not so much the **number** of different stakeholder groups per se, but the fact that these different groups have **different interests** which can come into conflict with each other.

And the range of different stakeholders with interests in an organisation can create ethical issues for marketing managers in particular.

As Schlegelmilch (in a text focusing on ethics and marketing) points out:

This is due largely to the fact that their business function involves dealing with many different groups of people who have many, and sometimes conflicting, agendas ... For example, a company might want to move its plant to a country where the cost of labour is lower. This decision would save on production costs and increase profits and, thus, be in the best interest of its shareholders. However, a relocation to another country might create negative publicity because it will lead to unemployment for many of its domestic workers.



#### Professional skills focus: Applying judgement

Ethical issues are often not clear cut and there is unlikely to be a 'correct' answer to dealing with the issue presented in the scenario. Instead you should present a balanced argument to demonstrate that you understand the concerns held by various stakeholder groups.



#### Worked example: Company relocation

The board of a company is considering a strategic decision to relocate a production plant to a new country where the cost of labour is lower.

##### Requirement

With reference to the different stakeholder groups that will have an interest in the decision, assess whether this decision presents an ethical dilemma for the board.

##### Solution

The decision should reduce production costs, which should in turn increase profits and, therefore, it would appear to be in the best interests of the company's **shareholders**.

However, the relocation is likely to lead to unemployment for the company's **existing workers**, and could also have a knock-on effect on the local economy (for example, for any supporting industries). This will create negative publicity in the country where the production plant is currently located.

If the workforce is unionised, **trade unions** will try to save their members' jobs as far as possible. Equally, if the company is a major local employer, local politicians may try to persuade it not to relocate away from the area.

If the company is moving into a country with a poor human rights record, this could further damage the company's reputation - for example, by it (rightly or wrongly) being associated with the human rights abuses.

In this case, it appears that there is not one course of action which is in all the stakeholders' best interests. Therefore the board needs to balance the company's responsibilities to each of the different stakeholder groups, and decide how much importance should be given to one stakeholder's interests in relation to another.

In this respect, the board clearly faces a dilemma. Importantly, however, this does not mean that the course of action it subsequently chooses will necessarily be unethical, and so the decision does not explicitly present the board with an ethical dilemma.

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## 4.2 Ethics and sustainability

We have already discussed issues around social responsibility and sustainability in the chapters Strategic performance management and Finance awareness, but it is worth acknowledging them again here because aspects of sustainability and ethics can be interrelated.

In particular, it is important to remember that the concept of 'sustainability' does not only relate to 'environmental sustainability'. The 'economic sustainability' component of the **triple bottom line** could be equally important in encouraging organisations to act in a way which helps them grow and prosper as a result of developing sustainable business practices.

In this respect, issues such as the health and safety of workers and paying workers a fair wage are becoming increasingly important. For example, while Apple's iPhones and iPads have become 'must-have' consumer items in many countries, a number of concerns have been raised about the working conditions of the employees in China who are making them, with allegations of excessive working hours, draconian workplace rules, and workers even being urged to sign an 'anti-suicide' pledge after a series of employee deaths in 2010.

Although health and safety measures do not necessarily add value to a company on their own, they can help to protect a company against the cost of accidents which might otherwise occur.

Moreover, if a company has poor health and safety controls this might result in, among other things, increased sick leave and possible compensation claims for any work-related injuries, as well as higher insurance costs to reflect the higher perceived risks within the company.

Equally, the issue of social responsibility in relation to consumers has been highlighted in recent years. The tobacco industry and the food and drink industry have received criticism in relation to the potential harm their products may cause to consumers.

Ultimately, if consumers cease to buy a product because they are concerned about the consequences of consuming it, that product will not be sustainable because it will not generate any sales. For example, concerns about the high level of sugar in the Sunny D orange drink forced Procter & Gamble to withdraw the drink's original formulation from the market.

Conversely, some companies do realise the importance of responding positively to environmental issues in order to protect and sustain their brand, and they can use sustainability issues to help maintain public trust in the brand.

For example, Toyota responded to environmental trends by successfully launching the Prius hybrid car, which supplements normal fuel usage with an electric-powered engine. The battery-powered electric engine starts the car, and operates it at low speeds. At higher speeds, the car switches automatically to a conventional engine and fuel. However, this combination saves on fuel compared to conventional cars and causes less pollution.

Similarly, environmental and social responsibility can provide marketing opportunities for companies, and companies can even achieve competitive advantage by addressing and accommodating their customers' ethical concerns. For example, Innocent Drinks has built its business on CSR ideals.



## Context example: Innocent Drinks

Innocent Drinks has based its business model around trying to 'leave things better than we find them'. As such the company strives to take full responsibility for the impact its business has on society and the environment, and to ensure that impact is positive.

In 2018, Innocent Drinks was certified as a B Corp – a company which has been independently assessed and found to meet the rigorous standards of social and environmental performance necessary for a B Corp certification.

In the press release accompanying the announcement about its B Corp certification, Innocent states the need to 'act truly responsibly' and with 'a genuine commitment to all of the people we set out to serve – the people who work here, the people who drink our drinks, and the planet upon which we live and do business'.

The company's strategy for trying to build a sustainable business, and having a positive effect on the world, has five main strands:

- **Brand** – Sustainability has always been a core part of the business. Since it started, the company has been guided by its values: to be natural, generous, commercial, entrepreneurial and responsible. The 'responsible' value is the daily reminder to each and every employee of Innocent's aim to leave things a little better than it found them.

The concept of sustainable nutrition then underpins all aspects of food production: with Innocent's aim being to lower the impacts associated with making its products, whilst ensuring they taste good and do its customers good.

- **Ingredients** – Fruits are the key ingredients for Innocent's products, so without good fruit the business will not be successful. However, as well as wanting its fruit to taste great, Innocent commits to buying it from suppliers who look after their environment and their workers, as certified by independent environmental and social organisations. Innocent pays a premium for fruit with the highest ethical accreditations, such as those from the Rainforest Alliance. Employees and independent auditors check standards on the farms Innocent uses.
- **Production** – Working with suppliers to improve water and energy efficiency, to reduce waste produced, and to increase recycling levels. Innocent also acknowledges that the need to reduce carbon emissions and climate change is directly relevant to its business. Its current sources of banana, mango, strawberry and pineapple all fall within areas that will be significantly affected by climate change, giving Innocent a strong commercial imperative to reduce carbon emissions.

Innocent also acknowledges that using resources more efficiently (and thereby using less of them) will save the business money too.

- **Packaging** – Using recycled, or renewable, material as much as possible, using the least possible amount of material per pack (whilst ensuring the packaging still does the job it is meant to), using material with a low carbon footprint, using material with a widely available sustainable waste management option.
- **Legacy** – Redistributing some of the wealth that the business creates to people who need it. Innocent donates a minimum of 10% of its profits each year to charity. The majority of these donations go to the Innocent Foundation which helps to fund rural development projects in countries where fruit comes from. Helping people who are dependent on subsistence agriculture get the most out of the natural resources available to them is an important part in helping them to have a sustainable future.

Given that firms are more likely to embrace sustainability if it brings them a financial benefit, it is important to note that introducing better environmental management systems can create 'win-win' situations. For example, if introducing environmental management systems can allow a company to continue to produce the same amount of product by using fewer resources, and generating less waste, this is both economically efficient and beneficial from an environmental and ecological perspective. In this context, the cost savings from more efficient resource usage and waste minimisation can be substantial.

#### 4.2.1 Sustainability and strategy

One of the key challenges sustainability presents for decision makers comes from having to incorporate longer-term (sustainability) issues alongside short-term issues. If they focus too much on short-term issues – in particular, profit – at the expense of the longer term this could undermine a company's **long-term reputation and prospects**.

Corporate reporting and performance measurement are often biased towards the short term. The fact that companies report their results on a yearly basis, and may be under pressure from shareholders and market analysts to deliver results, means they may be forced into measures or actions which boost profits in the short term, but which may create problems in the longer term and in doing so may threaten sustainability.

Although the challenges facing companies will vary according to their specific circumstances, the following points summarise some possible issues to consider in relation to social and economic aspects of sustainability, and which could also overlap with ethical issues.

##### Social dimension

- being seen as an attractive employer (which in turn can affect: ability to recruit high-quality staff, retain staff and staff know-how, and employee motivation)
- quality of working conditions (in own company, and across the supply chain)
- labour practices (labour/management relations, health and safety, training, diversity and opportunities, eg, equal opportunities)
- data protection and privacy
- risk of accidents (and subsequent litigation against the company)
- human rights (non-discrimination against minorities; use of child labour or forced labour; disciplinary practices, freedom for staff to belong to a union or other association)
- relations with society: contribution to local community
- integrity and image: not being involved with bribery and corruption, or anti-competitive prices (eg, price fixing)
- product responsibility: ensuring each product's health and safety for customers, honesty in advertising and communications with consumers

##### Economic issues

- business relations (security of business, relationship with banks and shareholders)
- supplier and customer structure: quality of relationships with suppliers and customers
- brand name: risk to reputation and sales resulting from negative publicity
- market position

**Ethical consumerism** – In relation to the sustainability of their sales, firms should also remember that, in most cases, consumers have a choice whether or not to buy their products. Individual consumers can make purchasing decisions based not only on personal interests but also on the interests of society and the environment. For example, they may boycott companies whose products are made by sweatshops or child labour, choosing fair trade products wherever possible. Moreover, some customers are prepared to pay more for products that are environmentally or socially responsible (fair trade, organic, etc) compared with cheaper, less responsibly sourced products.

However, if firms are going to portray themselves as ethical or socially responsible, for this to have any meaningful benefit, they must be genuinely committed to ethical principles, rather than just treating them as an 'ethical veneer'. As the US-based firm, Ethisphere - whose aim is to define and measure corporate ethical standards points out, truly ethical companies 'go beyond making statements about doing business ethically, and translate those words into action'.

#### 4.2.2 Corporate responsibility reviews

Increasingly, business executives are recognising that corporate responsibility is essential to their business, and that businesses have a duty to investors, employees, consumers, communities and the environment.

These views reflect a trend that has seen an increasing number of companies producing corporate responsibility reviews in which they report publicly on their social and environmental performance.

Earlier in the chapter, we noted BAE's response to the Woolf Report in developing an ethics programme to support responsible behaviour. The ethics programme is part of BAE's wider corporate responsibility programme.

As the Group's Corporate Responsibility Review notes: 'Creating a successful and sustainable business requires more than financial results. The Group places great importance not just on what we do, but how we do it. Responsible business is embedded within the Group's strategy.'

The Group's Corporate Responsibility (CR) objectives support it in progressing towards leading positions in ethics and safety. The Group also has programmes in place to promote diversity and inclusion, and environmental sustainability. BAE has identified these four areas of ethics, safety, diversity and inclusion, and environmental sustainability as being priorities which are crucial to its long-term performance.

'The Group's CR agenda covers the issues that have been identified as having the most potential to affect the long-term sustainability of the Group, by directly impacting the Group's reputation or ability to operate.'

#### 4.2.3 Sustainability assurance

We have already discussed CSR; sustainability; and integrated (social, environmental and economic) reporting in the chapters Strategic choice and Finance awareness but it is worth noting again that an increasing number of businesses are producing sustainability information in response to user needs and to meet regulatory requirements.

Similarly, organisations choose to get assurance on their sustainability information, to support views expressed in the annual report as part of the narrative disclosures, or in relation to separately produced corporate responsibility reports.

In some cases, firms may ask for assurance to enhance the credibility of their sustainability information more generally among external stakeholders.



#### Context example: EDF 'Blue' tariffs

For example, EDF Energy offers a range of so-called 'Blue' electricity tariffs, based on low-carbon generation sourced from nuclear power stations.

EDF does not promise that the electricity which individual 'Blue' customers use at home will have come directly from a low-carbon nuclear source, but rather it ensures that it obtains enough electricity in total from the low-carbon source to match every unit of electricity supplied to its 'Blue' customers.

However, rather than leaving its customers to take its own word that the electricity is being matched as promised, EDF has asked PwC to provide assurance that:

- the volume of electricity sourced from low-carbon generation matched the volume supplied to 'Blue' customers for the period under review; and
- the controls EDF has put in place will ensure that it obtains enough energy to match the volume of energy supplied to 'Blue' customers.

PwC subsequently provided reasonable assurance on these assertions to EDF using the framework provided by ISAE 3000.

On the promotional material for its 'Blue' tariffs on its website, EDF makes a point of telling customers it is important that they can trust EDF to supply them with electricity backed by low-carbon generation, so it has asked PwC to audit the control over the matching process 'so you don't just have to take our word for it'.

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#### 4.2.4 Public interest

An important element of the role of a professional accountant is serving, and being seen to serve, the public interest. This may be particularly true for auditors, given the role which an audit plays in giving the public confidence in a set of financial statements, but all professional accountants have a duty to act in the public interest.

However, determining what the public interest is may not always be as easy as it sounds.

Legally, private sector companies exist to serve their shareholders, not any wider public interest, and this view could lead to potential conflict with the idea that companies should adopt a wider public interest perspective.

For example, in the UK in 2013, global firms such as Starbucks, Google and Amazon came under fire for avoiding paying tax on their UK sales. The companies have argued, rightly, that everything they have done is legal, and the idea that firms would voluntarily pay more tax than they legally need to does rather contradict the objective of maximising shareholder value.

However, public opinion increasingly turned against the **tax avoidance** schemes used by the firms, leading some people to boycott the brands in question; for example, buying coffee from Costa instead of Starbucks. For these customers, the issue is that they feel the firms are acting in a way which is morally, if not legally, inappropriate.

Branding experts have pointed out that the reputational side of public opinion could be crucial to resolving these issues, because if a company with a strong brand damages that brand, it also damages its financial value. For example, following public pressure, Starbucks agreed to increase its tax payments in the UK.

Nonetheless, the debate around the firms' tax avoidance schemes serves to highlight that investors' interests are not the same as the public's interests.

In more general terms, the concept of public interest can also be difficult to determine because different sections of the public want different things. Consequently, there may be occasions when there may be no such thing as **'the'** public interest.

Equally, what the 'public' wants seems to fluctuate over time. For example, when a large supermarket moves into a small town, threatening the future of small, local businesses, some local people object, yet others still shop at the supermarket, taking advantage of the lower prices on offer. So, in such a case, what is 'the public interest'?

#### 4.2.5 Business sustainability

Our discussions of triple bottom line and corporate responsibility should have highlighted a key point about sustainability in a business context: that sustainability relates to the social, economic and environmental concerns of a business that aims to thrive in the **long term**. From a strategic perspective, there is little point in a business being profitable in the short term if it alienates customers, suppliers and/or staff in the process. By doing so, the business will weaken its chance of being profitable in the longer term.

In this respect, the idea of business sustainability is central to business strategy. In the chapter Strategic analysis of this Workbook we looked at the way organisations need to use their resources and capabilities to develop a **sustainable competitive advantage**. A company's ability to create and sustain a competitive advantage over its rivals is likely to be crucial to its long-term success.

Equally, a sustainable business needs an understanding of the changing business landscape and external environment so that it can respond and adapt to the opportunities and threats presented by it.

In this respect, the idea of sustainability should be seen as a strategic issue for almost every business

– for example, in relation to risk mitigation, strategic innovation and the development of new skills and capabilities.

Crucially, however, the concept of sustainability should encourage an organisation to consider long-term orientation in business decisions, rather than purely focusing on short-term (financial) information and metrics.

Short-term metrics may push managers towards making decisions that deliver short-term performance at the expense of long-term value creation. Equally, a focus on creating value for shareholders in the short term may result in a failure to make the necessary strategic investments to ensure future profitability.

By contrast, an increased focus on business sustainability will support decisions aimed at attracting human capital, establishing more reliable supply chains, and engaging in product and process innovation, even if those decisions do not necessarily maximise short-term financial performance and profitability.



#### Interactive question 3: DEF Airport

DEF Airport is a regional airport in country D, which is a European country. DEF's mission statement says:

At DEF Airport we aim to outperform all other regional airports in Europe by ensuring that we offer our customers a range of services that are of the highest quality, provided by the best people, and that conform to the highest ethical standards. We aim to be a good corporate citizen in everything we do.

In recent months, there has been increasing concern that passenger numbers are less than forecast and that DEF will fail to reach the revenue figure which had been forecast for the current year.

The Chief Executive is concerned about DEF's future strategy because he feels that, in general, airlines and their passengers are putting increased emphasis on lower costs and lower prices rather than quality, and DEF is no longer offering terms which are as competitive as some of its rivals.

However, the Commercial Director argues this pessimism is unjustified. He is currently at an advanced stage of negotiations with a large low-priced airline which is keen to use DEF as an entry point into country D. The airline does not currently operate any flights to and from the country, but feels country D offers it significant scope for growth.

The Commercial Director argues that if a deal with the airline can be signed this is likely to make good the shortfall in passenger numbers, and bring revenues at least back in line with forecast, if not ahead of forecast.

DEF's Director of Facilities Management pointed out that the airport has always sought to compete on the basis of the quality of the services it offers its customers. She expressed concern that if DEF starts hosting more low-priced airlines, and shifts its focus to minimising costs rather than upholding quality, this will change the whole culture of the organisation. She pointed out that DEF's mission statement specifically referred to its commitment to providing the highest quality and employing the best people.

However, the Commercial Director replied that the mission statement also said DEF would aim to outperform its competitors, and he believed its current performance suggested it wasn't doing this. Furthermore, he argued that if beneficial commercial opportunities became available DEF should take advantage of them, rather than letting the mission statement become some kind of 'business prevention' exercise.

The Chief Executive feels that both directors are making valid points, and points out it may be necessary for DEF to critically evaluate a number of different strategic options in the coming years in order to meet its strategic objectives.

However, the Chief Executive also highlighted the assertion in DEF's mission statement that it will aim to outperform all other regional airports. He questioned what analysis DEF is currently doing to assess whether it is outperforming the other airports, and what aspects of performance have been measured.

He reported that at a recent industry forum, the Chief Executive of one of the other regional airports in D argued that short-term metrics (such as revenue per passenger) are important, but airports cannot afford to overlook issues surrounding the environment and sustainability.

### **Requirement**

Evaluate the extent to which DEF's mission statement encourages it to develop a sustainable business model.

See **Answer** at the end of this chapter.

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## **4.3 Ethics, data and artificial intelligence (AI)**

On several occasions in this Workbook, we have highlighted that organisations are collecting and using increasing amounts of data to help their decision making (eg, 'big data'). Organisations have made use of data for many years - from census data used to target certain sectors based on socio- economic factors to supermarket loyalty cards generating databases for marketing purposes - but as we generate more and more data and technology evolves to be able to process it, finding effective ways to automate this processing has inevitably led to questions about how this data is being used. This also raises other issues for companies: Are they keeping data secure? Do they have appropriate measures in place to deal with cyber attacks? Are companies complying with data protection regulations in the way they use personal data?



In 2018, it emerged that Facebook had allowed a firm called Cambridge Analytica to harvest data not only from its users who had consented to sharing their data but also from others whose consent had not been obtained. This led to allegations that such data was being used as part of targeted political advertising and questioned the amount of trust people had in business and data.

The benefit of using technology is that it doesn't get tired or sick, it can handle significant volumes of data effectively without making mistakes and allows humans to get on with more complex and judgemental tasks. However, it still requires a human to set the parameters within which it operates.

The increased use of data evidently raises questions around fairness and bias. One of the benefits often given for the use of big data is that it allows companies to tailor products more specifically for customers. However, 'more tailored' for some could potentially equate to the exclusion of others (if customers are unfairly excluded from, or priced out of, markets). As such, companies need to be accountable for their use of big data, and to ensure that customers are treated fairly. For example, in the UK in 2018, there were allegations that insurance companies were quoting higher premiums for customers with names common among ethnic minorities.

Consider a financial institution such as a bank that is approached by numerous prospective customers for loans every single day. Beyond sourcing a credit history for the applicant, how does the institution decide on who gets a loan and who doesn't? Lending decisions made by humans can be affected by a variety of biases, consciously or otherwise, leading to decisions that could be considered unfair. Introducing an algorithm that takes facts not judgements into consideration should improve the fairness of this process, but the algorithm might still operate with bias if it uses source data on past lending decisions made by humans which contain historical biases against certain characteristics, such as income, postcode, ethnicity or gender, regardless of their actual ability to service the loan they are applying for.

There are many examples of data-driven decisions which have raised questions over the ethical credentials of the organisation concerned and whether they can be trusted to act in the public interest: in 2020, the algorithm used to generate school exam results in England and Wales was found to have used past exam results for each school to generate predicted grades that in some cases did not support current student attainment levels. In the same year in England, algorithms used by local authority social services departments were wrongly identifying children at risk of abuse in six out of ten cases, while similar technology was being used to make predictions of likely crime for police resourcing decisions which led to allegations of bias from civil liberties groups who felt unfairly targeted by these decisions (Public Finance, 2021).

Society expects professional accountants to act in a way that is a benefit to society as a whole, not for personal gain, and it is often referred to as acting in the public interest. There is no universally recognised definition of this term, but to help us understand what it means, let's look at professions, such as accountancy, which are trusted by society to act in this way and to self-regulate via a series of mechanisms including codes of ethics, professional development and a rigorous investigation and disciplinary regime. In recent years, the need to deploy professional scepticism has encouraged accountants to start to challenge and question things that they come across in their daily lives, including how data is used. The standards of expected behaviour for a professional accountant are often considered in terms of whether they support the public interest.

Companies may adopt voluntary codes of conduct but are only obliged to act in a certain way by legislation and regulation, including how data is used legally (or otherwise, as alleged in the Facebook example above). However, the ethical use of data is an area that is not yet fully regulated as it is both emerging and complex: some forms of data are

suitable for sharing while other forms of data are not: how do you tell the two apart and who should make that decision in the absence of any firm legislation? If there is no opportunity to self-regulate, how do you encourage an organisation to go beyond the core requirements of the law and become self-critical by deploying suitable levels of scepticism in relation to the appropriateness of how they make use of the data they collect? The absence of answers is currently creating a gap that could be exploited for personal or organisational benefit and which could fail to support the public interest.

The ICAEW White Paper *AI in Corporate Advisory* notes that, in November 2018, the global investment manager BlackRock suspended AI-based liquidity-risk models because the quantitative analysts who had developed them could not explain how they worked to their bosses. This raised the question of whether the company could meet its fiduciary duty to clients if the AI-based decision-making processes were unclear.

The ICAEW's White Paper highlights that deep questions about the transparency, monitoring and auditing of algorithm decision making remain across all business sectors. And a survey by Deloitte (*Digital Disruption Index, 2019*) found that fewer than half of the survey respondents had a policy in place for the safe and ethical use of AI.

Clearly there are issues with the abuse of technology and data that, in the wrong hands, is either poorly populated with biased data or just poorly interpreted. There are also many ways that data can be managed appropriately. Guidance exists in many forms: for example, the Alan Turing Institute supports research groups tasked with considering how data science and AI should be used for the good of society. The UK government has created guidance on how to use AI in the public sector, including how to use AI ethically and safely via its Data Ethics Framework, which also includes guidance for public sector organisations on how to use data appropriately and responsibly when planning, implementing, and evaluating a new policy or service. Ultimately, this is an area of emerging importance which will continue to push the boundaries of trust and the public interest as both society and technology evolve.



#### Interactive question 4: Flimsy plc

Flimsy plc, which is based in the UK, has recently been the victim of a ransomware cyberattack.

Hackers have attacked a database which had not been adequately secured, which contained – amongst other things – personal data about Flimsy's customers. The data from the database has been deleted, but the hacker has left a ransom note, claiming they have retained a copy of the data and will return it in return for a payment, made in bitcoin, to a specified account. Flimsy plc does not have a back-up of the data.

##### Requirement

Analyse the ethical issues this incident raises for Flimsy plc.

See **Answer** at the end of this chapter.

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#### 4.3.1 Data, ethics and bias

Bias can be both **intended** and **unintended** – if we consider the difference between fraud and error, we know that the difference between these is usually related to intent, but can we excuse unintended bias in the same way we might excuse an unintentional error as opposed to a calculated and deliberate fraud? The law is fairly clear about what must and must not be done in certain situations, but how can we make sure we don't make unintentionally biased decisions?

As accountants, we can use **technical skills** to support decisions that reflect the law and best practice, plus we are used to the idea of deploying **professional scepticism** in our everyday work and beyond when challenging judgements and evidence, so we can use our awareness of ethics and scepticism to help with new developments like data-driven decisions made by AI and develop something like a 'bias radar'.

It is important to understand the ways that bias can creep into data-driven decisions. We have already looked at some of the problems associated with technology and data - here are some further examples of data bias:

- Collecting data from a **known biased population** which is based disproportionately towards a specific:
  - age group
  - income group
  - geographic location
  - period of time
- **Analysis and presentation to emphasise a preferred result** in favour of the preparer:
  - **Deliberate manipulation of results** and how they are **presented**, disclosing only the preferred results (in other words, reporting findings that support what you wanted to see, not what you actually found)
  - Claiming **correlation as causation** (for example, there is correlation between ice cream sales and the number of shark attacks across the year, but this reflects the fact that in warmer weather, people are more likely to eat ice cream and swim in the sea, not that eating ice cream attracts sharks)
  - Claiming **spurious results as valid** (such as using a smaller sample which is not statistically significant to make significant decisions)
- *Data presentation:*
  - **Truncating the Y-axis on a graph** can make visual representations look misleading (for example, showing the average height of people across different countries but only starting the Y-axis at 5 feet tall will show a disproportionate variation which may be visually misleading)
  - **Truncating the X-axis on a graph** can present similar problems (for example, plotting time-series trends across shorter and longer timeframes respectively can make the same line of data appear shallower or steeper)

Being aware of these types of bias (whether they are intended or unintended) will help to reduce the risk that data-driven decisions are made using flawed or incorrect logic.

### What other kinds of bias exist?

Here are some examples of data bias:

- We've already covered the idea that only collecting data from a specific population can create biased results - this is known as **selection bias** (and introducing yourself into the population under scrutiny can also create what's known as self-selection bias)
- **Observer bias** describes the phenomenon of recording what was observed during the process of gathering evidence, which may not be an entirely accurate record of what actually happened
- In cases when data is scrutinised without access to all its potential constituent variables, this can lead to what is called **omitted variable bias**
- **Cognitive bias** is used to describe any failure of judgement when attempting to form a conclusion about a set of data
- **Survivorship bias** refers to the way that only data from successful enterprises are used for decision making when the inclusion of those that have failed is also required for a more representative view of the population



## Context example: Survivorship bias

In business terms, this could be illustrated by an investment analyst tracking shares in a specific industry for investment purposes without taking into account shares for companies from the same industry which have gone bust. There are other illustrations of survivorship bias that perhaps tell this story better. During the second world war, allied aircraft returning from combat missions were inspected for bullet-holes from enemy anti-aircraft fire and those areas with the heaviest damage were reinforced to make the planes less vulnerable.

However, such analysis failed to take into account the fact that a number of planes would have been shot down and never returned for inspection. The work of Hungarian statistician Abraham Wald concluded that in places where returning planes did not have bullet-holes, these were likely to be the most vulnerable areas on the aircraft as those planes that returned had avoided being hit there (and by the same logic, it was assumed that those shot down had been hit in these areas). Following on from this, reinforcements were subsequently made to areas without bullet-holes.

Only focusing on the survivors may tell you about those who survive, but not necessarily why they survived (and why the others failed).

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### Bias in codes of ethics

In the Handbook of the International Code of Ethics for Professional Accountants (IESBA, 2021) the Code talks about both **conscious bias** and **unconscious bias** which could have a detrimental effect on the professional accountant's ability to display sound judgement when reaching ethical decisions.

The following types of bias are covered in the Code:

- **Anchoring bias**, which is a tendency to use an initial piece of information as an anchor against which subsequent information is inadequately assessed.
- **Automation bias**, which is a tendency to favour output generated from automated systems, even when human reasoning or contradictory information raises questions as to whether such output is reliable or fit for purpose.
- **Availability bias**, which is a tendency to place more weight on events or experiences that immediately come to mind or are more readily available than those that are not.
- **Confirmation bias**, which is a tendency to place more weight on information that corroborates an existing belief than information that contradicts or casts doubt on that belief.
- **Groupthink**, which is a tendency for a group of individuals to discourage individual creativity and responsibility and as a result reach a decision without critical reasoning or consideration of alternatives.
- **Overconfidence bias**, which is a tendency to overestimate one's own ability to make accurate assessments of risk or other judgments or decisions.
- **Representation bias**, which is a tendency to base an understanding on a pattern of experiences, events or beliefs that is assumed to be representative.
- **Selective perception**, which is a tendency for a person's expectations to influence how the person views a particular matter or person.

Actions that might **mitigate** the effect of bias include:

- Seeking advice from experts to obtain additional input.
- Consulting with others to ensure appropriate challenge as part of the evaluation process.
- Receiving training related to the identification of bias as part of professional development.

(IESBA Code s.120.12 A1-3)

Possible areas for exam questions

In an exam question, you may be asked to explain or identify unethical behaviour in data analysis from a series of situations – for example:

- Using **data analysis** to identify bias in data capture
- Explaining why **data capture** methods are biased
- Identifying and explaining inappropriate data analysis **methods**
- **Manipulated trends** in visualisations

Sources: IESBA Code (2021) *Handbook of the International Code of Ethics for Professional Accountants* [Online]. Available at: [https://www.ifac.org/system/files/publications/files/IESBA-English-2021-IESBA-Handbook\\_Web.pdf](https://www.ifac.org/system/files/publications/files/IESBA-English-2021-IESBA-Handbook_Web.pdf) [Accessed 30 June 2022]

Statology (2021) *Correlation Does Not Imply Causation: 5 Real-World Examples* [Online]. Available at: <https://www.statology.org/correlation-does-not-imply-causation-examples/> [Accessed 8 July 2022]

#### 4.4 Potential conflicts between ethics and business

One of the key sources of ethical issues facing accountants in business is the prospect of business strategies being proposed which could conflict (either in full, or in part) with ethical principles.

Potential areas for conflict between ethics and business strategy include:

- (a) **Cultivating and benefiting from relationships with legislators and governments:** Such relationships may lead politicians to ignore the national interest (eg, of the people who elected them) to further their own personal interests. A related issue here could be managers bribing people to help their company win contracts or gain business.
- (b) **Fairness of labour contracts:** Firms can use their power to exploit workers, including child labour, and subject them to unethical treatment in areas where jobs are scarce.
- (c) **Privacy of customers and employees:** Modern databases enable tracking of spending for marketing purposes or discriminating between customers on the basis of their value. Staff can be subject to background checks and monitored through their use of email and the location of their mobile phones.
- (d) **Capturing and storing data:** More generally – and as noted earlier – as the volumes of data available to organisations increase, there could be issues around the way companies capture and store data. This could also be an issue in the context of cyber security – if an organisation is not holding personal data securely, and that data is subsequently hacked.
- (e) **Terms of trade with suppliers:** Large firms may pay poor prices or demand long credit periods and other payments from weak suppliers. This has been a particular criticism of large retail food stores in North America and Europe, who are blamed for the impoverishment of farmers at home and in developing countries.
- (f) **Product and production problems:** These include the environmental impacts of the production itself, product testing on animals or humans, the manufacture of products with adverse impacts on health and the impact on the environment when products are thrown away.
- (g) **Supply chain:** Remember that a company's reputation for ethical conduct isn't founded solely on its own internal activities. Increasingly, stakeholders are looking at the behaviour of other organisations a company interacts with – particularly in its supply chain. Continuing to use suppliers which are known to employ child labour, treat workers harshly, or pollute

local environments can damage a company's reputation and brand.

- (h) **Prices to customers:** Powerful suppliers of scarce products such as energy, life-saving drugs and petrol, are able to charge high prices that exclude poorer individuals or nations. Examples include anti-AIDS drugs to Africa and purified water to developing countries.
- (i) **Managing cross-cultural businesses:** Different countries of operation or different ethnic groups within the domestic environment can present ethical issues affecting what products are made, how staff are treated, dress conventions, observance of religion and promotional methods.
- (j) **Marketing:** There is the basic argument that marketing persuades people to buy what they don't need. However, this stance assumes superiority of judgement over the consumers who buy the products. A key issue is the ends to which marketing is put. Marketing can be used to promote ecologically responsible ways of life, but it can also be used to promote unhealthy products such as cigarettes, alcohol and fatty foods. Some promotion techniques have also been criticised for attempting to brainwash consumers, encouraging anti-social behaviour and upsetting observers.

More generally, misleading statements made to consumers, for example around the characteristics of benefits of products, can also create ethical issues.

- (k) **Tax strategy:** Although tax avoidance is legal, it is viewed by some as unethical. From a business perspective, a company's primary objective should be to maximise the value it delivers for its shareholders. One way it can help to do this, is by keeping its tax costs to a minimum – within the realms of what is legal. Therefore, structuring a multinational business so that its profits are taxed in countries with low tax rates could be seen as good governance from a business perspective.

However, paying a 'fair' amount of tax in the countries in which they operate, is seen as the socially responsible thing for a company to do – because taxation provides the funds for public services such as healthcare, education and public investment in infrastructure. As such, tax avoidance strategies could damage a company's reputation or damage public trust in them, if the public believes that by avoiding tax a company is also avoiding its social obligations.



### Interactive question 5: Electrical manufacturer

RRR Co manufactures electrical products. It is based in Erewhon, a European country, with a well- developed economy.

In the last four years, RRR has suffered from decreasing profits due to increased competition from imported products. These imports have reduced its market share. RRR has always stressed that it has an 'ethical business' policy which is based on the following aspects:

- All of RRR's products are sourced and made exclusively within Erewhon.
- RRR sells all its output within Erewhon.
- RRR pays high regard to its employees' working conditions and strictly adheres to all legislative requirements.
- RRR has stated its commitment to the principles of fair trade although it does not currently trade with any developing economies.

Market research indicates that RRR's customers and shareholders value its ethical business policy.

RRR's procurement manager has identified several suppliers in country Y, which is a developing economy. Suppliers from country Y could supply components to RRR at a price which would undercut its existing domestic suppliers within Erewhon by 40%.

If RRR bought from the suppliers in Y, it would enable it to significantly reduce its product costs and compete on price against the imported products which have been reducing its market share.

RRR's procurement manager believes the reasons for the low prices of the suppliers based in Y are:

- (1) Y's labour costs are 60% lower than those in Erewhon. Y's labour laws allow children from 11 years of age upwards to work in factories, whereas in Erewhon, no one under the age of 16 can work in a factory. Y has a national minimum wage for adults which is only 15% of the national minimum wage for adults in Erewhon. Y has no national minimum wage for people under the age of 18.
- (2) Erewhon has extensive health and safety legislation which, it is estimated by RRR's Management Accountant, adds approximately 20% to its products' costs. Y has little health and safety legislation.

### Requirement

Advise RRR whether the four aspects of its 'ethical business policy' could cause concerns for its shareholders.

(Assume that the components are **not** sourced from suppliers in Y when answering this question.)

See **Answer** at the end of this chapter.

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### Ethics and change

Ethical issues can arise in change programmes, for example, over whether staff are treated reasonably or fairly during the changes.

It can often be difficult to monitor whether a company (or its staff) are acting ethically during periods of rapid change, so accountants may need to be particularly vigilant during such times.

Companies which are looking to enter new businesses, markets or channels may make speed a priority - to be the first with the product, to capture new customers and markets, and to seize market share as sales and order fulfilment channel opportunities arise. Nonetheless, it is important that they do not let this need for speed become a justification for acting unethically.

#### 4.4.1 Ethical failings and audit firms

Although the focus of this chapter is predominantly on the ethical issues which could be faced by an accountant in business, the following case example highlights how potential conflicts between ethics and business strategy also affect accountants in practice.



#### Context example: Ethical failings

'Developments in audit 2019' was published by the Financial Reporting Council (FRC) in November 2019 as part of its ongoing remit to provide transparency and integrity in business. This report specifically highlighted the issues facing the auditing profession in the wake of corporate reporting scandals such as Carillion and Patisserie Valerie.

The FRC reported that audit quality standards are not at the level they should be, with the UK's biggest seven firms failing to meet the FRC's own 2019 inspections target for FTSE 350 entities of 90% of audits being classified as good. The main criticism of auditors was the

failure to challenge management in subjective areas such as long term contracts and items held at fair value, although the FRC also identified many shortcomings in basic audit practice for issues such as revenue that were described as 'worrying'. There was also an apparent disconnect between the audited financial information and the supporting disclosures that the FRC felt was not adequately supporting the users of audited information, such as those relevant to the assessment of an entity's going concern status.

The response from the FRC was to levy a significant increase in punitive fines for missing these quality targets and introduce greater scrutiny of firms who were involved in some of the financial casualties of 2018/19. The report also discusses the future of audit in the wake of recent reviews, such as those published by the Competition and Markets Authority (CMA), Kingman and Brydon. The FRC will eventually be replaced by a stronger regulator that can enforce higher standards in audit, reporting and governance (the Audit, Reporting and Governance Authority or ARGA) and there will be broader debate around the need for audit to be considered a profession in its own right, as opposed to being part of the role of the professional accountant.

As quality is such an essential part of the audit, failures of this kind represent an ethical issue due to the poor levels of scepticism displayed from inadequate levels of management challenge and an apparent inability to display professional competence and due care.

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### Context example: Carillion

One of the many outcomes of the Carillion collapse was an investigation by the FRC to determine whether its external auditors were responsible for any professional shortcomings and if any punitive action should be taken.

In May 2022, the FRC concluded that a number of employees from Carillion's external auditors had colluded to create fictitious evidence which would have been necessary to support the auditor's report but, at that time, did not formally exist. Draft meeting notes from the appropriate time were subsequently recovered and used to manufacture evidence which purported to be in existence at the time the auditor's report was signed and which ultimately went into the audit documentation submitted for inspection by the regulator.

Fines and penalties were issued to staff from the partner down to the 25-year-old audit junior whose draft meeting notes had become the centre of the FRC's investigation. The audit junior, still studying for their professional exams, was fined £25,000 and suspended from working for two and half years. This prompted a debate about culpability and the abuse of power within the audit firm - was the audit junior guilty of not pushing back against the hierarchy and questioning the legitimacy of what he had been asked to do, or was he placed in an impossible situation where he had no choice and felt compelled to act for the sake of his career?

What would you do and how could you protect yourself from suffering a similar fate? The fact that the audit junior kept records of all the relevant events and decisions was important, as that can help to provide mitigating circumstances (although it is ironic that these same records were what was used to create the manufactured evidence which ultimately led to the sanctions mentioned above).

When situations such as this are occurring, it is vital that actions and their consequences are considered before they occur. This is where strong ethical guidance by firms, coupled with a willingness to act from staff, means that the courage to make the right choice (or simply avoid making the wrong one) is emphasised. Even after the event, taking the Carillion case above as an example, having manufactured the fictitious evidence, the audit junior still could have decided to raise concerns at work instead of keeping quiet. Ethical advice



should stress the importance of being courageous and doing the right thing, instead of just phoning the ethics helpline.

Source: Rutter Pooley, C. (2022) KPMG's Carillion case should worry juniors across the City [Online]. Available at: <https://www.ft.com/content/8bd9587b-e5df-4b68-a108-8bafeddc9669> [Accessed 7 July 2022]

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## 4.5 Ethical issues in the exam

Ethical issues have already been examined at Professional Level. However, at Advanced Level you will be faced with **more complex situations**. More emphasis will be placed on your ability to use your **judgement** in the light of the facts provided, rather than testing your knowledge of the ethical codes and standards in detail. In some instances, the correct action may be uncertain and it will be your ability to identify the **range of possible outcomes** which will be important rather than concluding on a single course of action.

You should also be aware that the term 'ethics' will be used in a much broader sense than it has been in the earlier Assurance and Audit and Assurance exams. It is likely to be combined with financial **reporting**, **business** and **tax issues** where you may be required to assess the ethical judgements made by others, including management. You may also be asked to consider the issue from the point of view of both the accountant in practice and the accountant in business.

### 4.5.1 Ethical issues

Although the precise nature of the ethical issues you will be expected to consider in your exam will vary according to the context of the case study scenario, possible ethical problems that you may find in scenarios include:

- (a) the impact of ethics on strategies and strategic choice
  - (b) conflicts of interest among stakeholders
  - (c) attempts to mislead key stakeholders (either by disclosure or omission of information)
  - (d) issues in relationships with vendors, suppliers, contractors, joint venture partners or other third parties
  - (e) mistreatment of staff (for example over pay, or in relation to dismissal/redundancy, equal employment opportunities or discrimination)
  - (f) questionable accounting or commercial business practices
  - (g) inappropriate pressure to achieve results
  - (h) conflict between the accountant's professional obligations and the responsibilities to the organisation
  - (i) lack of professional independence, eg, personal financial interest in business proposals
  - (j) actions contrary to law, regulation and/or technical and professional standards
  - (k) unsafe or socially undesirable manufacturing processes
  - (l) product quality and/or safety
  - (m) CSR and sustainability issues
  - (n) corporate governance: the quality and behaviour of the board; corporate governance issues could also involve issues like the integrity of the management accounting control system, the existence of internal controls and the integrity of management and staff
- Some of these issues may not be clear-cut. When assessing them, you need to develop a balanced argument, using appropriate ethical language and discussing relevant professional principles.

#### 4.5.2 Recommended approach

The following is a suggested list of factors to consider when tackling questions involving ethical issues.

- (a) Is there a legal issue (criminal or civil law)?
- (b) Do any other codes or professional principles apply? (Eg, is the individual with the ethical dilemma a professional accountant?)
- (c) Upon which stakeholders does the decision/action impact?
- (d) What are the implications in terms of:
  - **Transparency** - Is the situation characterised by integrity, openness and honesty? Would a third party construe it as honest and straightforward?
  - **Effect** - Who does the situation potentially affect or hurt? Have the interests of all stakeholders been considered?
  - **Fairness** - Would the situation, or proposed course of action, be considered fair by those affected, and by third party?
- (e) If the proposed action/decision is not taken, what are the issues?
- (f) What are the alternative actions that could be taken and what are the consequences of each course of action?
- (g) Are there any sustainability issues?

#### 4.5.3 Weaknesses to avoid

Key weaknesses in answering ethical questions include:

- (a) failing to identify the ethical issue (eg, transparency)
- (b) failing to use ethical language
- (c) quoting chunks of the Code of Ethics without applying it to the scenario
- (d) failing to identify appropriate safeguards
- (e) applying professional accountants' ethical codes to individuals in the scenario who are not accountants
- (f) failing to distinguish between the ethical responsibilities of the individual and those of the organisation
- (g) concluding by asserting an opinion that is not supported by clear justification on ethical grounds
  - stating 'X should be done because it is right' is insufficient



#### Professional skills focus: Concluding, recommending and communicating

It is always good practice to end your discussion of ethical issues with a conclusion. Do not use the concluding paragraph to repeat the content of your earlier discussion but instead use it to pull together the strands of your argument and to state your final position on how the ethical dilemma is best resolved.

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#### 4.5.4 Distinguishing ethical and commercial issues

It is also important that you can distinguish between the ethical issues and the commercial issues which an organisation is facing in a case study scenario. Ethical issues can usually be described as issues under the following moral principles.

**Fairness:** This means treating someone as they deserve to be treated or as you would wish to be treated if you were in their position. Therefore discrimination, poor pay, summary dismissal or refusing reasonable requests for assistance are unfair. Deliberately distorting competition or taking advantage of a customer's ignorance or desperate position is unfair. Some of these are also illegal,

and many would give rise to commercially damaging publicity. However, these things happen. But society recognises the practices as ethically wrong and wants to stamp them out.

**Justice:** This means going through a proper process, involving weighing up the evidence and arguments and coming to a balanced decision and a measured response. Therefore things like sacking someone without hearing what they have to say, or ignoring their side of the story, is unjust. So is punishing someone harshly for a minor wrong, even if the rules lay down that punishment. In such a case, the rules and the punishment are both unjust.

**Honesty and straightforwardness:** This is as basic as telling the truth and not withholding important information, or trying to use loopholes to escape responsibilities. It also covers taking assets of value belonging to other people. This principle covers things like corruption, misrepresentation, deliberately misleading wording, and selling someone something unsuitable.

**Duty, responsibility and integrity:** As a citizen you have duties – such as to obey the law and report crime. As an employee you take on other duties that flow from your job and you are paid to do them and put in a position of trust by your superiors or the people that appointed you into your role.

Therefore you must put personal interest aside and act as the role requires you to do. Any attempt by you to make someone else forget their duty and responsibility, such as by making bribes or threats, is also an unethical action by you.

# Summary

Tick off

Business ethics identify the standards of behaviour expected in the conduct of business.

Acting unethically is likely to damage an organisation's brand or reputation, and could thereby damage its competitive position. As a result, organisations need to act ethically, and be seen to be acting ethically. Many have addressed this by publishing ethical codes.

Ethical decisions and business decisions are often linked, particularly where management decisions involve a trade-off (or potential conflict) between economic and social performance. Acting ethically may sometimes restrict short-term profits, but it should enhance longer-term shareholder value (compared to a less ethical course of action).

In many cases, ethical issues are linked to corporate social responsibility and sustainability. Business executives are increasingly recognising that corporate responsibility is essential to their business, and that businesses have a duty to investors, employees, consumers, communities and the environment.

The Code of Ethics establishes five fundamental principles which should direct the behaviour of professional accountants: integrity; objectivity; professional competence and due care; confidentiality; and professional behaviour. It is the accountant's duty to comply with these principles in the face of any threats to them.

If a professional accountant believes that unethical behaviour is occurring in business, the accountant has a responsibility to investigate the courses of action available to try to resolve the ethical issues involved.

In relation to an audit (or assurance) engagement, the principles of the Ethical Standard are also important: integrity, objectivity and independence.

# Further question practice

## 1 Knowledge diagnostic

Before you move on to question practice, complete the following knowledge diagnostic and check you are able to confirm you possess the following essential learning from this chapter. If not, you are advised to revisit the relevant learning from the topic indicated.

Confirm your learning	
1.	What are the possible ethical stances an organisation can adopt? (Topic 1)
2.	Do you know the fundamental principles of the Code of Ethics? (Topic 2)
3.	What are the threats to the fundamental principles of the Code of Ethics? (Topic 2)
4.	What safeguards can be employed to guard against the threats to the fundamental principles? (Topic 3)
5.	What impact can ethics have on business strategy? (Topic 4)

## 2 Question practice

Aim to complete all self-test questions at the end of this chapter. The following self-test questions are particularly helpful to further topic understanding and guide skills application before you proceed to the next chapter.

Question	Learning benefit from attempting this question
1 MSA	This question tests your ability to apply the Code of Ethics to a scenario. You need to assess whether the Finance Director's suggestion to move the corporate headquarters is a breach of Code of Ethics. Ethics is tested in every SBM&L exam and the Code of Ethics can provide a useful framework for your response.
4 Groundman Co	This is a comprehensive scenario-based question. You need to evaluate the ethical challenges faced by Groundman if it bids for a construction project. Your answer should address the ethical principles being challenged, and should also provide an overall recommendation, as to whether Groundman should accept the contract. This is an exam standard question and your answer should be practical and pragmatic.

Once you have completed these self-test questions, it is beneficial to attempt the questions from the Question Bank for this module. These questions will introduce exam style scenarios that will help you improve your knowledge application and professional skills development before you start the next chapter.

Refer back to the learning in this chapter for any questions which you did not answer correctly or where the suggested solution has not provided sufficient explanation to answer all your queries. Once you have attempted these questions, you can continue your studies by moving on to the next chapter.

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# Self-test questions

Answer the following questions.

## 1 MSA

MSA is a public company that has its corporate headquarters in Asia. It is listed on the London Stock Exchange.

Its latest annual report was criticised in a leading international financial newspaper because of its 'exclusive focus on the interests of shareholders which ignored any other interested parties'.

MSA was established over 150 years ago and, at that time, its purpose was importing and exporting commodities between the UK and a number of Asian countries.

Since then, the nature of MSA's business has changed radically and it is now a property company with investments in many countries. In the last financial year, MSA managed properties valued at £800 million. MSA does not have a mission statement.

MSA's Financial Director is a Chartered Accountant. He has suggested that the corporate headquarters be moved from Asia to London for the following reasons.

- London is a major international financial centre whereas its current host country is not. It would be easier for MSA to arrange finance from a London base and some of its transactions costs would be cheaper.
- MSA's business takes place in 28 different countries. None of these countries contributes more than a 5% share of MSA's business and there is no particular reason for MSA to be based in one of them.

The board has agreed to this proposal and is considering using a change agent to help it in this process.

MSA has decided that when the corporate headquarters is moved to London - within the next 12 months - 80 employees in Asia would lose their jobs. Their prospects for finding a replacement job are not good.

### Requirement

Assess whether the Finance Director's suggestion to move the corporate headquarters is a breach of ICAB Code of Ethics.

## 2 Nadir Products

John Staples is the Finance Director of Nadir Products, a UK-based company which manufactures and sells bathroom products - baths, sinks and toilets - to the UK market. These products are sold through a selection of specialist shops and through larger 'do it yourself' stores. Customers include professional plumbers and also ordinary householders who are renovating their houses themselves.

Nadir Products operates at the lower end of the market and does not have a strong reputation for customer service. Sales have been slowly declining whereas those of Nadir's competitors have been increasing. In order to encourage increased sales, Nadir's board of directors has decided to pay senior staff a bonus if certain targets are achieved. The two main targets are based on profit levels and annual sales.

Two months before the end of the financial year the Finance Director asked one of his staff to check through the orders and accounts to assess the current situation. The staff member was informed that without a sudden improvement in sales before the year end the important sales targets would not be met and so bonuses would be adversely affected.

The Finance Director has proposed to other senior staff that this shortfall in sales could be corrected by taking one of the following decisions.

- (1) A significant discount be offered to any retail outlet which takes delivery of additional products prior to the end of the financial year.
- (2) Scheduled orders due to be delivered at the beginning of the next financial year be brought forward and billed before the end of this year.
- (3) Distributors told that there is a risk of price increases in the future and that it will be advisable to order early so as to circumvent this possibility.

The board is not sure of the implications associated with such decisions.

### **Requirement**

As a consultant, prepare a report for the board of Nadir Products examining the commercial and ethical implications associated with each of the three proposed options mentioned above.

## **3 Merson, Shiplock and Brown LLP**

You are Kirsten Flint and you work as an Chartered Accountant for Merson, Shiplock and Brown LLP (MSB), a firm of accountants and business advisers.

Heavitree Hercules plc (HH) is a UK-resident, listed company, operating in the mechanical engineering sector. It manufactures heavy lifting equipment such as cranes, bulldozers and hydraulic elevation platforms. HH is not audited by MSB.

The chief executive of HH was dismissed in April 20X3 following the publication of the financial statements for the year ended 31 December 20X2, which reported a loss. It took some time to find a new chief executive, but Kate Marston was appointed to this position in August 20X3.

Kate undertook a review of the business, following which she asked Fiona Dunlop, a partner in MSB, to attend a meeting. You attended the meeting with Fiona.

### **The meeting**

Kate opened the meeting: 'Fiona, thanks for coming to see me. HH has not been performing well recently, so I was appointed to carry out a reconstruction to return the company to profit. I do not believe that HH's staff have either the expertise or the objectivity to perform some of the key tasks I need, so I am seeking MSB's help. In confidence, I believe that some of my fellow board members are part of the problem and on completion of the reconstruction I intend to ensure that they are removed from the board.'

Kate explained that HH makes three different types of machinery: bulldozers; cranes; and hydraulic elevation platforms. Each of these is produced by a separate division. The three divisions are operated as separate profit centres and each is of approximately equal size.

HH's financial performance has declined in recent years. The Cranes Division has become loss making and the other two divisions are only making modest profits.

Kate also explained that following her business review it seemed clear to her that the Cranes Division should close, because it is only operating at 35% of capacity. However, a tender which the Cranes Division has submitted to supply machinery for a major infrastructure project has reached its latter stages, and there is a reasonable probability that it will be



successful. There are only two bidders (the Cranes Division and one bidder) remaining in the process, but it is likely to be another year before the customer makes a final decision. However, if the Cranes Division is successful, the contract will generate a substantial net cash contribution for the duration of the contract, expected to be three years.

Kate continued, 'Without the possibility of winning this new contract, the clear decision would be to close the division down this year. If we keep it open a further year and do not win the contract this will be disastrous because there will be another year of losses and closure costs will increase as well. However, if we win the contract, we can make decent profits for the three years of the contract and then close the division once the contract is completed.'

'The key question though is whether we should close the division now, or whether we should keep it open. I would like MSB's advice about this, and will let you have access to any management information you require, including forecast income statements and details of the contract, to help you make a recommendation in this matter.'

'Please report back directly to me, and do not inform any HH staff, including board members, about any part of what I have asked you to do. I expect complete confidentiality in this matter.'

### **Requirement**

Following the meeting, Fiona asked you to set out the ethical position for MSB arising from Kate's request to respond directly to her, without informing the board as a whole.

## **4 Groundman Co**

Groundman Co is a multinational civil engineering company which works for a large number of private companies and government departments around the world for whom it manages complex construction and civil engineering projects.

Groundman's senior management team believes that the company's ethical and socially responsible approach to business is an important factor which differentiates it from some of its competitors internationally. The 'Responsibility' section of the company's website states: 'Groundman's reputation is built on the values of conducting business in an ethical and socially responsible manner. We strive to respect the law, protect the environment and bring benefits to all the communities in which we work.'

Groundman's values are reinforced in its Ethical Code of Conduct, which also provides clear guidelines around the conduct and standards of behaviour expected from staff. All the company's employees receive training in its Code of Conduct as part of their induction process, and they are expected to adhere to the Code at all times. Groundman also ensures that its suppliers are aware of its ethical principles, and its procurement manager evaluates the social responsibility and ethical positions of all potential new suppliers before buying goods or services from them.

### **Railway construction project - Enoland**

Groundman is currently in the early stages of preparing a tender to bid for a contract in Enoland to construct a rail link between two of the country's major cities. Enoland is less developed than its neighbouring countries, and construction of the rail link is expected to bring major economic benefits to the country, as well as improving the living standards of its residents.

If Groundman wins the bid for the contract, it would appoint a range of local contractors and suppliers from Enoland, and will aim to ensure that the construction process minimises environmental impact and social disruption.

During negotiations about the tender (with government officials from Enoland) it has come to light that the Government's intended route for the railway will pass through several

remote villages. These villages will be destroyed as a result. Several areas of forest and other sites of wildlife interest will also be badly damaged along the route.

The Government's initial communications to the people of Enoland - outlining the proposal to build the rail link - have not provided any detailed information about the proposed route. The Government intends to offer minimal compensation to the villagers for the loss of their homes, and it considers the damage to the natural environment to be unimportant when compared with the benefits the railway can bring in developing Enoland's economy.

The Government has made it clear to Groundman, and to the other potential bidders, that any detailed information about the route and compensation arrangements is strictly confidential until the tender negotiations have been finalised and construction commences.

The Government has also stated that it would require Groundman to procure goods and services from the Government's preferred suppliers if it is awarded the contract. However, Groundman has made clear that it would expect to evaluate the social responsibility and ethical position of the suppliers before using them - in the same way that it does for the suppliers it uses on other projects. In response to this, a government official told Groundman that, if it drops the requirement to evaluate the Government's preferred suppliers, then it would almost certainly win the bid for the contract, provided it meets the other contract criteria.

### **Requirement**

Evaluate the ethical challenges faced by Groundman if it bids for the contract for the railway construction project with the Government of Enoland.

Your answer should address the ethical principles being challenged, and should also provide an overall recommendation, with justification, as to whether Groundman should accept the contract if it is offered to it by the Government of Enoland.

Now go back to the Introduction and ensure that you have achieved the Learning outcomes listed for this chapter.

# Answers to Interactive questions

## Answer to Interactive question 1

The notion of corporate social responsibility (CSR) is often interlinked with ethical issues, but increasingly the term CSR is being used interchangeably (in general parlance) with the concepts of ethics.

However, the two are not the same.

**Business ethics** can be defined as behaviour which supports justice, integrity, honesty and goodness, in the conduct of business. An important focus in business ethics is the way people and organisations behave, and how organisations conduct transactions – for example, whether they are acting fairly or honestly. In this respect, one of the primary goals of ethics can be seen as ‘preventing harm’.

**CSR** is a broader concept. It includes a commitment for businesses to act ethically, but also to act in a way that provides benefits to society. This benefit to society can be related partly to economic development, but CSR also extends to look at the ways companies deliver environmental improvements, community projects, or any other measures to improve quality of life. Therefore, the primary goal of CSR could be seen as ‘doing good’ or ‘acting as a good corporate citizen’ (in contrast to the ethics, whose primary focus is on ‘preventing harm’).

In this context, we can see that business ethics only forms one part of corporate social responsibility. A company also has **economic** and **legal duties**, in addition to its **ethical duties**. However, the major value of corporate social responsibility is that it encourages companies to take account of **social costs and benefits** when they are fulfilling their economic duties.

## Answer to Interactive question 2

A professional accountant has two ‘directions’ of responsibility: one to their employer and another to the highest standards of professionalism.

Many companies provide a Code of Ethics that all employees are expected to follow in order to maintain a culture of corporate ethics. Issues which could be included in such a Code of Ethics are:

- avoiding conflicts of interest
- compliance with laws and regulations
- rules about disclosure or avoidance of opportunities for personal gain through use of company property or position in the company
- confidentiality – extending to absolute discretion of all sensitive matters both during and after the period of employment
- fair dealing with customers, suppliers, employees and competitors
- encouragement to report illegal and unethical behaviour

The responsibilities also include the expectation that the accountant will act in shareholders’ interests as far as possible, and that they will show loyalty within the bounds of legal and ethical good practice.

In addition to an accountant's responsibilities to their employer, there is a further set of expectations arising from their membership of the accounting profession. In the first instance, professional accountants are expected to observe the letter and spirit of the law in detail and of professional ethical codes where applicable (depending on country of residence, qualifying body, etc).

In any professional or ethical situation where codes do not clearly apply, a professional accountant should apply 'principles-based' ethical standards (such as integrity, objectivity and professional competence) such that they would be happy to account for their behaviour if so required.

Finally, and in common with members of other professions, accountants are required to act in the public interest and that may involve reporting an errant employer to the relevant authorities. This may be the situation that an accountant may find themselves in at As hdene Homes. It would clearly be unacceptable to be involved in any form of deceit and it would be the accountant's duty to help to correct such malpractice if at all possible.

### Answer to Interactive question 3

**Sustainability and the long term** - Sustainability refers to the **social, economic and environmental** concerns of a business that aims to thrive in the long term. However, increasingly sustainability is also being linked to **ethics**, encouraging businesses to appreciate that a socially and environmentally ethical approach increases their ability to be successful in the long term.

**Measuring success** - DEF's mission statement clearly expresses an aim to be successful (by outperforming all other regional airports), but there is no indication whether this success is to be measured in the short or the long term. In the context of a sustainable business model, performance should not simply be measured in relation to the annual accounts, but should consider, for example, the effects that an investment project could have on profits in the longer term.

**Ethical standards** - The mission statement states that DEF aims to conform to the highest ethical standards, and to be a good corporate citizen. This expressed desire to follow an ethical approach suggests DEF should consider the impact which ethics can have on its **brand** and on how it is perceived but, in practice, it is not clear how far ethics will be **embedded in its strategy and decision-making process**.

The Commercial Director's attitude that DEF needs to be quick to take advantage of commercial opportunities when they become available suggests that he may be motivated more by short-term profit than by promoting a sustainable business model. If DEF is going to develop a sustainable business model, then the decision about whether to pursue any of these 'commercial opportunities' must be made with a view to longer-term consequences as well as any possible short-term gains.

**Investment appraisal** - A sustainable business model implies a holistic view of investment appraisal in which the wellbeing of society (social, environmental and ethical factors) are considered as well as maximising shareholders' wealth.

The fact that DEF's mission statement expresses the desire to be a **good corporate citizen** suggests it has recognised this balance between its own financial performance and the wellbeing of society.

DEF's strategic objectives also reiterate this balance: highlighting the need for financial security but also the need to minimise pollution and to reduce the audible and visual impact of the airport's operations.

Again, DEF is most likely to achieve its **social and environmental goals** if these are measured alongside other aspects of performance. Although the mission statement refers

to outperforming other airports and offering customers high-quality services, there could be a danger that performance against these aims is measured in the short term and in financially orientated terms; for example, simply focusing on increasing passenger numbers in the short term rather than looking at the longer term and, for example, looking at the environmental costs of the services being provided.

### Answer to Interactive question 4

**Objectivity** - The ethical principle of objectivity identifies the need to 'do the right thing', not allowing a conflict of interests or the influence of others to override decision making. In this case, the 'right thing' may be to refuse to pay. There is no guarantee that the data will be returned if Flimsy plc makes the payment, or that additional money won't be demanded in future. The threat that data will be destroyed presents an intimidation threat, and the risk is that this overrides the professional or business judgement of Flimsy's management team.

**Confidentiality** - If the data is exposed to unauthorised parties this could breach the fundamental ethical principle of confidentiality. This could be a particular problem for Flimsy here, because the database contained personal customer data, which is therefore subject to data protection regulations.

**Professional competence and due care** - The fact that the database had not been 'adequately secured' suggests that Flimsy had not taken appropriate measures to protect personal data, as it is required to do by data protection regulation. As such, Flimsy could face legal action as a result of the breach. However, from an ethical perspective, it appears that Flimsy has failed to take due care in ensuring the data is adequately secured.

**Communication; transparency** - Whether or not a ransom is paid, it is important that Flimsy is transparent about the breach. In particular, Flimsy should alert affected customers as soon as possible to warn them that their data has been compromised.

**Improving security** - The current breach has highlighted that Flimsy hasn't taken due care to protect its data. However, as well as dealing with the current issue, it also has a duty to protect data from any further breaches, and therefore it needs to take action to improve the security of its databases (and potentially its information systems more generally) as a matter of urgency.

### Answer to Interactive question 5

All of RRR's products are sourced and made exclusively within Erewhon

**Cheaper suppliers** - RRR's procurement manager has identified several suppliers in country Y who could supply components at a price which is 40% lower than that which RRR pays to its current, domestic suppliers.

If RRR continues to source all the components for its products domestically, its **costs will be higher** than if it sourced them from the suppliers in Y. In turn, this suggests that RRR's profits are likely to be lower than they would be if it used components imported from Y. It could also mean that RRR might lose sales if customers choose to buy cheaper imported rival products instead of RRR's. Therefore, this aspect of the ethical business policy could cause concerns for RRR's shareholders, because it conflicts with the aim of maximising shareholder wealth.

**Customer preference** - However, market research has also shown that RRR's customers value its ethical business policy. This means that RRR's customers may be prepared to pay more for its products, on account of its ethical business policy. Although it is unlikely that the extra amount that customers are prepared to pay will cover the 40% difference in cost, RRR should consider its customers' attitudes before making any change to the policy. For example, if there is a danger that customers will stop buying RRR's products if it discontinues its ethical

business policy, then such a change will also concern the shareholders because it will again conflict with the aim of maximising shareholder wealth.

RRR sells all its output within Erewhon

**Restricting growth** – Although RRR’s share of the market has been reduced in the face of competition from imported products, this restriction on its market development imposed by the ethical business policy prevents RRR from trying to replace any losses of revenue by expanding into foreign markets. In this respect, if the policy prevents growth – or even RRR’s ability to maintain its existing revenues – then it could cause concern because, again, it conflicts with the aim of maximising shareholder wealth.

Conversely, the policy could reduce risk, by avoiding exposure to the risk of foreign trade.

**Exporting and fair trade** – If RRR were to start exporting to developing economies, a fair trade policy might imply that it should sell its exports to those economies at more favourable terms than those which it would offer to developed countries.

In this respect, the combination of exporting to developing economies and a fair trade policy could again conflict with the idea of shareholder wealth maximisation.

Employees’ working conditions and adherence to legislative requirements

**Adherence to legislative requirements** – The element of the policy which states that RRR adheres to all legislative requirements should not cause any concerns for the shareholders.

RRR, like all other companies operating within Erewhon, has to comply with all relevant laws, and therefore RRR’s competitiveness shouldn’t suffer as a result of complying with the law. Equally importantly, if RRR doesn’t adhere to legislative requirements it could be fined, or may even be prevented from operating – both of which outcomes would be detrimental to the aim of maximising shareholders’ wealth.

Nonetheless, adhering to the law could still leave RRR exposed to international competitors who practise ‘social dumping’, by selling products from countries which do not have equivalent labour protection laws.

**High regard to employees’ working conditions** – It is not clear how far the ‘high regard’ which RRR gives to employees’ working conditions extends beyond its legal requirements, and what the cost implications of providing these favourable working conditions are.

If RRR’s policy simply means that it takes care to ensure that its working conditions comply with all legislative requirements, then this should not cause concern for its shareholders. However, if RRR’s working conditions exceed legal requirements – for example, by providing very generous wages and benefits – then this could be a concern for the shareholders. The shareholders might feel that RRR is

incurring unnecessary costs (by providing favourable working conditions above the legal requirements) which could be seen as conflicting with shareholder wealth maximisation.

Commitment to the principles of fair trade

**Paying a fair price for components** – ‘Fair trade’ principles would oblige RRR to pay a fair price for any inputs or components it sources from a developing economy. However, because all RRR’s inputs currently come from within Erewhon, they will not be affected by a ‘fair trade’ policy.

Therefore, this aspect of the policy should not currently cause any concerns for RRR’s shareholders.

### Overall impact of the policy

**Customer values** – The shareholders’ concerns with the policy are likely to arise if they feel it is making RRR’s products more expensive than competitors’ products, thereby leading to reduced margins.

**Basis of differentiation** - As the market research has indicated, RRR's customers value its ethical business policy. This could mean that some customers buy RRR's products because they share the values of the ethical business policy. In this respect, the policy may provide RRR with a means of differentiating itself from other manufacturers. As such, the shareholders should consider the extent to which the policy might actually increase their wealth rather than reduce it.

# Answers to Self-test questions

## 1 MSA

**Code of Ethics** – Code of Ethics highlights five fundamental principles: integrity; objectivity; professional competence and due care; confidentiality; and professional behaviour.

The Finance Director's suggestion will only constitute a breach of Code if it contravenes one of these principles.

Although the decision to move the headquarters has been agreed by the board of MSA as a whole, the Finance Director must take some responsibility for it: partly because he made the original decision, and partly because, as a member of the board, he shares in the collective responsibility of the board.

**Redundancies** – The relocation of MSA's headquarters to London will mean that 80 employees in Asia lose their jobs, and they are unlikely to be able to find replacement employment. Consequently, the decision to relocate is likely to have an adverse impact on these 80 employees. However, the fact that people are being made redundant does not necessarily make the decision to relocate MSA's headquarters unethical.

Sometimes difficult decisions have to be made in the best interests of an organisation.

**Fiduciary responsibility** – The directors are obliged to act in a way which is most likely to promote the success of the company for the benefit of its shareholders. In this case, it appears that there are genuine business reasons to relocate to London: for example, finance can be arranged more cheaply, and some of MSA's transactions costs would be lower.

Given this, it seems that the Finance Director is simply carrying out his fiduciary duty to the shareholders by suggesting the relocation.

**Objective decision** – There is no indication that the director was forced to suggest London as an alternative site for the headquarters, nor that he has any self-interest in doing so. Given that MSA's business is spread relatively thinly across 28 different countries, there is no apparent reason why a location in any of those countries would necessarily be more suitable for the headquarters than London.

Therefore, the decision to move to London appears to be made for objective business reasons: driven by lower financing costs.

Consequently, although the suggestion will have adverse consequences for the 80 employees who will lose their jobs, the suggestion does not appear to constitute a breach of Code of Ethics.

Nonetheless, the directors need to ensure that when the relocation does occur, the employees losing their jobs are treated fairly and in accordance with legal requirements; for example, in relation to the notice periods they are granted and the level of redundancy pay they receive.



## 2 Nadir Products

### Memo

**To:** Board Members, Nadir Products

**From:** A Consultant

**Date:** [today's date]

**Subject:** Proposed adjustments to revenue reporting

You asked me to comment on the commercial and ethical implications of suggestions that had been made about the value of this year's revenue. There was concern that a current decline in sales will adversely affect the level of bonuses paid to senior staff.

My first comment is that the **assumption behind the suggestions appears wrong**. The intended aim of the bonus scheme was to provide an incentive for senior staff to take appropriate action to improve performance. If performance has not improved, it would be perverse to adjust the numbers so that they receive the bonuses anyway. There is an element of **moral hazard** here: if the bonuses are, in effect, guaranteed and not dependent on improved performance, the incentive effect disappears and the scheme might as well be abandoned.

I understand that there is concern that staff will be adversely affected by the downturn in sales value. However, I must point out the **questionable nature of the suggestions** from an ethical point of view. It is likely that the detailed proposals will create a **conflict of interest** since each has the potential to disadvantage shareholders. It would be ethically inappropriate to pursue any course of action that reduced shareholder value in order to enrich senior staff.

I will now examine the individual proposals in turn.

**Discount for additional sales.** A discount is a popular promotional device that may be used to increase sales; for instance, to increase or defend market share or to shift excess inventory. It has a cost, in the form of reduced margin, and it is a matter of commercial judgement to decide whether the benefit is greater than the cost. It may also have the effect of merely bringing sales forward in time, so that later trading periods suffer.

Of the three suggestions, this is the most defensible. However, it is quite **indefensible** if it is undertaken solely in order to boost bonuses, because of the conflict of interest discussed above.

**Bringing forward scheduled orders.** Bringing forward scheduled orders is a form of window dressing.

Your auditors will deploy checks on such activities as a matter of course, and may succeed in detecting this. The accounts would then have to be adjusted, since there is no commercial justification for the practice. It can be seen as detrimental to shareholders since the reported profit would be overstated in the current year and, while this may have a positive effect on share value in the short term, were it ever discovered, it would bring into question the company's **corporate governance**. Such a scheme is also likely to irritate customers who may respond by delaying payment and even seeking a new supplier. This would clearly disadvantage the company.

This suggestion is **unacceptable** on both ethical and practical grounds.

**Warning of possible price rises.** I have assumed that there are no actual plans to raise prices. If this is the case, to say that such plans exist is **untruthful** and therefore inappropriate for a company that wishes to maintain high ethical standards. Further, to hide behind a form of words such as 'there **may** be price rises' would be equally dishonest, since the intention

would be to create a specific, incorrect impression in customers' minds. When the warning is eventually shown to be spurious, customers' estimation of the company will fall, with an eventual knock-on effect on revenue.

This ploy is comparable to the previous one in its potential effect on shareholders and customers but is even more unethical.

**Conclusion.** None of the suggestions are acceptable ethically or commercially as a solution for improving sales or for helping senior staff to achieve their bonus targets.

### 3 Merson, Shiplock and Brown LLP

The ethical principles which are relevant to Kate's request are those of **confidentiality** and **integrity** – or, more specifically, **transparency** in relation to any potential dealings MSB needs to have with HH's staff.

**Confidentiality** – Although Kate has asked for 'complete confidentiality', she appears to be using the concept of confidentiality to mean that MSB should discuss its findings solely with her, rather than with any other members of staff or the board of HH. This seems to be a different interpretation of the principle than that used in Code of Ethics which requires an accountant not to disclose information acquired in the course of a professional engagement to **third parties** without specific authority, unless there is a legal or professional duty to do so.

However, Kate's interpretation also raises the question of who MSB's client actually is in this situation, and therefore to whom its ethical duties are owed: to Kate, or to HH. (Members of the board or the staff of HH could only be considered as 'third parties' if MSB's duty is to Kate as an individual.)

MSB's contractual duty is to HH as a legal entity, though.

The board normally has the power to represent the entity in any dealings with an accountant acting in the capacity as business adviser or assurance practitioner or alternatively those charged with governance.

The CEO (Kate) should not be acting in a single personal capacity unless empowered to do so by the board.

Constraints which limit dealings to certain people may be within the power of the CEO and, as MSB's appointment is not a statutory appointment such as an audit, this may be acceptable. The issue of dissemination to the board will be one for the CEO to deal with, providing she has capacity to engage her own advisers without reference to the board.

Confidentiality from executive directors may be within the powers of the CEO but to substantiate the powers of confidentiality may itself be a breach of confidentiality.

From a practical perspective it might not be possible to hide the activities required of MSB from HH's staff. If MSB tries to do so, or misleads HH's staff about the reason for any enquiries being made of staff, then this lack of transparency could represent a threat to the principle of **integrity**.

Other issues which MSB should consider before accepting the engagement:

- It is not clear who would authorise the engagement letter if only the chief executive had knowledge of our intended remit. In particular, we should consider whether the chief executive has this within her sole and legitimate capacity to act.
- Actions might be to enquire of the chief executive the reasons for the confidentiality from the board and her authority for denying legitimate information about the company to the board.
- Perhaps seek permission of the CEO to approach the chairman to substantiate that the CEO has the capacity and is not acting ultra vires. If this is refused, then consider not accepting the engagement unless the CEO can otherwise demonstrate her capacity to act.

## 4 Groundman Co

### Destruction of remote villages

Although the proposed route of the railway means that several villages will be destroyed, the Government has hidden this fact by not providing any information about the route to the people of Enoland.

### Integrity

If Groundman bids for the contract, the destruction of the villages could present it with an ethical dilemma relating to the principle of integrity. The principle of integrity highlights the importance of honesty and truthfulness in business relationships, and the importance of not being associated with reports which are false or misleading.

In this case, the failure to disclose the route of the railway, and to indicate that its construction will require several villages to be destroyed, means that the Government's communications are misleading or, at the very least, have not disclosed the full truth about the route of the railway.

Although the communications have come from the Government rather than Groundman, Groundman - as the lead contractor on the project - will necessarily become associated with the fact that key information has been withheld from the people of Enoland.

In addition, the proposed route presents Groundman with a dilemma in relation to the values and responsibilities it has espoused on its website. The company has stated that it aims to bring benefits to all the communities in which it works. However, building the railway is unlikely to bring any benefits to the village communities which will be destroyed to make way for it, especially given the

low level of compensation which the Government intends to offer. Here again, the ethical principle of integrity is at stake, if Groundman acts in a way which is inconsistent with claims it has previously made.

**Safeguard** - As a possible safeguard to these ethical dilemmas, Groundman should try to persuade the Government to change the route of the railway, to avoid destroying local villages and to reduce the damage to the surrounding natural environment.

Moreover, if it is not possible to build the rail link without destroying some villages, then Groundman should insist that the Government compensates the local communities adequately, rather than making minimal compensation.

### Confidentiality

Groundman also needs to consider the principle of confidentiality, because the Government has insisted that information about the route of the railway and its environmental effects must remain confidential until construction begins.

According to Code of Ethics, the principle of confidentiality dictates that information acquired as a consequence of a business engagement should not be disclosed to third parties without specific authority, unless there is a legal or professional duty to do so.

In this case, Groundman clearly does not have the authority to disclose the proposed route of the railway, and does not have a legal duty to do so.

Nonetheless, the Government's failure to disclose the route creates an ethical dilemma for Groundman, relating to integrity (as discussed above).

**Safeguard** - Therefore, Groundman should insist that the Government publishes its plans for the railway and its proposed route. The plans should be publicly available, and the residents of Enoland should have the opportunity to comment on them, before the route is finalised, and certainly before any construction work begins.

It is inevitable that there will be some objections to the railway (particularly from inhabitants of the villages it will destroy, and environmentalists concerned about the areas of wildlife it will affect), but it is important that the Government of Enoland is open and honest with its citizens. In this respect, it is important that the plans are presented fairly: highlighting the environmental impact of constructing the railway, as well as the economic benefits it should bring to Enoland as a whole.

### **Supplier selection**

The suggestion by the government official that Groundman is 'almost certain' to win the contract if it uses the Government's preferred suppliers, and forgoes its usual evaluation of suppliers' ethical and social responsibility credentials, also creates an ethical dilemma for Groundman.

**Objectivity** - In effect, the ethical principle being challenged is objectivity. The government official appears to be bribing Groundman to use the Government's own suppliers, and to forgo its usual evaluation procedures, in return for Groundman being assured of winning the contract.

**The size of the contract** - an intercity rail link - suggests it will generate a significant amount of revenue for Groundman, meaning that the potential impact of the 'bribe' is also significant.

Historically, Groundman's procurement policy has been clear: the social responsibility and ethical positions of all potential suppliers are evaluated in advance of the company buying goods or services from them. If the company deviates from this policy, this again could be seen as a threat to its objectivity. Therefore, Groundman should continue to uphold its policy on supplier evaluation, even if this means it loses the railway contract. Given that the company prides itself on conducting business in an ethical manner, it cannot afford to be accused of accepting bribes in order to win contracts.

Instead, Groundman should try to negotiate with the Government to allow it to select its own suppliers based on its established ethical principles. In order to generate some benefits for the local communities, Groundman should try, if possible, to use some local companies, and to employ local labour, subject to them complying with its usual ethical requirements.

### **Recommendation**

**Do not accept the contract** - Given the number of ethical issues associated with the contract, it is recommended that Groundman should not accept the contract.

**Government's conduct** - Groundman's values are based on conducting business in a socially responsible and ethical manner. However, the Government of Enoland - or some of its officials, at least - does not appear to share these values. Therefore, although the short-term financial gain from the contract could be significant, this could be outweighed by the damage which could be done to Groundman's reputation and future prospects by being involved in the project, and from being associated with the Government of Enoland.

**Destruction of villages** - In fact, if the Government doesn't agree either to publicly disclose the route and to improve its compensation arrangements for displaced villages (if the route remains unchanged), Groundman should withdraw its bid altogether, due to the fundamental conflict with its publicly stated values and ethical principles.

**Supplier contracts** - The Government's inducements to try to get their own suppliers used in the project might also be a reason for withdrawing from the bidding process. Groundman cannot afford to have its reputation tarnished by being associated with bribes or inducements (even though it has not accepted them).

Even if Groundman continues with the bidding process, the underlying insistence that it uses the Government's suppliers would still be a significant reason not to accept the contract, because it contravenes the company's established procedures, and the standards of behaviour (in particular, objectivity) which it expects from its own staff.

# Chapter 21

## Spreadsheet Formulae for Strategic Business Management

### Learning topics

- 1 Spreadsheet formulae in Strategic Business Management & Leadership
- 2 Further examples of using spreadsheets in Strategic Business Management & Leadership

### Summary

Answers to Interactive questions



# 1 Spreadsheet formulae in Strategic Business Management & Leadership



## Section overview

- There are a number of calculations that can be performed more efficiently using spreadsheet functions.
  - The spreadsheet functions are:
    - SUM
    - SUMIF
    - SUMIFS
    - IRR
    - XIRR
    - MIRR
    - NPV
    - RATE
    - PV
    - POWER
    - AVERAGE
    - CORREL
    - CONFIDENCE
    - STDEV
    - COUNTIF
    - COUNTIFS
    - IF (including nested IF statements)
    - IFS
    - RANK
    - TREND
  - This chapter also introduces you to relative and absolute cell referencing which are important when analysing large data sets with the spreadsheet functions listed above. You will also need to be able to format cells correctly (percentages, monetary values, decimal places).
- 

## 1.1 SUM

The SUM spreadsheet function adds the values in a range of cells.

### 1.1.1 SUM formula format

=SUM (cell range)

### 1.1.2 Using the SUM formula

Type **=SUM (** to begin the function entry. Drag the cursor over the range of cells containing the cashflows or enter the range address. Finally insert a closed bracket).



## Worked example: SUM formula

A company expects the following cash flows for a proposed investment project:

	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Revenue £	60,000	60,000	60,000	60,000	84,000
3	Material costs £	(14,000)	(14,000)	(14,000)	(14,000)	(20,000)
4	Labour costs £	(16,000)	(16,000)	(16,000)	(16,000)	(22,000)
5	Variable overheads £	(8,000)	(8,000)	(8,000)	(8,000)	(10,000)
6	Fixed overheads £	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)

### Requirement

Calculate the net cash flows in each year of the project.

### Solution

To calculate the net cash flows in a single year the correct instruction would be (for year 1 as an example) **=SUM(B2:B6)**.

B7=SUM(B2:B6)						
	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Revenue £	60,000	60,000			84,000
3	Material costs £	(14,000)	(14,000)	(14,000)	(14,000)	(20,000)
4	Labour costs £	(16,000)	(16,000)	(16,000)	(16,000)	(22,000)
5	Variable overheads £	(8,000)	(8,000)	(8,000)	(8,000)	(10,000)
6	Fixed overheads £	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)
7	<b>Net cash flow</b>	<b>20,000<sup>1</sup></b>	20,000	20,000	20,000	30,000

<sup>1</sup> Cell B7 could be copied to cells C7, D7, E7 and F7.

This will mean that cell C7 would contain the formula =SUM(C2:C6)

## 1.2 SUMIF

The SUMIF function adds the values in a range of cells that meet certain criteria.

### 1.1.1 SUMIF formula format

=SUMIF(range, "criteria", sum range) where range is a range of cells to be added and criteria is a number, expression, cell reference or text that defines the cells to be added. The sum range is an optional argument which contains a range of cells that you actually wish to add, other than those specified in the range argument

### 1.1.2 Using the SUMIF formula

Type =SUMIF( to begin the function entry. Drag the cursor over the range of cells containing the numbers that you wish to add as part of the range, then add a comma and enter the criteria for adding the numbers. The criteria should be expressed within " ". If you wish to add a sum range, add a comma after the criteria argument and enter the cells you actually wish to add. The sum range cell range should be the same size and shape as the range, for this to work properly.



### Worked example: SUMIF formula

The following is a list of products and associated profits that were recently sold by a furniture store.

	A	B
1	Type of product	Profit
2	Bed	100
3	Cupboard	50
4	Table	150
5	Cupboard	75
6	Sofa	300
7	Bed	120
8	Bed	150
9	Sofa	250
10	Table	200
11	Cupboard	600

#### Requirement

Calculate the total profit earned from products that earned a profit of over £180.

#### Solution

To calculate the total profit earned from products that earned a profit of over £180, the instruction would be =SUMIF(B2:B11,">180")



C3=SUMIF(B2:B11,">180")			
	A	B	C
1	Type of product	Profit	
2	Bed	100	
3	Cupboard	50	<b>1350</b>
4	Table	150	
5	Cupboard	75	
6	Sofa	300	
7	Bed	120	
8	Bed	150	
9	Sofa	250	
10	Table	200	
11	Cupboard	600	



### Worked example: SUMIF formula (2)

The following is a list of products and associated profits that were recently sold by a furniture store.

	A	B
1	Type of product	Profit
2	Bed	100
3	Cupboard	50
4	Table	150
5	Cupboard	75
6	Sofa	300
7	Bed	120
8	Bed	150
9	Sofa	250
10	Table	200
11	Cupboard	600

#### Requirement

Calculate the total profit earned from sales of beds.

#### Solution

To calculate the total profit earned from sales of beds, the instruction would be

**=SUMIF (A2:A11,"Bed",B2:B11)**

C3=SUMIF(A2:A11,"Bed",B2:B11)			
	A	B	C
1	Type of product	Profit	
2	Bed	100	
3	Cupboard	50	<b>370</b>
4	Table	150	
5	Cupboard	75	
6	Sofa	300	
7	Bed	120	
8	Bed	150	
9	Sofa	250	
10	Table	200	
11	Cupboard	600	

## 1.3 SUMIFS

**1.1.1** SUMIFS adds the values in a range of cells that meet multiple criteria, in comparison to SUMIF which only looks at one criterion in a range.

### 1.1.2 SUMIFS formula format

=SUMIFS(sum range, criteria range 1,"criteria1", criteria range 2, "criteria2") where sum range is the range of cells to be added, criteria range is the range of cells to be tested using the criteria and criteria is a number, expression, cell reference or text that defines the cells to be added.

### 1.3.2 Using the SUMIFS formula

Type =**SUMIFS**(to begin the function entry. Drag the cursor over the range of cells containing the numbers that you wish to add then add a comma. Now drag the cursor over the range of cells containing the first criteria you wish to test. Add a comma and enter the criteria you are testing in " ".

To test a second criteria add a comma after "criteria 1" and drag the cursor over the range of cells containing the second criteria you wish to test. Add a comma and enter the second criteria you are testing in " ". Repeat this process for as many criteria as you want. Finally insert a closed bracket).



### Worked example: SUMIFS formula

The following data shows the volume of products sold by month and by country.

	A	B	C	D	E	F	G	H	I
1	Month	Product	Country	Sales volume (units)		Criteria			
2	Jan	C	UK	88		Feb	Product B		
3	Jan	A	France	66		Feb	Product B	France	
4	Feb	D	France	74		Feb	Product B	>80 units	
5	Feb	B	Ireland	96					
6	Feb	A	Ireland	87					
7	Feb	B	France	90					
8	Mar	D	UK	43					
9	Mar	C	UK	52					

### Requirement

Using SUMIFS functionality calculate:

- The volume of Product B sold in February
- The volume of Product B sold in February in France
- The volume of Product B sold in February that exceeds 80 units

### Solution

The formulae used are;

- The volume of Product B sold in February =SUMIFS(D2:D9,A2:A9,"Feb",B2:B9,"B") The result is shown in cell I2 as 186 products.
- The volume of Product B sold in February in France =SUMIFS (D2:D9,A2:A9,"Feb",B2:B9,"B",C2:C9,"France") The result is shown in cell I3 as 90 products.
- The volume of Product B sold in February, that exceeds 80 units =SUMIFS (D2:D9,A2:A9,"Feb",B2:B9,"B",D2:D9,">80") The result is shown in cell I4 as 186 products

	A	B	C	D	E	F	G	H	I
1	Month	Product	Country	Sales volume (units)		Criteria			
2	Jan	C	UK	88		Feb	Product B		1
3	Jan	A	France	66		Feb	Product B	France	90
4	Feb	D	France	74		Feb	Product B	>80 units	186
5	Feb	B	Ireland	96					
6	Feb	A	Ireland	87					
7	Feb	B	France	90					
8	Mar	D	UK	43					
9	Mar	C	UK	52					

1 186

## 1.4 Internal Rate of Return (IRR)

The IRR spreadsheet function is used to calculate the internal rate of return (IRR) which is covered in the chapter "Investment appraisal" section 1.

The internal rate of return (IRR) is a discounted cash flow (DCF) technique that calculates the percentage return given by a project. If this return is used to discount a project's cash flow, it would deliver an NPV of zero. If the IRR exceeds the cost of capital, the project is worth undertaking.

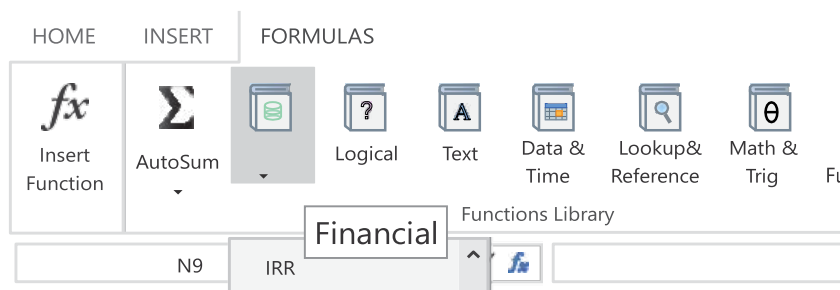
### 1.1.1 Format of the IRR formula

=IRR(cell range), where the cell range is an array of cell values containing the cash flows to be analysed eg, A3:A10. The IRR function assumes the first cell is a cash flow in year 0.

### 1.1.2 Using the IRR formula

Type **=IRR(** to begin the function entry. Drag the cursor over the range of cells containing the cash flows or enter the range address. Finally insert a closed bracket **)**.

Alternatively, to access the IRR formula select 'formulas' from the toolbar, click on 'financial' and then choose IRR from the dropdown menu as illustrated here:



Cash outflows, such as the initial investment, must be entered as negative values and cash inflows as positive values.



### Worked example: IRR formula

The cash flow projections from a project show the following cash flows over the next five years.

	A	B	C	D	E	F	G
1	Year	0	1	2	3	4	5
2	Cash flow £	(80,000)	20,000	20,000	20,000	20,000	30,000

The company's cost of capital is 10%.

#### Requirement

Calculate the IRR of the project.

#### Solution

To calculate the IRR the correct instruction would be **=IRR(B2:G2)**.

=IRR(B2:G2)							
	A	B	C	D	E	F	G
1	Year	0	1	2	3	4	5
2	Cash flow £	(80,000)	20,000	20,000	20,000	20,000	30,000
3	IRR	10.93%					

The formula does not work if the cash flows are set up as annuities

For example, one cash flow of £20,000 for time period 1-4).

The return generated by the project (IRR) is slightly lower than the company's required return (cost of capital) of 11%, therefore this project would be rejected if IRR was used.

IRR doesn't take into account when the actual cash flow takes place, so it rolls them up into annual periods. This limitation of IRR can be overcome by using XIRR.

## 1.5 Extended Internal Rate of Return (XIRR)

The XIRR spreadsheet function is used to calculate the internal rate of return (IRR) for a series of cash flows that may not be periodic. It does this by assigning specific dates to each individual cash flow. The XIRR function is therefore useful in determining the value of an investment or understanding the feasibility of a project that does not have regular period cash flows.

IRR doesn't take into account when the actual cash flow takes place, it rolls them up into annual periods. By contrast, the XIRR formula considers the dates when the cash flow actually happens. Because of this, XIRR is a more accurate way to evaluate an investment.

### 1.5.1 Format of the XIRR formula

=XIRR(values, dates,[guess])

The formula uses the following arguments:

Values - this is an array of cell values containing the cash flows to be analysed e.g A3:A10.

Dates - This is a series of dates that correspond to the cash flows.

Guess - This is the initial estimate of what the IRR will be. A default value of 10% is used.

### 1.5.2 Using the XIRR formula

Type **=XIRR(** to begin the function entry. Drag the cursor over the range of cells containing the cash flows or enter the range address, then insert a comma (,) and drag the cursor over the range of cells containing the dates. Finally enter the **)** to complete the formula.

Alternatively, to access the XIRR formula select 'formulas' from the toolbar, click on 'financial' and then choose XIRR from the dropdown menu.

Cash outflows, such as the initial investment, must be entered as a negative value and cash inflows as a positive value.



### Worked example: XIRR formula

The cash flow projections from a project show the following cash flows occurring on specific dates over the next five years.

	A	B	C	D	E	F	G
1	Date	10/06/20 22	10/01/20 23	10/12/20 24	10/02/20 25	10/06/20 26	10/01/20 27
2	Cash flow £	(80,000)	20,000	20,000	20,000	20,000	30,000

The company's cost of capital is 11%.

### Requirement

Calculate the XIRR of the project.

### Solution

To calculate the XIRR, the correct instruction would be:

=XIRR(B2:G2,B1:G1)							
	A	B	C	D	E	F	G
1	Date	10/06/20 22	10/01/20 23	10/12/20 24	10/02/20 25	10/06/20 26	10/01/20 27
2	Cash flow £	(80,000)	20,000	20,000	20,000	20,000	30,000
3	XIRR	11.54%					

The formula does not work if the cash flows are set up as annuities. (For example, one cash flow of £20,000 for time period 1–4).

The return generated by the project (XIRR) is greater than the company's required return (cost of capital) of 11%, therefore this project would be undertaken.

If the IRR function was used the project would generate a return of 10.93% which is below the company's required return and this project would have been rejected. XIRR is more accurate and should therefore be used.

## 1.6 Modified Internal Rate of Return (MIRR)

The MIRR spreadsheet function is used to calculate the modified internal rate of return (MIRR) which is covered in the chapter "Investment appraisal".

The internal rate of return (IRR) assumes that the cash flows after the investment phase are reinvested at the project's IRR. If the project's IRR is high this may be unrealistic. In addition, if there are changes in the direction of the project cash flows there may be more than one IRR, which can cause confusion. MIRR removes some of the drawbacks of IRR by modifying the reinvestment assumption so that it is assumed that cash inflows are reinvested at the company's cost of capital.

### 1.6.1 Format of the MIRR formula

=MIRR(values, finance\_rate, reinvest\_rate), where 'values' is an array of cell values containing the cash flows to be analysed eg A3:A10 and the cost of capital is used for both the finance rate and the reinvest rate.

### 1.6.2 Using the MIRR formula

Type =MIRR( to begin the function entry. Drag the cursor over the range of cells containing the cash flows or enter the range address, followed by a comma then insert the cost of capital as a decimal point, followed by a comma and insert the return on reinvested funds as a decimal point, finally insert a closed bracket ).

Alternatively, to access the MIRR formula select 'formulas' from the toolbar, click on 'financial' and then choose MIRR from the dropdown menu.

Cash outflows, such as the initial investment, must be entered as negative values and cash inflows as positive values.



#### Worked example: MIRR

The cash flow projections from a project show the following cash flows over the next 4 years.

	A	B	C	D	E	F
1	Year	0	1	2	3	4
2	Cash flow £	(24,500)	15,000	15,000	3,000	3,000

The company's cost of capital is 10%.

#### Requirement

Calculate the MIRR of the project.

#### Solution

To calculate the MIRR the correct instruction would be =MIRR(B2:F2,0.1,0.1)

B3 =MIRR(B2:F2,0.1,0.1)						
	A	B	C	D	E	F
1	Year	0	1	2	3	4
2	Cash flow £	(24,500)	15,000	15,000	3,000	3,000
3	MIRR	16%				

The return generated by the project (MIRR) is greater than the company's required return (cost of capital) of 10%, therefore this project would be undertaken.

Note that the formula does not work if the cash flows are set up as annuities (eg one cash flow of £20,000 for time period 1-4).

### 1.7 Net present value (NPV)

The NPV spreadsheet function is used to calculate the present value of future cash flows and can be used to calculate the net present value (NPV) which is covered in the chapter "Investment appraisal". The net present value (NPV) is a discounted cash flow (DCF) technique that calculates the value created by a project. If the NPV is zero or above, the project is worth undertaking.

### 1.7.1 Format of the NPV formula

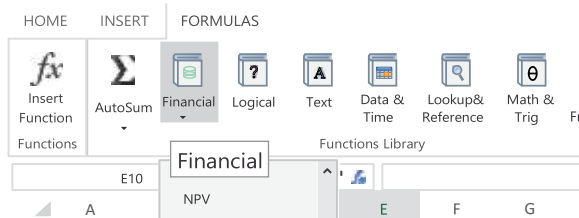
=NPV(discount, cell range), where discount is the discount rate (the cost of capital) and the cell range is an array of cell values containing the cash flows to be analysed eg, A3:A10.

### 1.7.2 Using the NPV formula

Type **=NPV(** to begin the function entry then insert the cost of capital followed by a comma then drag the cursor over the range of cells containing the cash flows or enter the range address, finally insert a closed bracket ).

The NPV function calculates the PV of cashflows over a number of years, it assumes the first cell is a cash flow in year 1.

Alternatively, to access the NPV formula select 'formulas' from the toolbar, click on 'financial' and then choose NPV from the dropdown menu as illustrated here:



Cash flows occurring immediately such as the initial investment, must be adjusted for after the NPV calculation. This is because the NPV function takes into account cash flows from year 1 onwards.



### Worked example: NPV formula

	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Cash flow £	20,000	20,000	20,000	20,000	30,000

The company's cost of capital is 10%.

#### Requirement

Calculate the NPV of the project.

#### Solution

To calculate the NPV the correct instruction would be **=NPV(0.1,B2:F2)**.

=NPV(0.1,B2:F2)						
	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Cash flow £	20,000	20,000	20,000	20,000	30,000
3	PV @10%T1-5	82,025 <sup>1</sup>				
4	Initial investment	(80,000)				
5	Project NPV	2,025				



<sup>1</sup>This is the present value of the cash flows in cells B2 to F2 ie, for years 1–5. The initial outlay at the start of the first year is excluded from this calculation because the formula assumes the first cash flow is at the end of year 1. As with IRR, the formula does not work if the cash flows are set up as annuities (eg, one cash flow of £20,000 for time period 1–4). T

<sup>2</sup>The value generated by the project (NPV) is above zero, therefore this project would be undertaken.



### Interactive question 1: Delayed cash flow

A company is considering a new project which would require an investment of £0.5 million.

Sales revenue is not expected until year 2, and is forecast to be £200,000 in years 2 and 3 and to rise to £400,000 for years 4 and 5. Year 5 is the final year of the project.

Costs will be 40% of sales revenue in years 2 and 3, and 30% in years 4 and 5. The company's cost of capital is 8%.

Taxation can be ignored.

#### Requirement

Estimate the internal rate of return and the NPV of this project.

See **Answer** at the end of this chapter.

## 1.8 RATE

The RATE spreadsheet function is used to calculate the pre-tax yield to maturity on a redeemable bond or debenture (ie, the pre-tax cost of redeemable debt). This is covered in the chapter "Financial instruments and financial markets".

### 1.8.1 Format of the RATE formula

=RATE(number of periods, payment, present value, future value, type, guess).

The number of periods is the number of periods remaining until maturity. Periods may be annual or non-annual (eg, six months) depending on whether or not the payments are made annually.

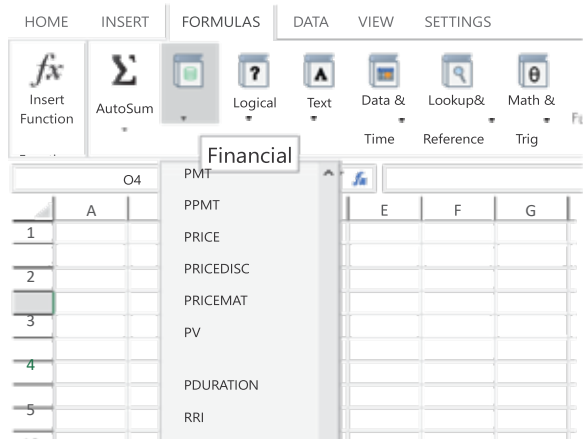
The payment is the amount (of interest) paid in any single period (ie, an annuity).

The present value is the current market value of the asset (the bond) ex interest.

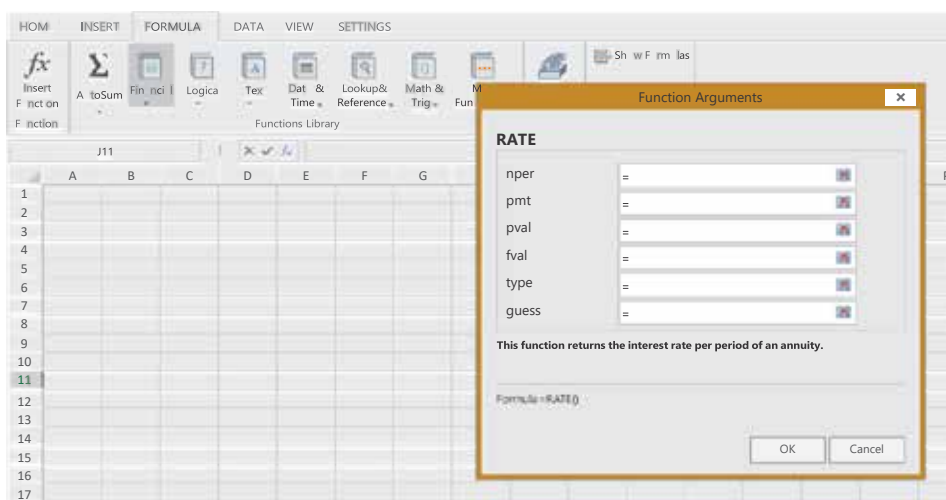
The future value is the redemption value (the amount paid at maturity).

### 1.8.2 Using the RATE formula

To access the RATE formula, select 'formulas' from the toolbar, click on 'financial' and then choose RATE from the dropdown menu as illustrated here:



After selecting RATE the following information will need to be input:



Nper = the number of periods

Pmt = the amount (of interest) paid in any single period

Pval= the present value of the asset (its market price), **inserted as a negative number**

Fval = the future value (the amount paid at maturity). Type and guess can be left blank.

This will give the yield to maturity over a given period. To calculate an **annual** yield to maturity the value will need to be multiplied by the number of periods in a year eg, if payments are made over six months, as there are two six-month periods in a year so multiply the RATE calculated by two.

**Alternatively**, type `=RATE` (to begin the function entry then insert the number of periods, the payment made in each period, the present value (as a negative value) and the future value, and end by inserting a closed bracket).



### Worked example: RATE formula

A 6% coupon bond, paying interest on a semi-annual basis, is redeemable in four years' time at its par value of £100. The current market price of this bond is £105 per £100 nominal value.

**Requirement**

Calculate the annual yield to maturity of this bond.

**Solution**

To calculate the RATE, the following variables need to be input to the RATE function.

B5 =RATE(B1,B2,B3,B4)		
	A	B
1	Nper = the number of periods	8 <sup>1</sup>
2	Pmt = the amount (of interest) paid in any single period	3 <sup>2</sup>
3	Pval = the present value of the asset (its market price)	-105 <sup>3</sup>
4	Fval = the future value (the amount paid at maturity).	100
5	Yield to maturity	0.02308 <sup>4</sup>
6	Annual yield to maturity	0.04616 <sup>5</sup>

<sup>1</sup>This is the number of six-month periods over which payments are made. (Six months is used as the bond pays interest on a semi-annual basis.)

(4 years, 2 six-month periods in a year = 8)

<sup>2</sup>This is semi-annual coupon, calculated as £6 divided by 2 = £3.

<sup>3</sup>This is the market price, inserted as a negative value.

<sup>4</sup>This is the yield expressed in terms of the period assessed: six months.

<sup>5</sup>This is the annualised yield to maturity, calculated as 0.02308 multiplied by 2 (As there are two six-month periods in a year) = 0.04616 or 4.616%.

## 1.9 Present Value (PV)

The PV spreadsheet function is used to calculate the present value (PV) of a series of equal cash flows (annuities). The PV spreadsheet function is used to calculate the market price (issue price) of a bond, this is covered in the chapter "Business and security valuation".

### 1.9.1 Format of the PV formula

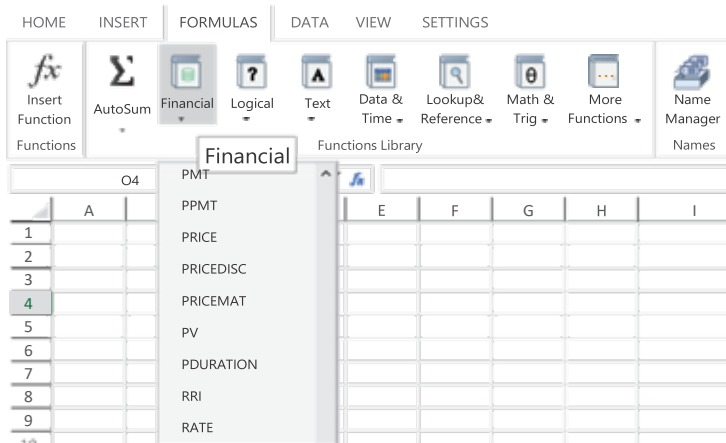
=PV(rate, number of periods, payment, future value, type).

The number of periods may in be years or in six months periods. The payment is the cash paid in each period (ie, an annuity).

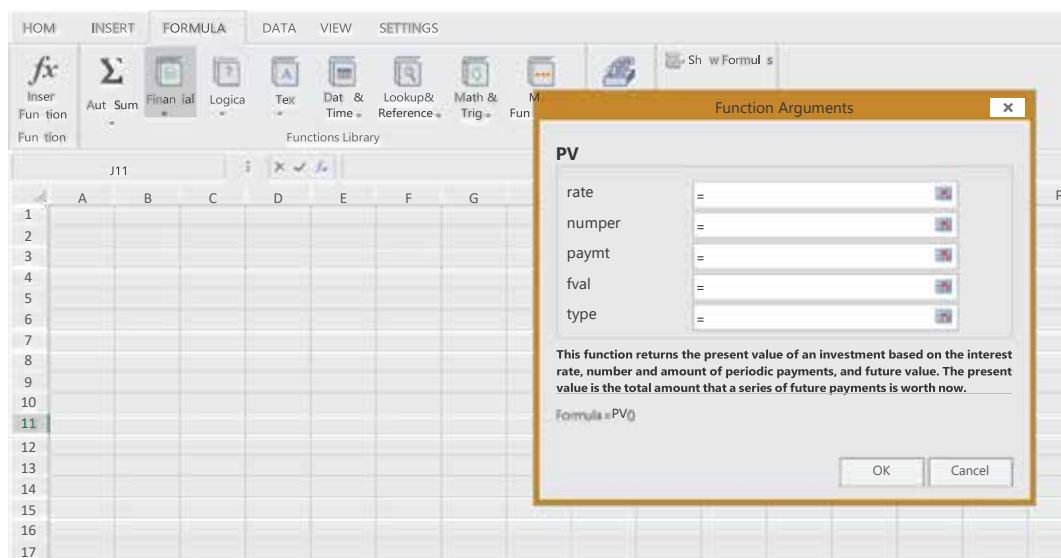
The future value is the redemption value (the value of the bond at maturity).

### 1.9.2 Using the PV formula

To access the PV formula select 'formulas' from the toolbar, click on 'financial' and then choose PV from the dropdown menu as illustrated here:



After selecting PV the following information will need to be input:



Rate = the yield to maturity for the period that reflects the frequency of the payments  
 Number = the number of periods

Paymt= the amount (of interest) paid in any single period  
 Fval = the future value (the amount paid at maturity)

This will give the present value (ex interest) of the asset being assessed (eg, a bond).

**Alternatively**, type `=PV(` to begin the function entry then insert the rate of return required, the number of periods, the payment made in each period and the future value, finally insert a closed bracket ).



### Worked example: PV formula

A company is planning to issue a 6% coupon bond, paying interest on a semi-annual basis, redeemable in four years' time at its par value of £100. The expected annual yield to maturity for a bond of this type and maturity is 4.616%.

#### Requirement

Calculate the issue price of this bond.

**Solution**

B5 =PV(B1,B2,B3,B4)		
	A	B
1	Rate of return required over the period	0.02308 <sup>1</sup>
2	Nper = the number of periods	8 <sup>2</sup>
3	Pmt = the amount (of interest) paid in any single period	3 <sup>3</sup>
4	Fval = the future value (the amount paid at maturity).	100
5	Present value (issue price)	-105.00 <sup>4</sup>

<sup>1</sup> This is the rate of return over six months, calculated as  $4.616\% \times 6/12$  (Interest is paid on a semi-annual basis.)

<sup>2</sup> This is the number of six-month periods over which payments are made. (Six months is used as the payments are made every six months.)

<sup>3</sup> This is semi-annual coupon, calculated as £6 divided by 2 = £3.

<sup>4</sup> This is the present value ie, the issue price as a negative number. So the issue price is £105.00.

**Interactive question 2: Valuing debt**

Company A is planning to issue 4% coupon debentures which will be redeemable in five years' time at their par value of £100. Interest will be paid annually on these debentures.

Company B is in the same industry as Company A and has a similar risk profile. Company B currently has 6% semi-annual coupon debentures in issue which are redeemable in eight years' time at their par value of £100. These debentures are currently trading at £110 cum interest.

**Requirements**

- 1.1 Calculate the annual yield to redemption on Company B's bonds.
- 1.2 Using the annual yield to maturity of Company B's bonds as calculated in the previous question, calculate the issue price for Company A's debenture issue.
- 1.3 Discuss the validity of using the yield to redemption of Company B's existing bonds to estimate the issue price.

See **Answer** at the end of this chapter.

**1.10 POWER**

The POWER spreadsheet function allows the geometric average growth rate to be identified for two given values over a given period of time.

This is helpful for estimating the growth rate used in the dividend valuation model as a method of calculating the cost of equity.

### 1.10.1 POWER formula format

=POWER(most recent value/ oldest value,1/number of periods of growth)

### 1.10.2 Using the POWER formula

Type **=POWER(** to begin the function entry then insert the most recent value divided by the oldest value followed by a comma, then insert 1 divided by number of periods of growth, finally insert a closed bracket ).

Subtract 1 from this value to obtain the geometric (compound) average growth rate.



### Worked example: POWER formula

A company has recently paid a dividend of £0.75 per share. 10 years ago the dividend was £0.40 per share.

#### Requirement

Calculate the average growth rate over the past 10 years.

#### Solution

The POWER function can be used to calculate average dividend growth rate.

B4=POWER(B1/B2,1/B3)-1		
	A	B
1	Most recent dividend	0.75
2	Oldest dividend	0.40
3	Time period of growth	10
4	Average annual growth	0.065 <sup>1</sup>

<sup>1</sup> Average annual growth over the past 10 years is 6.5%.

This value can be included in the dividend valuation model to calculate the cost of equity.

## 1.11 AVERAGE

The AVERAGE spreadsheet function calculates the arithmetic mean of a range of values.

### 1.11.1 AVERAGE formula format

=AVERAGE(cell range)

### 1.11.2 Using the AVERAGE formula

Type **=AVERAGE(** to begin the function entry. Drag the cursor over the range of cells containing the cash flows or enter the range address. Finally insert a closed bracket ).



### Worked example: AVERAGE formula

A company expects the following profits from a proposed investment project, costing £120,000:

	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Profit £	40,000	60,000	55,000	50,000	35,000

**Requirement**

Calculate the ARR of the project based on the initial investment.

**Solution**

To calculate the ARR (accounting rate of return) we need to divide the average profit by the initial investment. To calculate the average profit the correct instruction would be **=AVERAGE (B2:F2)**.

B3=AVERAGE(B2:F2)						
	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Profit £	40,000	60,000	55,000	50,000	
3	Average profit £	48,000				
4	Initial investment	120,000				
5	ARR	40%				

**1.12 CORRELATION**

The CORREL spreadsheet function calculates the correlation coefficient between two data sets.

**1.12.1 CORREL formula format**

=CORREL(cell range for array 1, cell range for array 2))

**1.12.2 Using the CORREL formula**

Type **=CORREL(** to begin the function entry. Drag the cursor over the first range of cells then insert a comma followed by the second range of cells. Finally insert a closed bracket ).

**Worked example: CORREL formula**

A company has paid the following dividends over the past five years.

	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Dividend per share £	1.10	0.40	1.05	0.25	1.21

The average dividend growth over this period has been correctly calculated as 2.4% by using the POWER formula.

It has been suggested that this should be included in the dividend valuation model to calculate the cost of equity.

### Requirement

Calculate the correlation between time and dividend per share, and comment on the implications of the use for the proposed used the average dividend growth rate.

### Solution

To calculate the correlation coefficient between time and dividends the correct instruction would be (for year 1 as an example) **=CORREL(B1:F1,B2:F2)**.

B3=CORREL(B1:F1,B2:F2)						
	A	B	C	D	E	F
1	Year <sup>1</sup>	1	2	3	4	5
2	Dividend per share £	1.10	0.40	1.05	0.25	1.21
3	Correlation coefficient	0.03 <sup>2</sup>				

<sup>1</sup>Years must be entered as numerical values (i.e 1,2,3 not "Year 1", "Year 2" etc)

<sup>2</sup>Correlation coefficient of close to 0 means no relationship between time and dividend per share.

Given that there is very little correlation between time and dividend per share, using the average dividend growth rate of 2.4% can be misleading in the cost of equity calculation.

## 1.13 CONFIDENCE

The CONFIDENCE spreadsheet function provides the value to be added and taken away from the sample mean in order to obtain a confidence interval for a population mean.

A sample is often used to estimate measures, such as the mean, for a whole population. A 95% confidence interval means that there is a 95% probability that the population mean lies within this interval. The interval is defined as the sample mean, plus or minus the value calculated by this formula. Confidence intervals are covered in the chapter "Business risk management".

### 1.13.1 CONFIDENCE formula format

=CONFIDENCE(alpha, standard deviation, sample size), where alpha is 100% - the confidence level.

### 1.13.2 Using the CONFIDENCE formula

You need the sample mean, sample standard deviation, sample size and confidence level. For example, a confidence level of 95% using a sample standard deviation of 20 and sample size of 100 is entered as **=CONFIDENCE(0.05,2,100)** and gives a result of 0.391.

The confidence interval for a population mean, is the sample mean +/- the returned value. If the sample mean is 50, the confidence interval is 50 plus or minus 0.391, ie 49.609 to 50.391. This means that given a sample mean of 50, there is a 95% chance that the mean of the population lies within the range 46.609 to 50.391.





### Worked example: CONFIDENCE formula

A company took a random sample of 100 of its customers and found that the mean receivables days was 36.2 days and the standard deviation was 3.2 days.

#### Requirement

Find the 95% confidence interval for the population mean.

#### Solution

A confidence level of 95% using a standard deviation of 3.2 and sample size of 100 is entered into a spreadsheet as **=CONFIDENCE(0.05,3.2,100)** and gives a confidence value of 0.627.

B5=CONFIDENCE(B1,B2,B3)		
	A	B
1	Alpha (100% -95%)	0.05
2	Standard deviation	3.2
3		
4		
5		0.627 <sup>1</sup>
6		36.2±0.627 <sup>2</sup>
7	Confidence interval	(35.57, 36.83) <sup>3</sup>

<sup>1</sup> Cell B5 is the confidence value. B5 =CONFIDENCE(0.05,3.2,100)

<sup>2</sup> The confidence value is then added and taken away from the sample mean. This is in order to obtain a confidence interval.

<sup>3</sup> Cell B7 is the confidence interval.

This means that, based on our sample data, we are 95% certain that the mean for the company's entire list of receivables (the population mean) lies between 35.57 and 36.83 days.

## 1.14 Standard deviation

The STDEV spreadsheet function calculates the standard deviation in a range of cells.

The standard deviation of the cashflows reveals to what extent values vary from the mean. The lower the standard deviation, the lower the variability. Standard deviations are covered in the chapter "Business and securities valuation".

### 1.14.1 STDEV formula format

=STDEV(cell range)

### 1.14.2 Using the STDEV formula

Type **=STDEV(** to begin the function entry. Drag the cursor over the range of cells containing the cash flows or enter the range address. Finally insert a closed bracket ).



## Worked example: STDEV formula

A company's share price at the end of the past five years is given in the following table.

	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Share price £	4.00	6.00	3.75	5.25	5.75

### Requirement

Calculate the mean and standard deviation of these share price numbers.

### Solution

To calculate the mean the correct instruction would be **=AVERAGE(B2:F2)**.

To calculate the standard deviation the correct instruction would be **=STDEV(B2:F2)**.

B4=STDEV(B2:F2)						
	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Share price £	4.00	6.00	3.75	5.25	5.75
3	Mean	4.95				
4	Standard deviation	1.02				

The standard deviation of the company's share price is 1.02. This recognises that whilst the average share price is £4.95, the actual share price will differ from this. In some years, the share price will be lower and sometimes it will be higher. On average the difference between the actual share price and the average (or mean) share price will be £1.02.

The lower the standard deviation, the closer the data points are to the mean, indicating a lower level of risk. Conversely a higher standard deviation indicates that the data points are spread out over a wider range of values, indicating a higher level of risk.

## 1.15 COUNTIF

The COUNTIF function counts the number of cells in a range that contain specific content.

The COUNTIF function can be used, for example, to count the number of cells in a spreadsheet with a value of over 100, or those containing the letter 'y'.

### 1.15.1 COUNTIF formula format

=COUNTIF(range, criteria) where the range is the range of cells being examined and criteria being the content being looked for.

### 1.15.2 Using the COUNTIF formula

Type =COUNTIF( to begin the function entry. Drag the cursor over the range of cells to be analysed, add a comma then type the criteria. The criteria can be a number, a cell reference containing a number or word, or a formula, but it should be enclosed within " ".



#### Worked example: COUNTIF formula

A company's profit projections show the following expected profit over the next 6 years.

	A	B
1	Year	Profit
2	1	15,000
3	2	20,000
4	3	25,000
5	4	40,000
6	5	60,000
7	6	90,000

#### Requirement

Calculate how many years the company is expected to earn over £22,500 profit.

#### Solution

To calculate how many years the company is expected to earn over £22,500 profit the instruction would be =COUNTIF(B2:B7,">22500")

B8=COUNTIF(B2:B7,">22500")		
	A	B
1	Year	Profit
2	1	15,000
3	2	20,000
4	3	25,000
5	4	40,000
6	5	60,000
7	6	90,000
8		4

## 1.16 COUNTIFS

The COUNTIFS function counts the number of cells in a range that meet one or more criteria.

### 1.16.1 COUNTIFS formula format

=COUNTIFS(range1,criteria1, range2, criteria2,...) where the range is the range of cells being examined and criteria is the content being looked for.

## 1.16.2 Using the COUNTIFS formula

Type=COUNTIFS( to begin the function entry. Drag the cursor over the range of cells to be analysed, add a comma then type the criteria. The criteria can be a number, a cell reference containing a number or word, or a formula, but it should be enclosed within " ". Repeat this process for all ranges and criteria you are wishing to examine.



### Worked example:

A company's profit projections and forecast Return on Capital Employed (ROCE) for the next six years are as follows:

	A	B	C
1	Year	Profit (£)	ROCE (%)
2	1	15,000	14
3	2	20,000	15.5
4	3	25,000	15
5	4	40,000	15.8
6	5	60,000	16.2
7	6	90,000	15.9

### Requirement

Calculate how many years the company is expected to earn over £22,500 profit and also achieve a target ROCE of at least 15.5%

### Solution

- 1 To calculate how many years the company is expected to earn over £22,500 profit and achieve a target ROCE of at least 15.5% the instruction in Cell A8 would be =COUNTIFS (B2:B7,">22500",C2:C7,">=15.5")

There are three years out of six where profit exceeds £22,500 and ROCE is equal to or greater than 15.5%.

	A	B	C
1	Year	Profit (£)	ROCE (%)
2	1	15,000	14
3	2	20,000	15.5
4	3	25,000	15
5	4	40,000	15.8
6	5	60,000	16.2
7	6	90,000	15.9
8	3 <sup>1</sup>		

<sup>1</sup> =COUNTIFS(B2:B7,">22500",C2:C7,">=15.5")

## 1.17 IF

The IF function makes a logical comparison between two values and returns one of two results depending on the outcome of the comparison.

The IF function enables the user to analyse the meaning of cells quickly. For example, the function can compare an 'actual' number with a 'budget' number, and return the text "Under budget" or "Over budget" depending on the result.

### 1.17.1 IF formula format

**=IF(logical test, value if true, value if false]** where the logical test performs a calculation and the value if true and value if false is what is displayed depending on the result of the logical test. If the cell is to be left empty when the value is false, a comma is required eg =IF(B1>20000,B1\*C1,)

### 1.17.2 Using the IF formula

Type =IF( to begin the function entry. Then type the logical test (for example A3>1), then type a comma followed by what should be returned if the test is true (for example "Yes"), then type a comma followed by what should be returned if the test is false (for example "No").



### Worked example: IF formula

The following report shows a company's actual and budgeted profits from the last 6 years.

	A	B	C	D
1	Year	Actual profit	Budgeted profit	
2	1	10,000	15,000	
3	2	15,000	20,000	
4	3	30,000	25,000	
5	4	35,000	40,000	
6	5	70,000	60,000	
7	6	95,000	90,000	

#### Requirement

Indicate in column D whether the actual profit for each year was "Under budget" or "Over budget".

#### Solution

To indicate in column D whether the actual profit for the year was "Under budget" or "Over budget", the instruction would be (for cell D2) **=IF(B2>C2, "Over budget", "Under budget")**. Once entered into cell D2 the formula should be dragged down to cell D7.

D2=IF(B2>C2, "Over budget", "Under budget")				
	A	B	C	D
1	Year	Actual profit	Budgeted profit	
2	1	10,000	15,000	<b>Under budget<sup>(1)</sup></b>
3	2	15,000	20,000	Under budget
4	3	30,000	25,000	Over budget
5	4	35,000	40,000	Under budget
6	5	70,000	60,000	Over budget
7	6	95,000	90,000	Over budget

### Spreadsheet notes

(1) Cell D2 could be copied to cells D3, D4, D5, D6 and D7. This would mean, for example, that cell D3 would contain the formula. **=IF(B3>C3, "Over budget", "Under budget")**

This is an example of relative cell referencing whereby the cell reference within the formula changes when the formula is dragged into new cells.

## 1.18 IFS

IFS statements make a logical comparison between two or more values and return a value that corresponds to the first TRUE value. Nested IF statements are an alternative to IFS when you are looking to test for more than one condition.

### 1.18.1 IFS formula format

=IFS(logical test1, value if true1, logical test2, value if true...) Note that the IFS function only returns a result that corresponds to the condition being TRUE.

### 1.18.2 Using the IFS formula

Type =IFS( to begin the function entry. Then type the logical test (for example A2>100), then type a comma followed by what should be returned if the test is true (for example "Higher").

Type another comma before entering the second logical test (for example A2<100) followed by a comma. Now type what should be returned if the second test is true (for example "Lower"). Finally insert a closed bracket ).

The IFS statement will now look like this:

#### Tutorial Note

If no TRUE conditions are found (for example if A2=100), IFS returns #N/A. To return a value when no TRUE conditions are found, type TRUE, followed by the value you wish to return as a default (for example "Same"). The IFS statement will now look like this:

=IFS(A2>100,"Higher", A2<100, "Lower", TRUE,"Same")

This can be seen in the worked example below.

=IFS(A2>100,"Higher", A2<100, "Lower") You can continue to add logical tests and values until you have tested all conditions.



### Worked example: IFS formula

The HR Director is going through a salary benchmarking process to ensure that employees are fairly remunerated. One particular role has a recommended salary of £35,000 and the HR Director would like to compare the salaries of employees currently in the role against this salary figure.

	A	B
1	Recommended salary	£35,000
2		
3	Employee number	Salary (£'000)
4	235	28,960
5	478	37,065
6	569	38,410
7	301	35,000
8	104	36,500
9	783	34,385
10	250	35,000
11	456	29,540
12	767	38,401

#### Requirement

Using the IFS formula, identify which employees are paid more than, less than or the same as the recommended salary of £35,000.

#### Solution

The IFS formula has been used to identify which employees are paid more than, less than or the same as the recommended salary. The formula is entered into Cell C4 and can then be copied into Cells C5:C12. Before copying the formula it is important to fix the reference to Cell C1 (£35,000) by inserting \$ before the column and row reference.

We can therefore see that three employees are paid more than £35,000, two are paid £35,000 and two are paid less than £35,000.

The formula in C4 is  
 =IFS(B4>=\$C\$1,"More",B4<=\$C\$1,"Less",TRUE,"Same")

	A	B	C
1	Recommended salary		£35,000
2			
3	Employee number	Salary (£'000)	More/Less/ Same
4	235	28,960	Less <sup>1</sup>
5	478	37,065	More
6	569	38,410	More
7	301	35,000	Same
8	104	36,500	More
9	783	34,385	Less
10	250	35,000	Same
11	456	29,540	Less
12	767	38,401	More

<sup>1</sup> Cell B4 must be a relative cell reference so that the formula can be copied in C5:C12

## 1.19 Nested IF statements

Nested IF statements are an extension of IF statements, grouping several IF statements together. Nested IF statements can be used when you are looking to test for more than one condition and return different results depending on those tests.

### 1.19.1 Nested IF formula format

=IF(logical test, value if true, value if false, IF(logical test, value if true, value if false, IF(logical test, value if true, value if false)))

Every function requires opening and closing brackets. The closing brackets all go at the end of the statement so make sure you have enough. For example, if you have three IFs you need three closing brackets.

#### Tutorial Note

It is not always necessary to have 'value if true' AND 'value if false' for each IF component. In the below example, students can either get an A grade, B grade or C grade. If they get none of these grades, they will get an F grade, which represents the 'value if false'. "F" is placed at the end of the statement rather than being repeated for each IF statement.



### Worked example: Nested IF formula

The following report shows a list of student exam results. If they score 85 or more, they get an A grade. If they score 75 or more, they get a B grade. If they score 65 or more, they get a C grade. For any other score the student fails, denoted by F.



	A	B	C
1	Student	Exam results	
2	Angel	85	
3	Bradley	77	
4	Caroline	68	
5	Dan	73	
6	Elsie	78	
7	Fred	91	
8	Georgie	66	
9	Hugh	65	
10	Ida	63	
11	Jack	81	

### Requirement

Indicate what exam grade Angel and Fred received.

### Solution

	A	B	C
1	Student	Exam results	Exam grade
2	Angel	85	A
3	Bradley	77	B
4	Caroline	68	C
5	Dan	73	C
6	Elsie	78	B
7	Fred	91	A
8	Georgie	66	C
9	Hugh	65	C
10	Ida	63	F
11	Jack	81	B

To identify the grades achieved by the students a nested IF statement is used. Within the statement there are three 'value if true' instructions grouped together.

To test whether Angel's exam results (cell B2) should be awarded an A grade, the instruction in C2 is =IF(>=85,"A")

To test whether Angel should be awarded a B grade, the instruction in C2 is =IF(>=75,"B") To test whether Angel should be awarded a C grade, the instruction in C2 is =IF(>=65,"C")

If Angel does not get an A, B or C grade she will automatically get an F grade. The instruction placed at the end of the nested IF statement is, "F".

When combined, the full instruction in C2 is:

=IF(B2>=85,"A",IF(B2>=75,"B",IF(B2>=65,"C","F")))

There are three IFs in the statement so there are three closed brackets at the end of the statement. Once entered into cell C2 the formula can be dragged down to cell C11.

#### Tutorial Note

The nested IF statement in this example could be replaced with an IFS statement as follows:

```
=IFS(B2>=85,"A",B2>=75,"B",B2>=65,"C",TRUE,"F")
```

IFS delivers the same output as Nested IF statements, but can be simpler to input and read when many conditions are tested.

## 1.20 RANK

The RANK function provides the rank of a number from within a series of numbers.

The rank of a number is determined by its size in comparison to the other numbers in a series. In other words, if the series of numbers was displayed as a list, the number's rank is the position of the number within the list.

### 1.20.1 RANK formula format

=RANK(number, ref, order) where number is the number which is being ranked, ref is an array, or a list, or a sequence of numbers and order refers to whether this list is to be sorted in ascending or descending order. If order is '0' or if no number is given for order, the list will be sorted in descending order (highest to lowest). If the value is any other value, the list will be sorted in ascending order (lowest to highest).

### 1.20.2 Using the RANK formula

Type =RANK (to begin the function entry. Then either type the number you are looking to rank (for example 56) or enter a cell reference containing that number, then type a comma and drag the cursor over the cells containing the numbers you wish to analyse. Then type another comma and the optional order value (0 or blank for descending order, any non-zero number for ascending order).



### Worked example: RANK formula

The following is a list of ages of students attending a university course:

	A	B	C
1	Student	Age	
2	Angel	18	
3	Bradley	22	
4	Caroline	20	
5	Dan	30	
6	Elsie	26	
7	Fred	40	

8	Georgie	19	
9	Hugh	21	
10	Ida	24	
11	Jack	28	

### Requirement

Calculate where Elsie's age ranks in the group of students, ranking in ascending order.

### Solution

To calculate where Elsie's age ranks in the group of students, ranking in ascending order, the instruction would be =RANK(B6, B2:B11,1)

C6 = RANK(B6, B2:B11,1)			
	A	B	C
1	Student	Age	
2	Angel	18	1
3	Bradley	22	5
4	Caroline	20	3
5	Dan	30	9
6	Elsie	26	7(1)
7	Fred	40	10
8	Georgie	19	2
9	Hugh	21	4
10	Ida	24	6
11	Jack	28	8

### Spreadsheet notes

(1) This is the RANK for Elsie's age (26). **C6 = RANK(B6,B2:B11,1)**

Note, any non-zero number could have been entered instead of 1 as the optional order value. If a zero had been entered, or if the optional order number was omitted, the ranking would have been in descending order and Elsie's age would have ranked as 4.

## 1.21 Absolute cell referencing

When entering a formula that uses values from specific cells, a relative cell reference is usually used. This means that if the formula is dragged vertically, the number part of the cell reference will change accordingly. If the formula is dragged horizontally, the letter part of the cell reference will change accordingly.

For example, the formula below (=B2-C2) is being entered into cell D2 to calculate the profit for year 1. If the formula is dragged downwards to calculate the profit for years 2 to 5, it will change to "=B3-C3" for year 2 and "B4-C4" for year 3 and so on.

D2=B2-C2				
	A	B	C	D
1	Year	Revenue	Costs	Profit
2	1	150,000	100,000	<b>50,000</b>
3	2	275,000	195,000	
4	3	250,000	225,000	
5	4	425,000	365,000	
6		65500,000	400,000	

There are times when a formula needs to use the contents of a particular cell or cells as part of the calculation. If the formula is dragged to other cells, the references to these particular cells will change and the calculation will be incorrect. However, cell references can be 'fixed' so they do not change as the formula is dragged. These are known as absolute cell references.

To create an absolute cell reference, a "\$" is inserted before the letter or number part (or both parts) of the cell reference that needs to be fixed.

If the "\$" is inserted before both parts of the reference, the cell reference will not change regardless of the direction the formula is dragged. For example, \$A\$2 ensures that neither the column nor row change when copied.

If the "\$" is inserted only before the letter part of the cell reference, for example \$A2, then the column does not change when copied.

If the "\$" is inserted only before the number part of the cell reference, for example A\$2, then the row does not change when copied.

The formula below is being entered into cell C2 to calculate the variable cost of product A (sales price multiplied by 60%). By including the "\$", cell D2 is fixed and the formula can be dragged down to calculate the variable cost of the other products.

C2=B2*\$D\$2				
	A	B	C	D
1	Product	Sales price	Variable cost	Variable costpercentage
2	A	150,000	<b>90,000</b>	60%
3	B	275,000		
4	C	250,000		
5	D	425,000		
6	E	500,000		

## 1.22 TREND

The TREND function returns values along a linear trend and only looks for linear relationships. TREND uses regression analysis to calculate the predictive values of Y for a given range of X values.

### 1.22.1 TREND formula format

=TREND(known y values, known x values, new x values) where known y values are the data you will use to predict new data, for example revenues. The known x values are a set of (optional) values that you may use to help predict new data, for example months. The new x values are data for which you want the TREND to return corresponding Y values, for example future months.

### 1.22.2 Using TREND formula

Highlight ALL cells where you wish trend values to be returned. It is important to do this before you input the TREND formula.

Type =TREND( to begin the function entry. Drag the cursor over the range of cells containing the Y values (values you wish to find a trend or prediction for). Type a comma and drag the cursor over the range of cells containing the X values. Type a comma and drag the cursor over the new X values for which you want to return a TREND value. Finally, insert a closed bracket ).

Note:

- the values of X and Y must be the same length ie both ranges should be, for example, 10 cells
- all cells that require a TREND value to be returned must be highlighted **before** typing =TREND(
- X and Y values must be numeric, for example instead of typing January use 1 to indicate the first month



### Worked example: TREND formula

A school teacher wishes to predict the grades of three students, based on their recent exam scores. The teacher has accessed past exam data from a previous class. Column A shows the score achieved by students in the previous class and Column B shows the corresponding exam grades. The recent exam score for the three students' is provided in Column C.

	A	B	C
1	Previous class exam score (x values)	Previous class exam grade (y values)	Student score
2	56	5	78
3	75	6	98
4	86	8	60
5	66	6	
6	96	9	
7	95	8	
8	85	7	
9	65	5	
10	100	9	
11	76	7	

### Requirement

Calculate the predicted grades of the three students using the data in Columns A-C.

### Solution

The formula used in cell D2 is =TREND(B2:B11,A2:A11,C2:C4)				
	A	B	C	D
1	Exam score (x values)	Exam grade (y values)	Student score(new x values)	Predicted grade
2	56	5	78	7
3	75	6	98	9
4	86	8	60	5
5	66	6		
6	96	9		
7	95	8		
8	85	7		
9	65	5		
10	100	9		
11	76	7		

### 1.23 Formatting

It is important to ensure that values in cells are formatted correctly and consistently so that it is clear to the marker what they are looking at.

- The key rules to remember are:
- Large monetary values (for example a company's quarterly revenue) should be formatted as Accounting £ to 0 decimal places.
- Small monetary values (for example the sales price of a product) should be formatted as Accounting £ to 0 or 2 decimal places.
- Any calculation resulting in a percentage should be formatted as a percentage cell to 0,1 or 2 decimal places.

Pre-populated spreadsheets in the exam may provide dates. When a date is presented in long form (eg 1-June-21) it can be used to perform calculations so the format should not be changed. An example of this can be seen in the question HGF Ltd . Using the pre-populated order and delivery dates, it is possible to calculate how many days early or late the delivery arrives.

## 2 Further examples of using spreadsheets



### Section overview

The following series of worked examples illustrate how spreadsheet terminology may be used.

### 2.1 Comprehensive worked example



#### Worked example: Sensortex plc

Assume that the current date is 31 December 20X2

Sensortex plc (Sensortex) manufactures sensors for the aerospace industry. You work in Sensortex's treasury department and have been asked to assist in the project appraisal of a new type of sensor (the LQ857) that has been developed over the past year at a cost of £287,000. Initially the project will be appraised using NPV on the assumption that all production and sales take place in the UK.

The Managing Director of Sensortex would like you to evaluate the project.

If the sensors are a commercial success in the UK, it may be possible to also produce and sell them in North America. However, the Sensortex board is concerned there may be additional risks in doing this.

LQ857 sensor data

You have collected the following data for the LQ857 project:

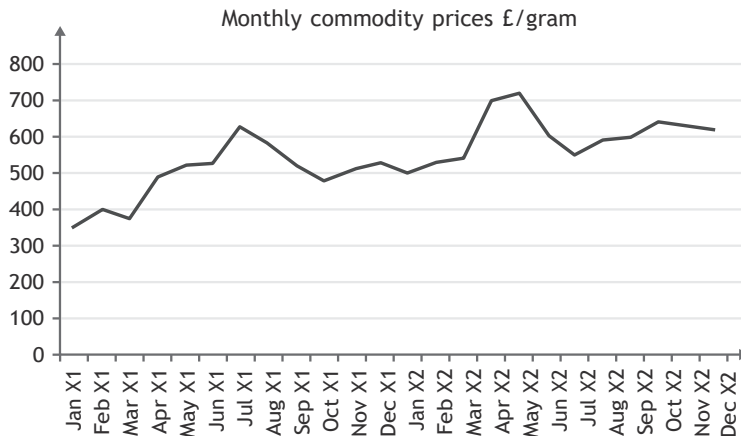
- The LQ857 sensor is forecast to have a three-year product life cycle. The marketing manager has examined the demand for other similar sensors and has informed you that demand in the year to 31 December 20X4 is likely to be influenced by the demand in the year to 31 December 20X3 as shown in the table below:

y/e 31 December 20X3		y/e 31 December 20X4	
Demand (units)	Probability	Demand (units)	Probability
10,000	0.6	8,000	0.3
		10,000	0.7
12,000	0.4	12,000	0.5
		15,000	0.5

Demand in the year to 31 December 20X5 is forecast to be half the expected level of demand in the year to 31 December 20X4. The expected level of annual demand is to be used in the NPV calculation.

- The price per sensor will be £1,500 in the year ending 31 December 20X3 and this is anticipated to increase by 3% pa compound in each of the following two years of the project.
- Each sensor will require one gram of a precious metal that Sensortex has not used in sensor production before. This metal will need to be purchased on a commodities market where prices are known to be highly volatile. The purchasing manager has gathered

monthly data for the last 24 months on the cost per gram (**Exhibit 1 in the prepopulated spreadsheet data**) and has also provided you with this data (£/gram) graphically as shown below:(1)



The purchasing manager has suggested that, because of the volatility in monthly costs, the average cost per gram over the 24-month period should be used in calculating the project's NPV.

- (3) Labour costs are expected to be £2,250,000 in the year to 31 December 20X3 and increase by 4% pa compound thereafter.

Your assistant has begun the NPV calculation by tabulating the project's cash flows (Exhibit 2 in the prepopulated spreadsheet data) and has correctly entered the necessary formulae and the data for price, other materials costs, overheads, initial investment, tax written down allowances and working capital flows. However, she became ill and did not have time to complete the NPV calculation. She has highlighted the cells, in the prepopulated spreadsheet table, for the items of data she was unable to complete.

- (4) The directors believe that the money discount rate for the project will be 10% pa. Board meeting

- 18 December 20X2

Board meeting - 18 December 20X2

The risk of the LQ857 project was discussed at the 18 December 20X2 board meeting, where the following comments were made:

- Production Director: 'I believe that the cost of the precious metal on the commodities market is a key issue. I'd like to see the impact on the NPV of both a 5% and a 10% increase in the cost per gram.'
- Marketing Director: 'The market for sensors has become very competitive recently. I do not believe we will be able to raise the price per sensor by 3% pa over the project's life cycle. I would like to see the impact on the NPV of a constant price of £1,500 per sensor throughout the 3-year project.'
- Finance Director: 'I'm more concerned about the financing and the cost of capital. I would like to know: (a) what the NPV would be if the discount rate were to be 6% pa (b) the discount rate which would result in a zero NPV.'

### Requirements

Prepare a report for the directors addressing the following:

- 1 Using the data in the **prepopulated spreadsheet**, calculate the omitted data and determine the project's expected NPV on 31 December 20X2. Ignore the directors'



requests at the board meeting.

- 2 Evaluate the risk factors of the LQ857 project identified by the directors of Sensortex in the board meeting. You should include:
  - Relevant calculations which address the points made by the directors at the 18 December board meeting
  - A discussion of these calculations in terms of their impact on the risk of the project, making reference in particular to the data on precious metal costs
  - An assessment of the validity of using expected demand in the calculation of the NPV
  - A reasoned recommendation whether the project should be accepted.
- 3 Explain how each of the following could be relevant to the appraisal of the LQ857 project:
  - follow on North American project
  - growth
  - abandonment
- 4 Briefly outline how shareholder value analysis (SVA) may be useful in evaluating the LQ857 project. No further calculations are required.
- 5 Explain the potential risks for Sensortex if it were to produce and sell the LQ857 sensor in North America in addition to the UK.

**Total: 40 marks**

**Exhibit 1: Metals monthly cost per gram over the last 2 years**

	A	B
1	Exhibit 1 - Metals monthly cost per gram over the last 2 years	
2		
3	£/gram	
4	Jan X1	350
5	Feb X1	400
6	Mar X1	375
7	Apr X1	490
8	May X1	520
9	Jun X1	525
10	Jul X1	630
11	Aug X1	580
12	Sep X1	520
13	Oct X1	480
14	Nov X1	510
15	Dec X1	530

16	Jan X2	500
17	Feb X2	530
18	Mar X2	540
19	Apr X2	700
20	May X2	720
21	Jun X2	610
22	Jul X2	550
23	Aug X2	590
24	Sep X2	600
25	Oct X2	640
26	Nov X2	630
27	Dec X2	620

### Exhibit 2: Project cash flows

	F	E	F	G	H	I	J	K
32	Exhibit 2 - Project cash flows							
33					31/12/20X2	31/12/20X3	31/12/20X4	31/12/20X5
34	Omitted data highlighted in yellow							
35								
36	Input variables for NPV		Expected demand (units)					
37			Price (£)			1500	1545	1591.35
38	Price inflation factor	1.03						
39	Average cost £/gram				£	£	£	£
40	Interest rate	0.1	Revenue			=I36*I37	=J36*J37	=K36*K37
41			Commodity			0	0	0
42			Other materials			-1890000	-1970000	-1005000
43			Labour					
44			Overheads			-1575000	-1800000	-1825000

45			Development costs				
46			Pretax cash flow	=SUM(H40:H45)	=SUM(I40:I45)	=SUM(J40:J45)	=SUM(K40:K45)
47			Tax at 17%	=-H46*0.17	=-I46*0.17	=-J46*0.17	=-K46*0.17
48			Asset investment	-8000000			1000000
49			WDAs	244800	200736	164604	579860
50			Working capital	-500000	-124000	-133100	757100
51			Net cash flow	=SUM(H46:H50)	=SUM(I46:I50)	=SUM(J46:J50)	=SUM(K46:K50)
52							
53			PV Inflows				
54			Outlay				
55			NPV				

### Solution

#### 1 Solution

	F	G	H	I	J	K
33			31/12/20X2	31/12/20X3	31/12/20X4	21/12/20X5
34			t0	t1	t2	t3
35						
36	Expected demand (units)			10800	11040	5520
37	Price (£)			1500	1545	1591
38						
39			£	£	£	£
40	Revenue			16200000	17056800	8784252
41	Commodity			-5913000	-6044400	-3022200
42	Other materials			-1890000	-1970000	-1005000
43	Labour			-2250000	-2340000	-2433600
44	Overheads			-1575000	-1800000	-1825000
45	Development costs		0			
46	Pretax cash flow		0	4572000	4902400	498452
47	Tax at 17%		0	-777240	-833408	-84737

48	Asset investment		-8000000			1000000
49	WDAs		244800	200736	164604	579860
50	Working capital		-500000	- 124000	- 133100	757100
51	Net cash flow		-8255200	3871496	4100496	2750675
52	<b>NPV t1-3 @10%</b>	8,975,004 <sup>1</sup>				
53	<b>t<sub>0</sub></b>	-8,255,200 <sup>2</sup>				
54	<b>NPV</b>	£719,804 <sup>3</sup>				

1 =NPV(0.1,I51:K51)

2 =H51

3 =SUM(G53:G54)

	A	B	C
1	<b>Input variables for NPV</b>		
2	Price inflation factor		1.03
3	Average cost £/gram		547.5
4	Interest rate		0.1

#### WORKING

(1) EV demand

y/e 31/12/X3			y/e 31/12/X4		
Demand (units)	P	EV	Demand (units)	P	EV
10,000	0.6	6,000	8,000	0.3	1,440
			10,000	0.7	4,200
12,000	0.4	4,800	12,000	0.5	2,400
			15,000	0.5	3,000
		10,800			11,040

$$y/e\ 31/12/X5 = 11040 \times 0.5 = 5,520$$

(1) average metal cost per gram: average (B3:B26) in exhibit 1 = £547.50

(2) labour £2,250,000 x 1.04 = £2,340,000 x 1.04 = £2,433,600 or formula in NPV

(3) development costs = £0 as sunk

2 Report

Issues to be covered include:

Metal cost

- If the average cost of metal rises by 5% the project still has a positive NPV
- If the average cost of metal rises by 10% the project has a negative NPV
- So the project is sensitive to the average cost of metal
- The graph of metal prices indicates a trend upwards not reflected in the use of the average cost in the initial NPV
- Using the first and last costs provided there is an increase of  $620/350 = 1.77$  ie 77% over two years (or 33% pa compound)
- The highest price is 720 which is 31.5% above the average - far in excess of the 10% scenario tested.
- So use of the average cost is likely to have produced an unreliable NPV
- Unless Sensortex can hedge against the movements in cost in the commodity market or respecify the sensor (flexibility option) or increase selling prices to pass on the cost to customers, then the project is very risky arising from variations in the precious metal cost.

#### Price inflation

- If the price cannot be raised by 3% pa and the selling price remains constant at £1,500 per sensor then, under this scenario, the NPV is much lower and the project is more marginal.
- The project is therefore sensitive to the sales price which adds to the risk especially if materials *and* metals cost changes occur simultaneously rather than the approach of exploring changes in one variable at a time.

#### Discount rate (zero NPV)

- The IRR is 15% ie, a 50% increase before the project becomes marginal.
- The project therefore has a reasonable margin of safety with respect to the discount rate.

#### Discount rate (changes from 10% to 6%)

- If the discount rate falls from 10% to 6% (a 40% decrease) then under this scenario the NPV rises from £719,804 to £1,356,101 (an 88.4% increase).
- While cash flows are unchanged in this scenario, it can be seen that the project is favourably sensitive to a decrease in discount rate for a fall to 6% pa.

#### Use of expected values

- Expected values assume the project is repeated many times rather than done once
- Actual demand won't correspond to the expected demand in each year
- If the worst case levels of demand occur the project loses £3m in NPV terms
- Uses past data for other sensors which might not be reliable

#### Conclusion

The project appears to be very risky and unless there are real options associated with it (3 below) then it should be rejected.

#### Appendix - scenario calculations

Results of changing data entered into relevant cell/cells in Exhibit 2 after initial NPV calculated based on directors' suggested scenarios.

## Changes required to

	NPV	spreadsheet in Exhibit 2
average cost +5% to 574.875	195,184	Multiply cell C39 in exhibit 2 by 1.05
average cost +10% to 602.25	-329,436	Multiply cell C39 in exhibit 2 by 1.1
price factor 1.0	64,577	Change cell C38 in exhibit 2
	NPV	Changes required to spreadsheet in Exhibit 2
worst case demand 10k 8k 4k	-2,924,658	
<b>best case demand 12k 15k 7.5k</b>	<b>5,580,675</b>	
IRR	15%	
NPV with 6% pa discount rate	1,356,101	Change cell C40 in exhibit 2 to 0.06

- 3 NPV analysis only considers the cash flows related directly to the project. However, there may be real options associated with a particular project that outweigh the conventionally calculated NPV so a negative NPV project may be acceptable once the value of any options is added in.

This project is risky and small changes in inputs eg, the cost of precious metal, sales price (part 2 above) produce a negative NPV.

Even though the project has a small ENPV and is risky it has a follow-on option which are enabled by initially producing and selling in the UK. By launching the LQ857, Sensortex may have later opportunities to launch further versions in North America which could be profitable.

Alternatively, there could be the option to later sell in alternative markets or later sell variant products which are not considered in the initial NPV ie, a growth option.

However, should the cost of precious metals rise and/or sales prices cannot be increased and/or the worst-case level of demand occurs, then Sensortex has the option to abandon the project before 31 December 20X5 and this may create the loss of committed or sunk costs.

- 4 SVA is useful to highlight the key drivers of value, namely: discount rate; Life of projected cash flows; Sales growth rate; Investment in working capital; Investment in non-current assets; Corporation tax rate; Operating profit margin.

This enables managers to set targets of achieving value-enhancing strategies in each area. It helps to focus managers on value enhancement to ensure that shareholder's wealth is the primary objective.

- 5 **Currency risks:** There is a potential currency risks if Sensortex generates revenues in US\$ or Canadian \$ (C\$) if the UK £ is the company's functional currency. This arises in the short term (transaction risks) and long term (economic risks) arising from fluctuations against the £. There may also be translation risk in financial reporting terms.

However, there may be some natural hedging as production is also planned to be in North America, so costs may be being incurred in the same currency as revenues. However there remains currency risks in terms of surplus cash inflows above costs generated in US\$ or C\$. There may also be a mismatch between costs and revenues between US\$ and

C\$ (eg if most production is in Canada and most sales are in the US). Currency hedging could be used to minimise these risks in the short-term, but this might be an expensive process, and less effective, for longer term shifts in currency values.

**Political risks:** political action may restrict opportunities to produce abroad or make this process more expensive eg tariffs, quotas, remittance restrictions, penal taxes.

**Cultural risks:** the product design may not be compatible with cultural preferences in North American markets or there may be labour force issues.

**Physical risks:** goods may be lost or stolen in transit, or the documents accompanying the goods may be lost or stolen.

**Credit risk:** the risk of default by new foreign customers may be greater than existing customers.

**Trade risk:** the risk of the customer refusing to accept the goods on delivery, or cancellation of the order in transit.

**Liquidity risk:** the inability to finance the credit given to customers.

#### Tutorial Note

The various scenarios suggested by the directors can be explored using the spreadsheet. One approach is to calculate the NPV based on the initial assumptions, using input variables. The impact of varying the assumptions for various scenarios can then be explored by varying the input variables. It is therefore important that these input variables are set up correctly and the cells in the NPV calculation are referenced to these input variables to minimise the use of absolute numbers in your calculations.

A variation on this approach, to test various scenarios, is to copy down the initial NPV calculations. The input variables in the copied down calculations can then be changed to see, not just the change in the outcome (the NPV), but also the changes in any cash flows in your calculations. This will enable you to see the differences in the cash flows to enable you to explain (where appropriate) **why** NPV has changed. This approach is demonstrated below, where two scenarios have been calculated by copying the original NPV calculations and then adjusting one of the inputs.

This question has explored scenarios by varying one variable at a time. Using the above approach, it would be possible (where appropriate) to vary more than one input variable at the same time.

## WORKINGS

### (1) Scenario 1 - Change price inflation from 3% to zero

	A	B	C
70	Input variables for NPV		
71			
72	Price inflation factor		1
73	Average cost £/gram		547.5
74	Interest rate		0.1

	F	G	H	I	J	K
70	Expected demand (units)			10800	11040	5520
71	Price (£)			1500	1500	1500
72						
73			£	£	£	£
74	Revenue			16200000	16560000	8280000
75	Commodity			-5913000	-6044400	-3022200
76	Other materials			-1890000	-1970000	-1005000
77	Labour			-2250000	-2340000	-2433600
78	Overheads			-1575000	-1800000	-1825000
79	Development costs		0			
80	Pretax cash flow		0	4572000	4405600	-5800
81	Tax at 17%		0	-777240	-748952	986
82	Asset invest		-8000000			1000000
83	WDAs		244800	200736	164604	579860
84	Working capital		-500000	-124000	-133100	757100
85	Net cash flow		-8255200	3871496	3688152	2332146
86						
87	NPV t1-3 @10%	8319777 <sup>1</sup>				
88	t <sub>0</sub>	-8255200				
89	<b>NPV</b>	<b>64577 <sup>2</sup></b>				

<sup>1</sup> =NPV(0.1,I85:K85)

(2) <sup>2</sup> =SUM(G87:G88)

Scenario 2 - Change discount rate from 10% to **6%**

	A	B	C
96	<b>Input variables for NPV</b>		
97			
98	Price inflation factor		1.03
99	Average cost £/gram		547.5
100	Interest rate		0.06



	F	G	H	I	J	K
93			31/12/20X2	31/12/20X3	31/12/20X4	21/12/20X5
94			t0	t1	t2	t3
95						
96	Expected demand (units)			10800	11040	5520
97	Price (£)			1500	1545	1591
98						
99			£	£	£	£
100	Revenue			16200000	17056800	8784252
101	Commodity			-5913000	-6044400	-3022200
102	Other materials			-1890000	-1970000	-1005000
10	Labour			-2250000	-2340000	-2433600
10	Overheads			-1575000	-1800000	-1825000
105	Development costs		0			
106	Pretax cash flow		0	4572000	4902400	498452
107	Tax at 17%		0	-777240	-833408	-84737
108	Asset investment		-8000000			1000000
109	WDAs		244800	200736	164604	579860
110	Working capital		-500000	-124000	-133100	757100
111	Net cash flow		-8255200	3871496	4100496	2750675
112						
113	<b>NPV t1-3 @6%</b>	9,611,301 =NPV(0.06,I11:K111)				
114	<b>t<sub>0</sub></b>	-8,255,200 =H111				
115	<b>NPV</b>	1,356,101 =sum(G113:G114)				



### Worked example: Redfox plc

You should assume that the current date is 30 June 20X5

Redfox plc (Redfox) is listed on the London Stock Exchange (LSE). It operates adventure parks throughout the UK. Redfox is seeking to diversify and expand its activities by opening a new adventure park called Westworld and has asked a market research company, for a fee of £200,000, to estimate the number of visitors in the first year of operation and the potential for growth.

The Westworld project would be a major undertaking for Redfox and, subject to a satisfactory project appraisal, the details will be made public in an announcement to the LSE. One of the Redfox directors has suggested that it would be a good idea to advise their close family members to buy shares in Redfox shortly before any public announcement is made.

It has come to the attention of the board that a competitor, East-Parks, which operates adventure parks in the USA, is considering expanding into the UK. East-Parks has identified a suitable location in the UK and has applied for planning permission to develop the site. However, it will be a year before the planning decision is made as to whether East-Parks will be allowed to start development of the site.

You are a Chartered Accountant and the finance director of Redfox. You intend to appraise the Westworld project at 30 June 20X5 using net present values.

- The following three bullet points detail Westworld's revenue and contribution data that is reproduced in the **Exhibit - Pre-populated spreadsheet**:

The market research company has produced a report that gives an indication of the forecast numbers of visitors to Westworld in the first year of operations to 30 June 20X6, together with associated probabilities and the forecast growth in the number of visitors for the next three years. The estimated visitor numbers in the first year are:

Case	Number of visitors	Probability
Best	12,000,000	50%
Medium	9,000,000	30%
Worst	6,000,000	20%

Visitor numbers in the following three years to 30 June 20X9 would grow at 5% pa.

- The estimated sales revenue per visitor will be £34 in the first year of operations. After 30 June 20X6 sales revenue per visitor is expected to increase by the general rate of inflation of 2.5% pa. Contribution is 40% of sales revenue.

The following further information is available to you regarding the Westworld project. This information has not been reproduced in the pre-populated spreadsheet.

- Incremental selling and administrative expenses in the year to 30 June 20X6 are estimated to be £90 million and will increase at the rate of 4% pa thereafter.
- On 30 June 20X5, the project requires an investment in working capital of £35 million, which will increase at the start of each year in line with sales volume growth and sales price increases. Working capital will be fully recoverable on 30 June 20X9.
- On 30 June 20X5, the project will require an investment in land of £40 million and plant and equipment of £500 million. It is estimated that on 30 June 20X9 (in 30 June 20X9 prices) the land will have a value of £80 million after tax and the plant and equipment will have a value of £120 million before tax. The plant and equipment will attract 18% (reducing balance) capital allowances in the year of expenditure and in every subsequent year of ownership by the company, except the final year.
- In the final year, the difference between the plant and equipment's written down value for tax purposes and its disposal proceeds will be treated by the company either:
  - as a balancing allowance, if the disposal proceeds are less than the tax written down value, or
  - as a balancing charge, if the disposal proceeds are more than the tax written down value.

- Assume that the rate of corporation tax will be 17% pa for the foreseeable future and that tax flows arise in the same year as the cash flows that gave rise to them.
- Redfox uses a discount rate of 10% pa to evaluate projects. However, the managing director of Redfox believes that this discount rate is too low and does not fully reflect the risks of the new project.
- You intend to include in the net present value a continuing value at the end of four years that will represent the value of the net cash flows after tax beyond the fourth year. This will be calculated as a multiple of nine times the expected after-tax operating cash flows for the year ended 30 June 20X9.
- Unless otherwise stated you should assume that all cash flows arise at the end of the year to which they relate.

Information relating to Redfox excluding the Westworld project:

- Issued 10p ordinary shares with a total nominal value of £9 million.
- Ex-div share price at 30 June 20X5 is £12 per share.

### Requirements

- 1 Using the **pre-populated spreadsheet** data and other information provided, calculate the expected net present value (ENPV) of the Westworld project on 30 June 20X5. Use money cash flows.
- 2 Calculate the sensitivity of the Westworld project's ENPV to changes in sales revenue and discuss this sensitivity with reference to the visitor numbers and associated probability estimates provided by the market research company. Ignore the effects on working capital.
- 3 Calculate the Westworld project's worst case NPV. Show full workings.
- 4 An analyst has calculated that the best case and medium case scenarios for the Westworld project result in NPVs of £386.24 million and £7.56 million respectively. Discuss whether this information and your calculations in (b) and (c) would change any advice in (a), based on ENPV alone.
- 5 Identify and explain **TWO** real options associated with the Westworld project.
- 6 The managing director of Redfox has suggested using a discount rate of 13% pa rather than 10% pa in appraising the Westworld project. Calculate the revised ENPV using a 13% pa discount rate and explain your revised result.
- 7 Assuming the Westworld project goes ahead, explain and calculate the likely effect on Redfox's share price after it makes the public announcement to the LSE.
- 8 Outline the ethical and legal issues for you as a Chartered Accountant, regarding the suggestion by the board member that their close family members should be advised to buy shares in Redfox shortly before the announcement of the Westworld project.

## Exhibit: Pre-populated spreadsheet

	A	B	C	D	E	F	G	H	I
1									
2									
3									
4		PART PRE-POPULATED ENPV FOR THE WEST-WORLD PROJECT							
5									
6									
7			Probability	Visitors m	Sales £m	Prob x Sales			
8		Best	0.5	12	408	204			
9		Medium	0.3	9	306	91.8			
10		Worst	0.2	6	204	40.8			
11			Expected Sales			336.6			
12									
13			Contribution Y1	0.4	134.64				
14			Sales revenue per visitor		34				
15			Growth in sales		0.05				
16			Increase in sales prices		0.025				
17			Discount rate		0.1				
18									
19									
20					0	1	2	3	4
21									
22		Contribution				134.64	144.91	155.96	167.85

## Solution

1

D39 =NPV(E15,E36:H36)							
	B	C	D	E	F	G	H
7		<b>Probability</b>	<b>Visitors m</b>	<b>Sales £m</b>	<b>Probability</b>		
8					<b>x Sales</b>		
9	Best	0.5	12	408	204.00		
10	Medium	0.3	9	306	91.80		
			6				
12		Expected Sales			<b>336.60</b>		
13							
14		Contribution 20X6	(336.6 x 0.4)	134.64			
15		Sales revenue per visitor		34.00			
16		Growth in sales		5%			
17		Increase in sales prices		2.5%			
18		Discount rate		8%			
19							
20	<b>Requirement (a) - ENPV</b>						
21			X5	X6	X7	X8	X9
22							
23	Contribution			134.54	144.91	155.96	167.85
24							
25	Selling & admin expenses			-90.00	-93.60	-97.34	-101.23
26							
27	Operating cash flows			44.64	51.31	58.62	66.62

14		Increase in sales prices		2.5%			
15		Discount rate		8%			
16							
17	<b>Requirement (a) - ENPV</b>						
18			X5	X6	X7	X8	X9
19							
20	Contribution			134.54	144.91	155.96	167.85
21							
22	Selling & admin expenses			-90.00	-93.60	-97.34	-101.23
23							
24	Operating cash flows			44.64	51.31	58.62	66.62
25							
26	Tax 17%			-7.59	-8.72	-9.97	-11.33
27							
28	After-tax cash flows			37.05	42.59	48.65	55.29
29							
30	Property, plant & equipment		-500.00				120.00
31	Land		-40.00				80.00
32	Tax saved on CAs		15.30	12.55	10.29	8.44	18.03
33							
34	Working Capital		-35.00	-2.67	-2.87	-3.09	43.63
35	Continuing value						497.61
36	Net cash flows		-559.70	46.93	50.01	54.00	814.56
37							
38							
39	PVt1 to t4at 10%		680.92				
40	Less t0		-559.70				
41	ENPV		<b>121.22</b>				

On the basis of ENPV the project should be accepted, which will increase shareholders' wealth. The market research of £200,000 should not be included as it is a sunk cost

### WORKING

	B	C	D	E
43		Tax saved on CAs		
44		Cost/WDV	CA	Tax
45				
46	0	500.00	90.00	15.30
47	1	410.00	73.80	12.55
48	2	336.20	60.52	10.29
49	3	275.68	49.62	8.44
50	4	226.06		
51	sale	-120.00	106.06	18.03
52				
53				
54				
55	Working capital			
56	Increase per year $1.05 \times 1.025 =$		1.07625	
57				
58			Total	Increment
59	t0		-35	-35
60	t1		-37.67	-2.67
61	t2		-40.54	-2.87
62	t3		-43.63	-3.09
63	t4			43.63

2

E75 =NPV(0.1,E73:H73),E77 =(D41/E75)							
	B	C	D	E	F	G	H
69				Sensitivity			
70							
71	Contribution x (1-0.17)			111.75	120.28	129.45	139.32
72	Continuing value						1253.88
73				111.75	120.28	129.45	1393.20
74							
75	PV at 10%			1249.83			
76							
77	SensitivityENPV/ PV			10%			
78							

3

D105 =NPV(0.1,E102:H102)							
	B	C	D	E	F	G	H
84			X5	X6	X7	X8	X9
85							
88	Selling & admin expenses			-90	-93.6	-97.34	-101.23
89							
90	Operating cash flows			-8.4	-5.78	-2.82	0.5
91							
92	Tax 17%			1.43	0.98	0.48	-0.09
93							
94	After-tax cash flows			-6.97	-4.8	-2.34	0.41
95							
96	Property, plant & equipment		-500				120
97	Land		-40				80



98	Tax saved on CAs		15.3	12.55	10.29	8.44	18.03
99							
100	Working Capital		-35.00	-2.67	-2.87	-3.09	43.63
101	Continuing value						3.69
102	Net cash flows		-559.70	2.91	2.62	3.01	265.76
103							
104							
105	PV t1 to t4 at 10%		188.59				
106	Less t0		-559.70				
107	NPV		-371.11				

4

	£m	Probability
ENPV	121.22	
Best case	386.24	0.5
Medium case	7.56	0.3
Worst case	(371.11)	0.2

At 10% sensitivity, the Westworld project is quite sensitive to change in total revenue. However the best and medium case scenarios produce positive NPVs and there is an 80% chance of these occurring. Therefore, my advice would not change and the project should be accepted.

However, it must be noted that there is a 20% chance of a substantial negative NPV. The board's appetite for risk should be considered.

- 5 East-Parks has already identified a site to launch its operations in the UK, therefore this will increase the uncertainty of the Westworld project revenues. In the circumstances Redfox might consider waiting to start the project until the decision regarding the planning permission that East-Parks has applied for has been made. The real option regarding the decision to delay the start of the Westworld project is a Timing option.

Redfox could start the project at time zero and has the option to abandon the project should East-Parks commence their project and erodes the profitability of Westworld.

Redfox also has the option to continue after four years, this is a Follow-on-option.

#### Tutorial Note

Only two need to be discussed

- 6 Changing the discount rate to 13% pa

The ENPV decreases to £58.01m (from £121.22m) when the discount rate increases to 13% pa from 10% pa. The workings for this are shown at the end of the solution.

While the ENPV is still positive, it has reduced by more than half, indicating sensitivity to the section of the discount rate.

The change in NPV has occurred as future operating cash inflows are discounted more reducing their PV. In contrast the major initial outlay cost, at time zero, is unaffected by the change in discount rate.

However simply adding 3% to the current discount rate appears to have no justification. It may not be appropriate to be more prudent as it may result in rejecting projects with a positive NPV which would have enhanced shareholder wealth had they been accepted.

The following should be considered:

- (1) How to accurately measure the systematic risk of the Redfox project. This can be achieved by adjusting the cost of equity by using an equity beta from a comparable company that reflects the systematic risk of the project. However gearing adjustments may have to be made.
  - (2) The size of the Westworld project may mean that Redfox's gearing would materially change and it would not be appropriate to use the discount rate or project appraisal methodology. Instead it could be more appropriate to appraise the Westworld project using the Adjusted Present Value model.
- 7 Assuming that the UK stock market is semi-strong form efficient and reacts instantaneously to public information, when Redfox makes an announcement in the Stock Market regarding the Westworld project the share price will immediately reflect the new information.

The increase, or decrease, in price will depend on whether the markets have confidence that the project will indeed be successful.

Assuming that the markets believe this project will be successful, using the ENPV the share price will increase by:  $(£121.22/90) = 135p$  per share. Giving a new share price of  $£12 + £1.35 = £13.35$ .

However several factors might mean that the price is below £13.35, the presence of the East- Parks expansion into the UK and the size of the project may make the markets cautious.

- 8 The suggestion that close family members of the board should buy shares in Redfox before the announcement about the Westworld project is made is likely to be highly unethical, since they will have access to price sensitive information that has not yet been made public.

It may also be insider trading and illegal, but legal advice should be taken.

**Tutorial Note**

This approach to requirement 6 has copied down the whole of the answer to requirement 1 and then changed the input variable for the discount rate from 0.10 to 0.13.

A quicker, short-cut, approach to the answer would be to change the input variable in Requirement 1 to 0.13 and note the revised ENPV.

	A	B	C	D	E	F
112			Probability	Visitors m	Sales £m	Probability
113						x Sales
114		Best	0.5	12	408	204.00
115		Medium	0.3	9	306	91.80

116		Worst	0.2	6	204	40.80
117			Expected Sales			<b>336.60</b>
118						
119			Contribution Y1	0.4	134.64	
120			Sales revenue per visitor		34.00	
121			Growth in sales		5%	
122			Increase in sales prices		2.5%	
123			Discount rate		0.1	
124						
125						
126			Probability	Visitors m	Sales £m	Probability
127						x Sales
128		Best	0.5	12	408	204.00
129		Medium	0.3	9	306	91.80
130		Worst	0.2	6	204	40.80
131			Expected Sales			<b>336.60</b>
132						
133			Contribution Y1	0.4	134.64	
134			Sales revenue per visitor		34.00	
135			Growth in sales		5%	
136			Increase in sales prices		2.5%	
137			Discount rate		0.13	

**WORKING****ENPV @13%**

	A	B	C	D	E	F	G	H
140				0	1	2	3	4
141								
142		Contribution			134.54	144.91	155.96	167.85
143								
144		Selling & admin expenses			-90.00	-93.60	-97.34	-101.23
145								
146		Operating cash flows			44.64	51.31	58.62	66.62

147							
148	Tax 17%			-7.59	-8.72	-9.97	-11.33
149							
150	After-tax cash flows			37.05	42.59	48.65	55.29
151							
152	Property, plant & equipment		-500.00				120.00
153	Land		-40.00				80.00
154	Tax saved on CAs		15.30	12.55	10.29	8.44	18.03
155							
156	Working Capital		-35.00	-2.67	-2.87	-3.09	43.63
157	Continuing value						497.61
158	Net cash flows		-559.70	46.93	50.01	54.00	814.56
159							
160							
161	PV t1 to t4 at 10%	617.71					
162	Less t0	-559.70					
163	ENPV	58.01					
164							
165		Tax saved on CAs					
166		Cost/WDV	CA	Tax			
167							
168	0	500.00	90.00	15.30			
169	1	410.00	73.80	12.55			
170	2	336.20	60.52	10.29			
171	3	275.68	49.62	8.44			
172	4	226.06					
173	sale	-120.00	106.06	18.03			
174							
175							
176							
177	Working capital						

178		Increase per year $1.05 \times 1.025 =$		1.07625			
179							
180				Total	Increment		
181	t0			-35	-35		
182	t1			-37.67	-2.67		
183	t2			-40.54	-2.87		
184	t3			-43.63	-3.09		
185	t4				43.63		



### Worked example: Bloom

Bloom plc is a listed company selling machine tools through a number of divisions located globally. Each division is a separate company and services customers in its geographical area. Operating cash inflows of divisions occur in their local currencies and are returned to the Bloom plc parent annually and then immediately converted to £ sterling. The functional currency of Bloom plc is the £.

Bloom's Japanese division has proposed a new investment in plant which it expects will increase sales. The Japanese divisional head has produced the following cash flow forecasts:

Year	Description	£
0	Outlay	(12,000,000)
1	Operating cash inflows	3,600,000
2	Operating cash inflows	4,230,000
3	Operating cash inflows	5,625,000
4	Operating cash inflows	3,450,000

The forecasts have initially been made in Yen (¥) and then all converted to £s using the current (ie. today's) £/¥ exchange rate.

The initial outlay of £12 million would be incurred next month so Alan, the Bloom finance director, is happy that this amount is reasonably certain.

Alan is however concerned about two key risks.

#### Currency risk

Alan is concerned about the underlying assumption in the forecasts of using the current £/¥ spot exchange rate for translating future operating cash inflows. He believes that the Japanese divisional head has a bias towards working in ¥, without considering fully the exchange rate risks for the parent company.

Alan is therefore sceptical about the forecast value in £s of the future operating cash inflows. Having considered this, Alan believes that the ¥ will depreciate against the £ over the next four years. To assess this risk, he wants to make a prudent working assumption of depreciation of the ¥ against the £ of between 4% and 5% per annum over the four years of the project.

Alan wishes to know the implications for the project if this scale of exchange rate movement occurs and therefore whether he can effectively hedge foreign currency risk.

Alan has discovered that in the 3-month £/¥ forward currency market the ¥ is currently trading at a 1.1% discount to the £, compared with the current spot £/¥ exchange rate.

### Volatility of ¥ operating cash inflows

Alan is concerned that the Japanese divisional head has built in an upward bias into the underlying ¥ operating cash inflows. Alan believes that each of the operating cash inflows in years 1 to 4 should be lower than the figures presented by the Japanese divisional head.

The cost of capital of Bloom is 10% per annum.

### Requirement

1 Calculate the IRR of the investment project using the Japanese divisional head's forecasts and exchange rate assumptions. Briefly comment on the resulting IRR.

(a) Determine the sensitivity of the project by calculating IRR under each of the following alternative assumptions about future £/¥ exchange rates over the next four years:

- The ¥ depreciates against the £ by 4% per annum compound
- The ¥ depreciates against the £ by 5% per annum compound

Assume that the exchange rate for the £12 million outlay remains at the current rate.

Use the Japanese divisional head's assumption about the underlying ¥ operating cash inflows (ie, ignore the potential bias upward bias in ¥ operating cash inflows noted by Alan).

(b) Discuss the implications for risk of the sensitivity analysis and explain any steps which could be taken by Bloom to mitigate risk.

(a) Determine the sensitivity of the project by calculating the IRR under each of the following alternative assumptions about the operating cash inflows in years 1 to 4 compared with the figures presented by the Japanese divisional head:

- 5% lower
- 10% lower

Assume that the outlay remains at £12 million.

Use the current £/¥ spot rate (ie, ignore possible changes in the exchange rate).

(b) Briefly discuss the results of the sensitivity analysis.

4 Provide a reasoned recommendation on whether Bloom should undertake the project.

### Solution

1

C12=IRR(C6:C10)		
	B	C
5	Year	Estimate
6	0	(12,000,000)
7	1	3,600,000
8	2	4,230,000
9	3	5,625,000
10	4	3,450,000

C12=IRR(C6:C10)		
	<b>B</b>	<b>C</b>
<b>11</b>		
<b>12</b>	<b>IRR</b>	<b>15.0%</b>

- (a) The IRR of 15% exceeds the 10% cost of capital of Bloom. Therefore, if the cash flow data and exchange rate are reliable estimates, the project should be accepted based on the IRR decision rule.

#### Cash flows in £s

	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
<b>17</b>	<b>Year</b>	<b>Original estimate (constant ¥ at current value) £</b>	<b>5% pa decline in ¥ £</b>	<b>4% pa decline in ¥ £</b>
<b>18</b>	<b>0</b>	(12,000,000)	(12,000,000)	(12,000,000)
<b>19</b>	<b>1</b>	3,600,000	3,420,000	3,456,000
<b>20</b>	<b>2</b>	4,230,000	3,817,575	3,898,368
<b>21</b>	<b>3</b>	5,625,000	4,822,734	4,976,640
<b>22</b>	<b>4</b>	3,450,000	2,810,047	2,930,246
<b>23</b>				
<b>24</b>	<b>IRR</b>	<b>15.0%<sup>1</sup></b>	<b>9.25%<sup>2</sup></b>	<b>10.40%<sup>3</sup></b>
<b>25</b>				
<b>26</b>	<b>Exchange rate variation - Workings</b>			
<b>27</b>	<b>1</b>		0.9500	0.9600
<b>28</b>	<b>2</b>		0.9025	0.9216
<b>29</b>	<b>3</b>		0.8574	0.8847
<b>30</b>	<b>4</b>		0.8145	0.8493
<b>31</b>				
<b>32</b>	<b>PV</b>	13,351,137 <sup>4</sup>	11,806,803 <sup>5</sup>	12,104,030 <sup>6</sup>
<b>33</b>	<b>Outlay</b>	12,000,000	12,000,000	12,000,000
<b>34</b>	<b>NPV</b>	£1,351,137	£(193,197)	£104,030

<sup>1</sup> =IRR(C18:C22)

<sup>2</sup> =IRR(D18:D22)

<sup>3</sup> =IRR(E18:E22)

<sup>4</sup> =NPV(0.1,C19:C22)

<sup>5</sup> =NPV(0.1,D19:D22)

<sup>6</sup> =NPV(0.1,E19:E22)

(b) A decline in the value of the ¥ against the £, means that the value in £s terms of the operating cash inflows would be lower than would be the case under the constant exchange rate assumption of the Japanese divisional head.

If the annual exchange rate movement is a 5% depreciation of the ¥ against the £, this would lower the IRR to 9.25% which is below the cost of capital of 10% and thereby it would make the project not viable. This is also indicated by the negative NPV of £193,197.

If the annual exchange rate movement is a 4% depreciation of the ¥ against the £, this would lower the IRR to 10.4% which is above the cost of capital of 10% and therefore it would make the project marginally acceptable. This is also indicated by the small positive NPV of £104,030.

At current exchange rates, the IRR of 15% is well above the cost of capital. Alan may therefore wish to lock into the current £/¥ spot exchange rate to mitigate risk.

However, the FOREX markets share Alan's view that the ¥ will depreciate against the £, at least over the next three months. The forward and futures market exchange rates already reflect the anticipation of the ¥ depreciation given that the ¥ is trading at a discount to the £ on forward and futures currency markets. Bloom will not therefore be able to lock into current spot exchange rates using forwards or futures contracts.

However, it is possible that Alan is being too prudent in estimating a 4% to 5% pa depreciation of the ¥ over the life of the project, as it is only the next 3 months that a 1.2% depreciation of the ¥ is expected (which would annualise to 4.9%) based on currency market available information. It may be that the ¥ will not continue to depreciate beyond 3 months. Alan may therefore be too prudent in extrapolating the 3-month currency depreciation over the life on the contract.

Therefore, despite the £/¥ 3-month currency market discount of 1.2%, it is likely that some effective currency hedging is possible beyond 3 months, which may result in an IRR in excess of the cost of capital. However, it may be difficult to hedge effectively over the full life of the contract.

Alan's prudent assumptions are a type of data bias and may represent undue pessimism which could prevent a valuable contract being accepted.

(a)

	B	C	D	E
38	Year	Estimate	5% lower	10% lower
39	0	(12,000,000)	(12,000,000)	(12,000,000)
40	1	3,600,000	3,420,000	3,240,000
41	2	4,230,000	4,018,500	3,807,000
42	3	5,625,000	5,343,750	5,062,500
43	4	3,450,000	3,277,500	3,105,000
44				
45	IRR	15.0% <sup>1</sup>	12.6% <sup>2</sup>	10.1% <sup>3</sup>

<sup>1</sup> =IRR(C39:C43)

<sup>2</sup> =IRR(D39:D43)

<sup>3</sup> =IRR(E39:E43)



- (b) If the operating cash inflows are 10% lower than predicted by the Japanese divisional head, then the project becomes marginal. The IRR is 10.1% to give a zero NPV, while the cost of capital is 10%.

Close scrutiny of the potential for data bias is appropriate to test the robustness of the Japanese divisional head's forecasts. A significant degree of professional scepticism is appropriate given the suspected upward bias in his forecasts.

However, the selection of rates of upward bias of 5% and 10% appear arbitrary and may be excessively prudent. More information is needed on how the estimates have been determined as analytical tools and assessment of risks can only be as valid as the data available.

- 4 There are two levels of uncertainty, being: (i) the underlying ¥ cash flows; and (ii) the exchange rate.

The above analysis considers them independently, but they can also be considered interdependently by considering simultaneous changes in £/¥ exchange rates and an element of upward bias in the underlying ¥ cash flows.

More information is needed to determine not just the consequences of the changes in assumptions but also the probability that will occur.

However, based on the information available even one of the changes makes the project marginal and large or multiple changes can create a large negative NPV.

The capacity for optimistic data bias by the Japanese divisional head is significant as he is both providing the underlying data and would be implementing the project. However, prudence by Alan is an alternative form of bias in the opposite direction. Objectivity and neutrality is required in obtaining an unbiased data set to be used in the analysis.

The cost of capital at 10% pa seems high and may reflect some of the risks but this needs to be ascertained. However, the cost of capital reflects the average risks of existing projects and may not reflect the risk of this project.

Overall, the unreliability of the data and the initial assumptions are key factors and further uncertainties relating to business outcomes over the life of the project would probably mean that the board should not undertake the investment.



### Worked example: Griddle Burger

Griddle Burgers Ltd (GB) operates a successful chain of 20 mid-market burger restaurants located in major cities in the South of England (the South).

The GB board wishes to expand, but it has not been able to identify any further suitable new locations in the South. However, the board believes that there is likely to be demand for GB's restaurants in the North of England (the North), where three potential alternative locations have been identified: Liverpool, Leeds, and Newcastle. This year, it is possible for GB to open a restaurant in only one of these locations.

#### Market research methods

The GB board is uncertain about whether tastes throughout the North would be similar to the South. It therefore chose to undertake market research to help decide which of the three locations would be the preferred choice

Desk-based market research based on data analytics was carried out on all three locations. The data analytics used data on population demographics, the regional economy and the restaurant industry in each location.

In addition, field research was undertaken, with three separate marketing research teams (the teams) each being responsible for gathering data on expected profits and risks for one of the three locations. The field research undertaken was as follows:

**Liverpool:** The city's demographics have a high proportion of younger age groups. To complete a questionnaire survey, the Liverpool team members carried out face-to-face interviews between 5pm and 7pm on Monday to Friday in one week. The Liverpool team believe that GB restaurants appeal particularly to younger age groups so they invited people for interview if they appeared to be under 30 years old and were walking in the area where the restaurant would open. They conducted 57 interviews, which was one in three of the people invited to be interviewed.

**Leeds:** The Leeds team carried out a social media survey using a commercially available online survey tool to reach the widest possible number of respondents. The team advertised the survey on Leeds media channels to encourage participation. The team received 876 responses.

**Newcastle:** The Newcastle team located a number of burger restaurants in the Newcastle area. They identified diners as they left these restaurants and invited them to attend a focus group in return for a £10 voucher to use at a wide range of Newcastle restaurants. They invited 100 people to attend a focus group and actually 20 attended. The team enthusiastically described GB's products and restaurants to maximise the attendance rate.

All three marketing research teams asked a range of questions of participants including: the individual's personal details: their dining habits; their attitudes to burger restaurants; how frequently they would be likely to visit a GB restaurant if one opened in their locality; and the prices they would be prepared to pay.

Based on their field research and their desk-based data analytics, all three teams made a wide range of estimates of the possible demand outcomes in different scenarios.

### Market research results

The results of the marketing research are inconclusive, so a risk remains that demand could vary significantly from expected levels.

GB's marketing director summarised the data collected by each team as follows:

	Expected mean annual contribution (Note 1)	Standard deviation (SD) of estimates of mean annual contribution	Expected annual fixed costs (Note 2)
	£000	£000	£000
Liverpool	3,500	1,700	1,800
Leeds	2,800	700	1,400
Newcastle	2,400	<b>Note 3</b>	1,500

### Notes

- 1 Annual contribution is calculated as: revenue less variable operating costs as cash flows. Annual contribution will be positive with a very high degree of confidence. The range of estimates of expected annual contributions approximate to a normal distribution.
- 2 Expected annual fixed costs are cash flows and are known with a high degree of certainty. All restaurant properties would be leased as fully equipped restaurants so, although there are annual fixed costs, there are no significant initial cash flows on opening each restaurant.

- 3 The Newcastle marketing research team comprised junior staff who were unable to determine the standard deviation of estimates of annual contribution. However, based on the range of estimates of expected annual contributions, the team estimates that there is a 95% probability that annual contribution will be between £1.6 million and £3.2 million.

### The GB board meeting

A board meeting was held to discuss the marketing research results.

The finance director spoke first: "It is really pleasing that the marketing research shows all three locations will generate an expected profit. However, we can only open one restaurant in the North this year, so we need to make a choice. The board has a limited risk appetite and, in this context, I am particularly concerned about two aspects of risk:

- variability of cash flows - we need to make financial plans confidently and we do not want wide fluctuations in operating cash flows;
- risk of losses - I am very keen to keep the probability of making a loss as low as possible, consistent with making a reasonable profit."

The marketing director disagreed: "It's simple. Liverpool has the highest expected profit, so we should open in Liverpool".

### Requirements

Prepare a report for GB Management comprising the following sections:

- 1 Explain and critically evaluate the marketing research data gathered and the market research methods used, for each of the three regions. In so doing, assess the extent to which the market research carried out permits valid, unbiased and consistent analysis of each of the three proposed locations. Calculations are not required.

**Note:** Entries in the table give the area under the curve between the mean and  $z$  standard deviations above the mean. For example, for  $Z = 1.25$ , the area under the curve between the mean (0) and  $z$  is 0.3944.

$Z = \frac{(x-\mu)}{\sigma}$	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.0000	.0040	.0080	.0120	.0159	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4430	.4441
1.6	.4452	.4463	.4474	.4485	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4762	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4865	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4980	.4980	.4981
2.9	.4981	.4982	.4983	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990

2 In order to make a choice between the three locations:

- Prepare calculations which compare the expected relative profits and the relative risks of the three proposed locations.
- Provide explanations of the calculations and give a reasoned recommendation for the board regarding where the new restaurant should be located.

### Solution

1 All three marketing research teams used desk-based market research and applied data analytics, so this broad data analysis method appears to be consistent. More information is needed to determine whether the desk-based data captured and used was valid and unbiased for each team.

The data analytics used data on population demographics, the regional economy and the restaurant industry in each location. These are all important sources of background information, but more information would be needed on the type of analysis carried out for each location.

A key additional source would be data on customer characteristics and customer preferences

in the existing 20 GB restaurants. While some adjustments might be needed to allow for different tastes and attitudes between the North and the South, the data would be a good benchmark and is specific to GB's products. Variations between individual restaurant customers in the South may give some indication of variations between customers in the North and South.

Regarding the field research, the three teams each used different methods of field research so the data captured is likely to exhibit inconsistencies according to the research method being used to extract data.

In addition, each of the data capturing methods and the way they have been applied by field research teams are likely to create questions over the validity of the data and the degree of data bias.

The extent and experience of recently-opened restaurants in each location at a similar level in the local market may give some useful further indicative information.

### **Liverpool field research**

There is an assumption that a new GB restaurant will appeal only, or mainly, to under 30s. Whilst this may be valid, there is a risk of confirmation bias based on a strong, preconceived notion of likely customer types for Liverpool. The preconceived notion may be based on existing information (eg from GB restaurants in the South), but may not apply in the North, which is the objective of the survey to determine.

Alternatively, it could just be a pre-conceived notion by the market researchers, based on their own expectations, perceptions and prejudices of which demographic is likely to be most attracted to GB's food.

Objective evidence supporting the assumption needs gathered to establish whether the proportion of potential customers over 30 is insignificant, otherwise the survey will exhibit the prior bias of the market researchers. A bias may result in poor operating decisions, with a GB Liverpool restaurant overemphasising the tastes of under 30s.

The method of face-to-face interview may also reveal bias because what people tell an interviewer they would do, may be different from how they would actually act.

How the face-to-face interviews take place may also create bias. Selection of people in the area of a potential restaurant may not be representative of customers who would visit the restaurant (eg, if they are prepared to travel to dine).

The timing of the interview (5-7pm Monday to Friday) may be relevant as it is likely that this only represents evening diners on weekdays. There may be a large, unrepresented lunch-time market. There may also be a bias from a day-of-the-week effect, with weekend diners excluded.

In addition, only 171 people were invited to be interviewed, which is a small number and may not represent the broader population of potential customers. Moreover, only one in three were willing to be interviewed. The 57 people interviewed may be atypical of the 171 invited so there could be a bias in the data. This may be a positive bias, as the 57 may be more keen to be interviewed because they are more keen on the idea of a new burger restaurant than the remaining 114.

### **Leeds field research**

The social media survey attracts a much larger number of respondents than the questionnaire approach, but it may be less representative of potential future customers.

This social media survey differs from the other two surveys in that the respondents self-select to take part. This contrasts with the other two surveys where people are invited. As a result, there may be self-selection bias where, for example, people willing to respond to the survey are enthusiastic about restaurants and may therefore have a positive bias towards a new GB

restaurant opening in Leeds.

However, it is difficult to restrict the respondents to the Leeds area and to people who may genuinely want to become customers of a future Leeds GB outlet. There may therefore be some 'random noise' in the responses. If factual filtering questions are asked about the respondents (eg, postcode, age, employment) the data could be cleaned to remove some of the 'random noise' (ie, fake or invalid responses from people unlikely to visit a new GB restaurant in Leeds).

For genuine responses, further filtering of the data could take place to segment it by age, postcode and eating habits. This may yield some valid results in segmenting data to different groups. The size of the sample permits this sub-sampling approach, unlike the questionnaire or focus group sample sizes.

### **Newcastle field research**

Focus groups are likely to have small samples, but they gain more detailed information from each respondent than questionnaires or internet surveys.

Selection of people leaving restaurants is at least indicative of potential customers who visit restaurants, although they may include infrequent diners. The types of burger restaurant selected would need to be similar to GB restaurants, so they are appealing to potential GB customers.

This issue of bias again arises in that the 20 respondents may be atypical of the 100 invitees.

A group of 20 would not be large enough to obtain any statistically significant quantitative results, but it may yield useful qualitative data.

Also, only 20 attendees is a small sample and may not be sufficient to obtain a broad range of views representing potential customers. However, it may need to be divided further into smaller focus groups to avoid bias from 'group think' or from a dominant personality.

The offer of the £10 voucher may have encouraged more attendees, but could introduce further bias, in that the people most attracted to the £10 for their time might be low-income groups who could least afford to dine out regularly paying full price at a mid-market restaurant such as GB. Alternatively, they may be the keenest customers who like to dine out and therefore are unduly positively biased, compared with the general population.

As the marketing research team enthusiastically described GB's products and restaurants to maximise the attendance rate, they may have induced additional favourable bias towards the idea of a new GB restaurant in Newcastle.

### **Conclusion**

All three field research methods, and the ways they have been applied by the three market research teams, are likely to create bias. This means both that comparisons of outcomes may be invalid, and that extrapolating the data collected into the general population to predict actual demand is likely to be difficult and flawed.

Additionally, demand in the first year may differ from demand in later years as the restaurant becomes established. This trend is likely to be similar in nature for each of the three restaurants, but may differ in extent.

2

F2=E2/B2						
	A	B	C	D	E	F
1		Expected mean annual contribution £000	Expected annual fixed costs £000	Expected mean annual profit £000	Standard deviation (SD) £000	Coefficient of variation (CoV)*
2	Liverpool	3,500	1,800	1,700	1,700	0.49
3	Leeds	2,800	1,400	1,400	700	0.25
4	Newcastle	2,400	1,500	900	400	0.17

\*Co-efficient of variation is calculated as Standard deviation/Expected mean annual contribution This formula can then be copied into cells F3 and F4

### Mean profit

The above table shows the mean profit if the average expected contributions are realised. It shows, as indicated by the marketing director, that Liverpool has the highest expected mean profit.

### Variability and standard deviation

A decision based on mean expected profit alone ignores the relative risks of the three locations. The finance director (FD) has indicated that the board's limited risk appetite demonstrates some degree of risk aversion.

The standard deviation (SD) for Newcastle can be determined because the estimates of expected mean annual contribution approximate a normal distribution. There is a 95% probability that annual contribution will be between £1.6 million and £3.2 million. In a normal distribution, plus or minus two SDs from the mean correspond to approximately 95% of the distribution. The SD for Newcastle is therefore  $(£3.2m - £1.6m)/4 = £400,000$ .

The FD's concern about variability of cash flows is indicated by the standard deviation. Liverpool has the highest mean profit and the highest SD. Indeed, the SD for Liverpool is much higher at £1.7m than for Leeds at £700,000.

Newcastle has the lowest mean profit and the lowest SD.

### Relative risk and co-efficient of variation

It is difficult to compare the SDs without considering the size of each SD relative to the size of the mean contribution in order to assess *relative* risk on a consistent basis. This is because the standard deviation may be larger, in absolute terms, simply because the expected contributions are higher.

A more meaningful measure of relative risk is the coefficient of variation (CoV), which relates the standard deviation to the size of the mean contribution. CoV is calculated as the SD divided by the mean contribution.

It can be seen from the above table that while Liverpool has the highest SD compared with Leeds and Newcastle in absolute terms, it also has a higher CoV (ie, a higher SD relative to the mean contribution generated).

Higher variability, as the FD noted, makes planning more difficult and increases operating risk. A lower SD and CoV makes planning easier as there is less variation.

### **Risk of making a loss**

The FD emphasised that the board wants to reduce the risk of GB making a loss.

- Liverpool

The expected mean profit for the Liverpool location is £1.7m. However, the SD is high as it is also £1.7m.

With a normal distribution, approximately 68% of the distribution falls within +/- one SD from the mean (*NB more precisely 68.27%*). Therefore, the probability of the contribution decreasing more than one SD at the lower tail of the distribution (which would generate a loss) is approximately 16%  $((100-68)/2)$ .

- Leeds

The expected mean profit for the Leeds location is £1.4m. The SD is half this figure, at £700,000.

With a normal distribution, approximately 95% of the distribution falls within +/- two SD from the mean (*NB. more precisely 95.45%*). Therefore, the probability of the contribution falling more than two SD at the lower tail of the distribution (which would generate a loss) is approximately 2.5%  $((100-95)/2)$ .

- Newcastle

The expected mean profit for the Newcastle location is £900,000. The SD is less than half this figure, at £400,000.

Approximately 95% of the distribution falls within +/- two SD from the mean. The Newcastle location would require a fall of more than 2.25 SD ( $£900,000/£400,000$ ) to start generating a loss. From the normal distribution tables (area under the normal curve - See *Appendix 2*) the value for a Z-score of 2.25 is 0.4878. As one half of the distribution is more than the mean, the proportion which is below zero profit (i.e. more than 2.25 SD below the mean) is approximately 0.0122 or 1.22% (ie  $1 - (0.5 + 0.4878)$ ).

Therefore, the probability of the Newcastle contribution falling more than 2.25 SD at the lower tail of the distribution is 1.22% which is even lower than the 2.5% of Leeds.

### **Reasoned recommendation Newcastle**

Newcastle would be highly unlikely to be able to match the Liverpool location, if it achieved its expected mean profit.

Even if the Newcastle performance was two SD above the mean, it would only generate a profit equal to that of Liverpool's mean expected performance ( $£2.4m + (2 \times £0.4) - £1.5m = £1.7m$ ). There is approximately only a 2.5% probability of this being achieved.

Thus, whilst Newcastle has the lowest probability of making a loss, it has the least upside potential.

### **Liverpool**

The Liverpool location has the greatest upside potential in terms of the highest mean profit. However, it also has the greatest downside potential for both of the FD's criteria: variability and probability of making a loss. Given the risk appetite of the board, this location is therefore probably too risky, despite having the highest mean profit.



## Leeds

If the data captured is credible, then the Leeds location seems to offer the best compromise between profit and risk. In terms of relative risk, the CoV of Leeds is only slightly more than half that of Liverpool. The risk of making a loss at Leeds is approximately only 2.5% which appears acceptable for a new venture. It compares favourably with Liverpool which has a 16% probability of generating a loss.

In terms of upside potential, if Liverpool achieves its mean expected performance, it is possible that Leeds would be able to match this. If the Leeds performance were one SD above the mean it would generate a profit greater than that of Liverpool's mean expected profit (£2.8m + £0.7m -

£1.4m = £2.1m). There is approximately a 16% probability of this occurring (as above  $(100-68)/2$ ).

## Conclusion

It is recommended to open a restaurant in Leeds this year as it has the best compromise between profit and risk. This does not exclude the possibility of opening restaurants in the other two locations in future years, as they generate a positive profit, but the decision would be subject to the future risk appetite of the board.



## Worked example: Chrono Ltd

Chrono Ltd (Chrono) manufactures three types of upmarket watches. It operates throughout England and Wales, selling to jewellery retailers.

Chrono's selling prices and variable costs per watch for each product type were as follows for June 2021:

Product code	Product type	Selling price per watch	Variable cost per watch
Product 1	Elite Gold	£935	£561
Product 2	Luxury Silver	£750	£525
Product 3	Fashion Bronze	£520	£416

Chrono has a geographical organisational structure, operating as three largely autonomous regions. Each region has a regional manager who is responsible for performance.

Region code	Region
Region A	North
Region B	Midlands and Wales
Region C	South

In recent years, the relative monthly performance of the South region has been significantly worse than the other two divisions. However, in May 2021 a new manager was appointed in the South region.

## Data analysis for a board meeting

You are an assistant to the finance director. The board requires an analysis of performance for June 2021 for products and for regions.

The finance director has provided you with a **pre-populated spreadsheet** for June 2021 showing daily volumes of sales transactions (each row shows a day's sales of one product type in one region).

### Requirements

- 1 Prepare a report for the board which analyses the data in the pre-populated spreadsheet, provided by the finance director, as follows:
  - (1) Assimilate and analyse the data according to:
    - (a) product type
    - (b) region
 (Your answer should include a structured analysis of the data relating to sales volumes, revenue, and contribution.)
- 2 Referring to your analysis of the data in part (a) above, compare and explain the relative performance in June 2021 of:
  - (1) the three product types
  - (2) the three regions

**Exhibit: Pre-populated spreadsheet data**

	A	B	C	D
1	SALES FOR JUNE 2021			
2			Quantity	
3	Delivery date	Region code	Delivered	Product type
4				
5	01 June 2022	B	22	2
6	02 June 2022	B	54	3
7	03 June 2022	A	9	1
8	04 June 2022	C	42	3
9	04 June 2022	A	58	3
10	05 June 2022	B	33	2
11	06 June 2022	C	12	1
12	06 June 2022	B	39	3
13	07 June 2022	A	31	2
14	08 June 2022	B	27	2
15	08 June 2022	A	60	3
16	09 June 2022	B	5	1
17	10 June 2022	C	29	2
18	10 June 2022	A	41	3
19	11 June 2022	C	14	1
20	12 June 2022	A	48	3

21	12 June 2022	C	47	3
22	13 June 2022	B	37	2
23	14 June 2022	C	11	1
24	14 June 2022	A	34	2
25	15 June 2022	B	45	3
26	16 June 2022	A	7	1
27	16 June 2022	C	33	2
28	17 June 2022	A	47	3
29	17 June 2022	B	15	1
30	18 June 2022	A	43	3
31	18 June 2022	C	49	3
32	19 June 2022	A	8	1
33	19 June 2022	C	14	1
34	20 June 2022	C	31	2
35	21 June 2022	A	6	1
36	22 June 2022	B	18	2
37	23 June 2022	C	33	3
38	23 June 2022	A	9	1
39	24 June 2022	C	16	2
40	25 June 2022	A	7	1
41	26 June 2022	C	43	3
42	27 June 2022	B	66	3
43	27 June 2022	C	23	2
44	28 June 2022	C	7	1
45	29 June 2022	B	48	3
46	30 June 2022	A	17	2

## Solution

### 1 Summary data table

	A	B	C	D	E
4	Summarydata				
5		Price	VC	Sales margin	Margin
6		£	£	£	
7	Product 1	935	561	374	40%
8	Product 2	750	525	225	30%
9	Product 3	520	416	104	20%

June 2021

Analysis by product

	A	B	C	D	E
65	<b>PRODUCTS</b>				
66		<b>Product 1</b>	<b>Product 2</b>	<b>Product 3</b>	<b>Total</b>
67	Volume	124	351	763	1,238
68	Price	£935	£750	£520	
69	<b>Revenue</b>	£115,940	£263,250	£396,760	£775,950
70					
71	<b>Contribution</b>	£46,376	£78,975	£79,352	£204,703
72					
73	<b>Mix %</b>				
74	Volume	10%	28%	62%	
75	Revenue	15%	34%	51%	
76	Contribution	23%	39%	39%	

June 2021 Analysis by region

	A	B	C	D	E
79	<b>REGIONS</b>				
80					
81		<b>Region A</b>	<b>Region B</b>	<b>Region C</b>	<b>Total</b>
82	<b>Volume</b>	425	409	404	1238
83					
84	<b>Revenue</b>	£258,950	£252,490	£264,510	£775,950
85					
86	<b>Contribution</b>	£66,542	£64,513	£73,648	£204,703
87					
88	<b>Margin</b>	26%	26%	28%	26%
89					
90	<b>Mix %</b>				
91	Volume	34%	33%	33%	
92	Revenue	33%	33%	34%	
93	Contribution	33%	32%	36%	

**1 Notes**

- 2 Mix figures are subject to rounding differences.
- 3 The analysis shown above should be copied from the spreadsheet software into the word processing software.

**Tutorial Note Summary data table**

The initial summary data table is important in determining some base data of price and unit contribution for each product type.

The data in the summary table is a key reference for later analysis and should be referred to with absolute cell references (rather than relative cell references).

Thus, for example, for the sales price of Product 1 this should be referred to as \$B\$7.

**Analysis by product**

In carrying out the analysis by product, there are a number of methods that can be used. The method used here is the =SUMIF function which is perhaps the easiest.

For example, in determining the sales volume for Product 1, the function is =SUMIF(D17:D58,"1",C17:C58).

This is saying that the items in the quantity delivered column should be added but only selecting those amounts to be added where there is a '1' in the product type column (ie, for Product 1 - Elite Gold watches).

Spreadsheet functionality has been used to produce the analysis (see tutorial notes below).

**WORKING**

	A	B	C	D	E	F
13	SALES FOR JUNE 2021					
14			Quantity		Regional	Regional
15	Delivery date	Region code	Delivered	Product type	Revenue (£)	Contribution (£)
16						
17	01 June 2022	B	22	2	16500	4950
18	02 June 2022	B	54	3	28080	5616
19	03 June 2022	A	9	1	8415	3366
20	04 June 2022	C	42	3	21840	4368
21	04 June 2022	A	58	3	30160	6032
22	05 June 2022	B	33	2	24750	7425
23	06 June 2022	C	12	1	11220	4488
24	06 June 2022	B	39	3	20280	4056

25	07 June 2022	A	31	2	23250	6975
26	08 June 2022	B	27	2	20250	6075
27	08 June 2022	A	60	3	31200	6240
28	09 June 2022	B	5	1	4675	1870
29	10 June 2022	C	29	2	21750	6525
30	10 June 2022	A	41	3	21320	4264
31	11 June 2022	C	14	1	13090	5236
32	12 June 2022	A	48	3	24960	4992
33	12 June 2022	C	47	3	24440	4888
34	13 June 2022	B	37	2	27750	8325
35	14 June 2022	C	11	1	10285	4114
36	14 June 2022	A	34	2	25500	7650
37	15 June 2022	B	45	3	23400	4680
38	16 June 2022	A	7	1	6545	2618
39	16 June 2022	C	33	2	24750	7425
40	17 June 2022	A	47	3	24440	4888
41	17 June 2022	B	15	1	14025	5610
42	18 June 2022	A	43	3	22360	4472
43	18 June 2022	C	49	3	25480	5096
44	19 June 2022	A	8	1	7480	2992
45	19 June 2022	C	14	1	13090	5236
46	20 June 2022	C	31	2	23250	6975
47	21 June 2022	A	6	1	5610	2244
48	22 June 2022	B	18	2	13500	4050

49	23 June 2022	C	33	3	17160	3432
50	23 June 2022	A	9	1	8415	3366
51	24 June 2022	C	16	2	12000	3600
52	25 June 2022	A	7	1	6545	2618
53	26 June 2022	C	43	3	22360	4472
54	27 June 2022	B	66	3	34320	6864
55	27 June 2022	C	23	2	17250	5175
56	28 June 2022	C	7	1	6545	2618
57	29 June 2022	B	48	3	24960	4992
58	30 June 2022	A	17	2	12750	3825
59	<b>Total</b>		<b>1238</b>		<b>775950</b>	<b>204703</b>

### Tutorial Note

To generate the amounts in the regional revenue column (Column E) it is necessary to use the

=IF function. This is a conditional statement which, in its simplest form, would look like =IF(D19=1,C19\*\$B\$7,""). This would say that if the product type is 1 (ie, Product 1) then multiply the price for Product 1 (given as an absolute reference to cell B7 as \$B\$7) by the sales quantity in the row for this day. If it is not Product 1 in the sales transaction, then the cell is left blank (as indicated by the "" instruction).

However, this simple type of =IF statement does not generate revenues for products 2 and 3 - this would require separate columns for Products 2 and 3 and create a more complicated assimilation task. By nesting the three =IF statements together we can generate revenues for all the rows for each product and price. This is just extending the use of the IF statement, rather than requiring any new functions.

So, for example in the first row of the regional revenue column (Row 17), we use the function =IF(D17=1,\$B\$7\*C17,IF(D17=2,\$B\$8\*C17,IF(D17=3,\$B\$9\*C17,IF))).

This is saying that the figure to be inserted into the regional revenue column (Column E) is based on the quantity in that row, multiplied by the price according to the product type (1, 2 or 3). The price is determined by the IF statement. So, given the first row of the regional revenue column is product 2, the =IF statement refers back to the price of product 2 in the initial summary data table using an absolute cell reference \$B\$8. Products 1 and 3 are not relevant to this row and so are ignored by the =IF statement.

Nesting the =IF functions (ie, grouping three simple =IF statements together) therefore inserts the relevant regional revenue figure for each row according to the relevant product price. The relevant amounts can then be selected from this column using the =SUMIF function as previously.

The same procedures can then be applied to the regional contribution column (Column F).

**Note:** Columns A-D are copied from the pre-populated data. Columns E-F are calculated using spreadsheet functionality (see tutorial notes below).

## 2 Product types Revenue and volumes

Despite having the lowest price, the dominant product in terms of sales revenues and sales volumes is the Fashion Bronze watch. In June 2021, it generated 62% of the total sales volume of Chrono Ltd and over half (51%) its sales revenue.

In contrast, the Elite Gold generated only 10% of the total sales volume of Chrono Ltd and only 15% of its sales revenue.

The Luxury Silver product is positioned between the other two products, both in terms of revenue generated (34%) and volume sold (28%).

Analysing this data, starting with the Elite Gold watch perspective, indicates a surprising degree of price sensitivity. As the price decreases from £925 for the Elite Gold watch to £520 for the Fashion Bronze watch (a 44% decrease), the volume sold increases from only 124 Elite Gold watches sold to 763 Fashion Bronze watches sold to (a 515% increase).

The extent of the difference in the quantity demanded relative to the price difference between the two watches is slightly surprising, as the higher price watch is better quality, so customers are obtaining more for their money.

This calculation is similar to price elasticity of demand, but it is not the same, as these are different products at one point in time, not changes in the price of the same product over time.

Some investigation is needed for the differences in quantity demanded between the three products and whether price alone is an adequate explanation. Surveys of customers (jewellery retailers) and consumers are needed to obtain further information.

Other explanations and types of analysis of the sales volume and price differences are possible:

- The Elite Gold may not have an attractive design or other attributes with consumer appeal, compared with the other two watches, despite its quality.
- Sales channels may discriminate against high value watches (eg, some jewellery retailers may not believe high value items like the Elite Gold are appropriate for the price range of their target customer market).
- The one month of June 2021 is a small data set and may be atypical. Similar analysis is needed over a longer period.

Also, a key issue with data analysis is that the same data can be analysed in different ways and care is needed not to allow different data perspectives to bias the analysis or the decision making arising from that analysis. An alternative analysis of the above data, starting with the Fashion Bronze watch perspective, gives different figures as follows:

As the price increases from £520 for the Fashion Bronze watch to £925 for the Elite Gold watch (a 78% increase) the demand falls from 763 Fashion Bronze watches sold to 124 Elite Gold watches sold (an 84% decrease).

Starting from this Fashion Bronze watch perspective, the same data on the differences in price and volume demanded for the two watches now appear much more in line.

### Contribution - volumes and margins

Revenue is a key driver of contribution and profit. However, total contribution is a more appropriate measure of performance than revenue alone, as it considers both revenue and costs.

The total contribution is a function of sales margin per item (in £s) and sales volume.



The sales margin is greatest on the highest price product Elite Gold at £374 (40%) and the lowest on the lowest price product Fashion Bronze at £104 (20%).

Performance in terms of sales volumes is the inverse of margin, where Elite Gold only sold 124 watches in June 2021, compared with the Fashion Bronze sales volume of 763 items.

The Luxury Silver watch is positioned between these extremes, where it sold 351 watches in June 2021, at a sales margin per watch of £225 (30%).

### Conclusion

In terms of total contribution, the mix data in the table above shows that the Luxury Silver watch and the Fashion Bronze watch have performed equally, each having a 39% share of total contribution. This arises as the lower sales volume for the Luxury Silver watch is compensated by the higher sales margin per item, compared with the Fashion Bronze watch.

Whilst the Elite Gold watch has the highest % margin and absolute margin per item, this is not sufficient to compensate for the much lower sales volume. As a result, in terms of total contribution it is the worst performing product, with only 23% of the total contribution in the mix table above.

### Regions

#### Revenue and volumes

All three regions have a similar share of sales revenue. In the revenue mix data table, all three regions fall in the narrow range of 33–34%, with the South having, very slightly, the highest revenue.

Similarly, for sales volumes, all three regions fall in the narrow range of 33–34%, with the North having, very slightly, the highest sales volume at 34%.

Given that the key drivers of sales revenues are product sales price and product sales volumes, this suggests that each region has a similar mix of the three products, in relative and absolute terms.

As such, the three regions have performed approximately equally, with no clear signs of excess, or inferior, performance by any one division.

Even though the relative performance of the three regions is approximately equal, the new manager for the South has performed well in comparison with historical performance, even though they have only just been appointed.

#### Contribution

All three regions have a similar share of total contribution although there is a little more dispersion (a range of 32% to 36% in the total contribution mix) than for revenue and volumes.

The South has just the highest contribution margin at 28%, compared with 26% each for the other two regions. This may indicate a slightly higher proportion of Elite Gold watch sales for the South region. Combined with the slightly higher revenue for the South, compared with the other two regions, this means the South contributes 36% of the total contribution in the contribution mix, compared with 33% for the North and 32% for the Midlands.

### Conclusion

There is little to choose between the performance of the three regions, with the South having only a slightly higher total contribution.

The new manager for the South has therefore performed well relative to the other two regions, but more particularly in comparison with historical performance, even though they have only just been appointed.

However, this is only one month's data, so care needs to be exercised in drawing strong conclusions. This data analysis needs to be combined with more past data and with future data to establish stronger evidence of relative performance.



### Worked example: Home and Garden Furniture Ltd

Home and Garden Furniture Ltd (HGF) is a wholesaler of furniture, selling to retailer customers (customers) in the UK. HGF's operations are located near the port of Hull, where it has offices plus its single, large warehouse to hold inventory.

Customers order online using HGF's website. The 'HGF delivery promise' is that a customer's goods will be delivered to them two days after the order date, at the latest. Customers can place an order for goods only when they are held in inventory.

HGF outsources customer deliveries to three small, low-cost independent distribution companies (distributors), which all have their main operations near Hull. These three distributors are:

- (1) Nexprezz
- (2) Roadee
- (3) Hullier

The HGF distribution manager, Matt Moore, is responsible for allocating customer orders to the three distributors. The selected distributor for a delivery is required to collect the goods ordered by a customer from the HGF warehouse in Hull on the day following the order date. The distributor is then required to make the delivery to the customer anywhere in the UK on the next day.

It has become apparent that, for longer distance journeys, the distributors are sometimes delaying delivery to HGF customers, so they can add the goods collected from other companies to their load. This is to avoid making two separate journeys and enables travelling with a fully loaded van.

Using an online questionnaire, HGF's customers are asked to score the overall quality of the service provided by the distributor (10 = excellent; 1 = very poor). Issues that customers are asked to consider in giving their overall score include timing of delivery; condition of the goods and packaging; and politeness and efficiency of delivery staff.

HGF has the following KPIs and targets with respect to its delivery operations:

KPI	Targets for each distributor and for HGF overall
Delivery to customer is on, or before, the promised date.	85% of deliveries are on or before the promised date
High customer satisfaction.	Average customer survey score of over 7

A board meeting is to be held next month. One of the agenda items is to consider the level of service being provided to HGF and its customers by the three distributors.

You work in the operations management division of HGF and you have been asked to analyse data for the board which has been provided by Matt Moore. Matt was asked to select a typical three-week period and to provide data on delivery dates and customer survey results. Matt has provided you with data for the three weeks beginning 1 June 2021 in the **pre-populated spreadsheet**.

#### Requirements

- 1 Prepare a report for the HGF board which analyses the data in the pre-populated

spreadsheet as follows:

- (1) Assimilate and analyse the data in relation to:
  - (a) delivery dates achieved
  - (b) customer satisfaction, as denoted by survey scores

Evaluate and explain the relative performance of the three distribution companies relating to delivery dates and customer satisfaction.

State any further information that would be required to make a more complete assessment of the performance of the three distributors.

- 2 Calculate the standard deviation of the customer survey scores for HGF as a whole. Briefly comment on the extent to which this standard deviation may give useful information for management.

**Note:** You are **not** required to calculate the standard deviation of the survey scores of each individual distributor.

- 3 Assess the extent to which the data collected in the customer survey is sufficiently reliable and unbiased to inform the HGF board's assessment of the distributors' performance.

#### Exhibit: Pre-populated spreadsheet data

	A	B	C	D
1				
2	Distributors are:			
3	A.	Nexprezz		
4	B.	Roadee		
5	C.	Hullier		
6				
7	<b>DELIVERIES FOR THE THREE WEEKS BEGINNING 1 JUNE 2021</b>			
8				
9	<b>Order date</b>	<b>Actual Deliverydate</b>	<b>Distributor</b>	<b>Survey score</b>
10				
11	01 June 2022	03 June 2022	A	7
12	01 June 2022	03 June 2022	B	8
13	01 June 2022	03 June 2022	C	8
14	02 June 2022	05 June 2022	A	3
15	02 June 2022	04 June 2022	C	8
16	03 June 2022	05 June 2022	A	4
17	03 June 2022	05 June 2022	B	8
18	03 June 2022	05 June 2022	C	9
19	04 June 2022	06 June 2022	B	4

20	05 June 2022	07 June 2022	A	7
21	05 June 2022	08 June 2022	B	3
22	05 June 2022	07 June 2022	C	8
23	06 June 2022	08 June 2022	A	6
24	07 June 2022	09 June 2022	A	4
25	07 June 2022	09 June 2022	B	7
26	08 June 2022	10 June 2022	A	3
27	08 June 2022	09 June 2022	B	9
28	08 June 2022	10 June 2022	C	9
29	09 June 2022	11 June 2022	B	8
30	09 June 2022	11 June 2022	C	9
31	10 June 2022	15 June 2022	A	1
32	10 June 2022	11 June 2022	B	9
33	10 June 2022	12 June 2022	C	6
34	11 June 2022	13 June 2022	A	8
35	11 June 2022	13 June 2022	C	8
36	12 June 2022	14 June 2022	C	9
37	13 June 2022	16 June 2022	B	3
38	14 June 2022	18 June 2022	A	2
39	14 June 2022	16 June 2022	B	8
40	14 June 2022	17 June 2022	C	4
41	15 June 2022	17 June 2022	A	5
42	15 June 2022	17 June 2022	B	3
43	15 June 2022	17 June 2022	C	4
44	16 June 2022	18 June 2022	A	5
45	17 June 2022	18 June 2022	B	9
46	17 June 2022	18 June 2022	C	9
47	18 June 2022	21 June 2022	A	2
48	18 June 2022	20 June 2022	B	8
49	18 June 2022	20 June 2022	C	8
50	19 June 2022	21 June 2022	B	7
51	19 June 2022	21 June 2022	C	8
52	20 June 2022	22 June 2022	C	4

53	21 June 2022	24 June 2022	A	3
54	21 June 2022	23 June 2022	B	7
55	21 June 2022	23 June 2022	C	9

Solution

WORKING

	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4	<b>DELIVERIES FOR THE THREE WEEKS BEGINNING 1 JUNE 2022</b>									
5										
6	<b>Order date</b>	<b>Actual Delivery date</b>	<b>Distributor</b>	<b>Survey score</b>	<b>Days early (-) late (+)</b> <small>(with 1 day lag promised)</small>	<b>Delivery by promised date</b>	<b>SURVEY</b>	<b>SURVEY</b>	<b>SURVEY</b>	
7							<b>A</b>	<b>B</b>	<b>C</b>	
8	01 June 2022	03 June 2022	A	5	0	YES		3		
9	01 June 2022	03 June 2022	B	5	0	YES			8	
10	01 June 2022	03 June 2022	C	5	0	YES				9
11	02 June 2022	05 June 2022	A	3	1	NO		3		
12	02 June 2022	04 June 2022	C	5	0	YES				8
13	03 June 2022	05 June 2022	B	4	0	YES		4		
14	03 June 2022	05 June 2022	B	5	0	YES			8	
15	03 June 2022	05 June 2022	C	5	0	YES				9
16	04 June 2022	06 June 2022	B	4	0	YES			4	
17	05 June 2022	07 June 2022	A	3	0	YES		3		
18	05 June 2022	06 June 2022	B	3	1	NO			3	
19	05 June 2022	07 June 2022	C	5	0	YES				8
20	06 June 2022	08 June 2022	A	5	0	YES		6		
21	07 June 2022	06 June 2022	A	4	0	YES		4		
22	07 June 2022	06 June 2022	B	3	0	YES			3	
23	08 June 2022	10 June 2022	A	3	2	YES		3		
24	08 June 2022	09 June 2022	B	5	1	YES			6	
25	08 June 2022	10 June 2022	C	5	0	YES				9
26	09 June 2022	11 June 2022	B	5	0	YES			8	
27	09 June 2022	11 June 2022	C	5	0	YES				9
28	10 June 2022	07 June 2022	A	3	3	NO		1		
29	10 June 2022	08 June 2022	B	5	0	YES			5	
30	10 June 2022	12 June 2022	C	6	0	YES				8
31	11 June 2022	11 June 2022	A	5	0	YES		8		
32	11 June 2022	13 June 2022	C	5	0	YES				8
33	12 June 2022	14 June 2022	C	5	0	YES				9
34	13 June 2022	15 June 2022	B	4	1	NO			8	
35	14 June 2022	16 June 2022	A	3	1	NO		3		
36	14 June 2022	16 June 2022	B	5	0	YES			8	
37	14 June 2022	17 June 2022	C	4	1	NO				4
38	15 June 2022	17 June 2022	A	3	0	YES		5		
39	15 June 2022	17 June 2022	B	3	0	YES			3	
40	15 June 2022	17 June 2022	C	4	0	YES				4
41	16 June 2022	18 June 2022	A	5	0	YES		5		
42	17 June 2022	18 June 2022	B	5	0	YES			9	
43	17 June 2022	18 June 2022	C	5	0	YES				9
44	18 June 2022	23 June 2022	A	3	5	NO		2		
45	18 June 2022	20 June 2022	B	5	0	YES			8	
46	18 June 2022	20 June 2022	C	5	0	YES				8
47	19 June 2022	21 June 2022	B	3	0	YES			3	
48	19 June 2022	21 June 2022	C	5	0	YES				8
49	20 June 2022	22 June 2022	C	4	0	YES				8
50	21 June 2022	24 June 2022	A	3	3	NO		1		
51	21 June 2022	22 June 2022	B	3	0	YES			3	
52	21 June 2022	23 June 2022	C	5	0	YES				9
53										
54			<b>Average</b>	<b>6.2</b>		<b>AVERAGE</b>	<b>Newpress</b>	<b>Wadee</b>	<b>Hutley</b>	<b>Total</b>
55							6.3	6.7	7.5	6.2
56			<b>Standard deviation</b>	<b>2.5</b>		<b>Std. dev.</b>				
57	<b>Delivery times</b>					<b>Received</b>	no	no	yes	no
58		<b>A</b>	<b>B</b>	<b>C</b>	<b>Total</b>					
59										
60	Late	5	2	1	8					
61	On-time	9	13	15	37					
62										
63	<b>Total</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>45</b>					
64										
65	<b>On-time %</b>	<b>64.3%</b>	<b>86.7%</b>	<b>93.8%</b>	<b>82.2%</b>					
66										

### Tutorial Note

#### Late deliveries (column E)

To determine whether the delivery is late, or not, the dates given in the pre-populated spreadsheet are compared. Dates can be treated as any other number, and should be deducted from each other to show the gap between the two dates in terms of the number of days.

The question says that the due date is two days after the order date. One approach would be to add 2 to the order date to produce a new column of due dates for delivery. However, this is not necessary as it can be done in a single step by taking the order dates in column A, and adding 2, then deducting the actual delivery date from this total.

Thus, for cell E8, to calculate days early/late this is  $=B8-(A8+2)$ .

Column E shows not just whether the delivery is late or not, but also the number of days by which it is late (or early), which is useful management information in this context.

As the KPI is whether or not the delivery is late, column F shows this (as "YES" or "NO") according to whether column E is greater than zero using an =IF statement. So for the cell F8 it is  $=IF(E8>0,"NO","YES")$

To count the total number of on-time and late deliveries the =COUNTIF function is needed. In the workings above, the total count (column E) uses the function as:  $=COUNTIF(F8:F52,"no")$  for late deliveries in E60 and  $=COUNTIF(F8:F52,"yes")$  for on-time or early deliveries in E61.

Counting the number of on-time and late deliveries for each distributor is slightly more difficult as there are now two conditions: (a) whether it is late (b) whether it is distributor A, B or C. It is therefore necessary to use the =COUNTIFS function (note the extra S in the function title).

So, for example, in determining the number of late deliveries for Distributor A the function used in B60 is:  $=COUNTIFS(E8:E52,">0",C8:C52,"A")$  This is simply saying that the item should be counted if both: (a) the figure in Column E is greater than zero (ie, it is late); AND (b) the letter in column C is "A" (ie, it is Distributor A that has made the late delivery).

This function then counts the number of late deliveries by Distributor A, and the next columns do the same for Distributors B and C.

### Customer survey

To determine the simple average (the mean) of all survey scores (ie, for all three distributors), the function used in D54 is  $=AVERAGE(D8:D52)$  To determine the average survey score for each distributor requires separate identification of each distributor's scores. There are a number of ways to do this. In the table above this has been done using the =IF function. This is not necessarily the quickest method of determining the separate averages, but it is a flexible approach that can be used for extracting and analysing data in a variety of circumstances.

The **key technique** is to insert the correct formulae in the first row of the three columns relating to the customer survey. These can then be easily copied into all the remaining rows.

So, in the first row of the customer survey column for Distributor A the formula in G8 is  $=IF(C8="A", D8,"")$  This is saying that if column C states "A" (ie, it is Distributor A) then insert the survey score from column D into column G. The double inverted commas "" means that if it is not "A" in column D, then the cell is left blank.

So, in the first row of the customer survey column for Distributor B the formula in H8 is  $=IF(C8="B", D8,"")$  As the first row relates to Distributor A (not B), H8 is left blank.

In this way the three-column analysis selects the appropriate customer survey scores for each of the three distributors. The average scores for each of the three columns are determined using the =AVERAGE function.

### Standard deviation

The standard deviation can be calculated using the =STDEV function in cell D56.

This function is applied to the column of customer survey scores using =STDEV(D8:D52).

### 1 Delivery times (see workings)

	A	B	C	D	E
57	<b>Delivery times</b>				
58		<b>A</b>	<b>B</b>	<b>C</b>	<b>Total</b>
59					
60	Late	5	2	1	8
61	Ontime	9	13	15	37
62					
63	<b>Total</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>45</b>
64					
65	<b>KPI ontime %</b>	64.3%	86.7%	93.8%	82.2%

The KPI target of 85% of deliveries being on time (ie, within the promised two-day period from the order date) has been met by two distributors: Roadee and Hullier.

Roadee has marginally satisfied the KPI target, with two late deliveries out of 15. Hullier has comfortably satisfied the KPI target, with only one late delivery out of 16.

In contrast, Nexprezz has missed the KPI target significantly with 5 out of 14 deliveries being late (ie, only 64.3% of deliveries were on time - less than 2 in 3).

Moreover, in the three-week sample period, visual inspection of the data shows three deliveries were late by more than one day. These were all by Nexprezz. One of these was five days late.

The deliveries data can be linked to the customer survey data by visual inspection as the late deliveries also all received low customer survey scores (no late delivery was scored more than 4 out of 10). This indicates that late delivery matters to HGF's customers.

### Customer survey scores (see workings)

	F	G	H	I	J
53		<b>Nexprezz</b>	<b>Roadee</b>	<b>Hullier</b>	<b>Total</b>
54	<b>AVERAGE</b>	4.3	6.7	7.5	6.2
55					
56	KPI Target	7	7	7	7.0
57	Achieved	no	no	yes	no

The average satisfaction score actually achieved for the company as a whole is 6.2, which is below the target of 7.

The overall score hides considerable variance between the customer survey scores achieved by individual distributors, although the total number of deliveries made by each distributor in the three-week sample period is approximately equal.

Roadee has marginally fallen below the KPI target. Low customer survey scores for the two late deliveries have been a key factor in not achieving the KPI target.

Hullier has comfortably satisfied the KPI target, with good customer survey scores for most deliveries and some very good scores.

In contrast, Nexprezz has missed the KPI target significantly, with an average customer survey score of only 4.3 out of 10. The five late deliveries have been a factor in not achieving the

KPI target but also, only three of the other customer survey scores for Nexprezz were at 7 or above.

Nexprezz is clearly the weakest of the three distributors in terms of customer survey scores. Indeed, taken together, Roadee and Hullier would jointly have achieved the target KPI of 7, if Nexprezz had been excluded.

### Further information

Before conclusions can be drawn, further information and explanations are required from each distributor to identify the underlying causes of the differences in relative performance in the sample period.

For example:

- Policies - do any of the distributors have a policy of delaying deliveries to obtain a full load or shared load?
  - Practices - why have delays arisen in the three-week period? Is it due to inefficient practices or inappropriate procedures (eg, for collection, storage or delivery)?
  - Capacity - do the distributors lack staff or a sufficient number of vehicles to meet peak demand? Do they accept assignments from HGF when they are already at peak demand?
  - Capability - is there appropriate resource for staff (training and recruitment with necessary skills); IT (meets industry standards and appropriate for purpose); vehicles (right size and type; reliable)?
  - Allocations of long-distance journeys - are all three distributors allocated an equal number of the longest journeys?
  - Events - have there been random unavoidable or unforeseeable events which have caused delays (eg, traffic delays, staff illness, access to retailer customers' premises, vehicle break down)?
- 2 The standard deviation (SD) of the customer survey scores for HGF overall is 2.5 (see workings).

The broad indication for management is therefore that there is significant variability in the customer survey scores around the mean of 6.2.

However, the validity of the SD is limited in these circumstances. The distribution only has 10 points and it is not identified as a normal distribution. Conclusions about proportions of the distribution within one SD of the mean are not therefore valid.

Moreover, the distribution is not random or normally distributed but, as noted above, is related to each particular distribution company's performance. Analysing this data for individual distributors is therefore more useful to management than exploring the overall SD for the company. The overall SD shows little beyond the basic notion that there is variability in the overall customer survey scores, without linking this to underlying causes related to variability between individual distributors.

- 3 The sample of customer survey scores for HGF as whole is small at 45 observations. It may therefore be atypical of a larger sample over a longer period. Moreover, once the overall sample of 45 is segmented into three sub samples for the three distributors, the sample sizes become even smaller (14 to 16 observations) and perhaps even more unrepresentative.

For example, Nexprezz could have been having particular difficulties in the three-week sample period (eg. IT, staffing, vehicles break-downs) and the customer survey scores may therefore have been unusually poor.

Aside from sample size, a degree of professional scepticism needs to be applied to the data as Matt Moore extracted the sample, and the performance of the distributors is his



responsibility. He may have selected a particularly favourable three-week period, resulting in bias. This may mean that more KPIs were not actually achieved in typical weeks than indicated by the data.

He may even have distorted the data itself or omitted data, introducing favourable biasing. It would have been more appropriate to have greater objectivity in data collection by using somebody to capture data who would not be affected by the consequences of the data analysis.

The parameters in the data may also lead to bias in the assessment of distributors' performance. In particular, there may be omitted variables relating to aspects of performance that are not seen, or do not affect, customers, for example the price charged to HGF for delivery and efficiency of collection from HGF.

Overall customer survey scores are one piece of data that forms part of the assessment of distributors' performance, but more data and more reliable data is needed.

# Summary

Formula	Spreadsheet format	Used for
SUM	=SUM(range), where range is formula data, ie, A3:A10	Adding together a range of cell values
SUMIF	=SUMIF(range, "criteria", sum range)	Adding together a range of cells that meet certain criteria
Internal rate of return	=IRR(range), where range is formula data, ie, A3:A10	Calculating the IRR in project appraisal
MIRR	=MIRR(values, finance_rate, reinvest_rate), where 'values' is an array of cell values containing the cash flows to be analysed	Calculating the MIRR in project appraisal
NPV	=NPV(discount, range), where range is formula data, ie, A3:A10	Calculating the NPV in project appraisal
RATE	=RATE(number of periods, payment, present value, future value, type, guess)	Calculating the rate of return that is expected (by bond holders) over a given period
PV	=PV(rate, number of periods, payment, future value, type)	Calculating the value of a bond
POWER	=POWER(most recent value/oldest value, 1/number of periods of growth)	Calculating the geometric average growth rate
AVERAGE	=AVERAGE(range), where range is formula data, ie, A3:A10	Calculating the arithmetic mean of a range of values
CORRELATION	=CORREL(cell range of first array, cell range of second array)	Calculating the correlation between two sets of data
CONFIDENCE INTERVAL	=CONFIDENCE(confidence percentage, standard decision, sample size)	Calculating the confidence intervals when reviewing the result from sampling
STANDARD DEVIATION	=STDEV(RANGE) where range is formula data, ie, A3:A10	Calculating the standard deviation of a range of values
COUNTIF	=COUNTIF(range, criteria) where the range is the range of cells being examined and criteria being the content being looked for	Counting the number of cells in a range that contain specific content
COUNTIFS	=COUNTIFS(range1, criteria1, range2, criteria2,...) where the range is the range of cells being examined and criteria	Counting the number of cells in a range that meet one or more criteria

Formula	Spreadsheet format	Used for
	being the content being looked for	
IF	=IF(logical test, [value if true], [value if false])	Comparing two values and returning one of two results depending on the outcome of the comparison
Nested IF	=IF(logical test, value if true, value if false, IF(logical test, value if true, value if false, IF(logical test, value if true, value if false)))	Grouping several IF statements together when you are looking to test for more than one condition
RANK	=RANK(number, ref, [order]) where number is the number which is being ranked, ref is an array, or a list, or a sequence of numbers and order refers to whether this list is to be sorted in ascending or descending order	Providing the rank of a number from within a series of numbers

# Answers to Interactive questions

## Answer to Interactive question 1

To calculate the NPV the correct instruction would be **=NPV(0.08,B4:F4)**. The NPV function assumes the first cell is a cash flow in year 1.

=NPV(0.08,B4:F4)						
	A	B	C	D	E	F
1	Year	1	2	3	4	5
2	Revenue £		200,000	200,000	400,000	400,000
3	Costs £		(80,000)	(80,000)	(120,000)	(120,000)
4	Cash flow £	0 <sup>1</sup>	120,000	120,000	280,000	280,000
5	PV@8% T1-5	594,512 <sup>2</sup>				
6	Initial investment	(500,000)				
7	Project NPV	94,512 <sup>3</sup>				

<sup>1</sup> It is important to insert a zero in time period 1 and the first cashflow in time period 2 as the NPV function assumes the first cashflow is at the end of time period 1

The value generated by the project (NPV) is above zero, therefore this project would be undertaken.

To calculate the IRR the correct instruction would be **=IRR(B2:G2)**. The IRR function assumes the first cell is a cash flow in year 0.

<sup>2</sup> This is the present value of the cash flows in cells B4 to F4 ie, for years 1-5. The formula assumes the first cash flow is at the end of year 1. A column has to be added for year 1 (column B) so that the spreadsheet recognises that the first cash flow occurs at year 2.

<sup>3</sup> This is the project NPV after subtracting the initial outlay.

=IRR(B2:G2)							
	A	B	C	D	E	F	G
1	Year	0	1	2	3	4	5
2	Cash flow £	(500,000)	0	120,000	120,000	280,000	280,000
3	IRR	13.1% <sup>1</sup>					

<sup>1</sup> This is the IRR. B3 =IRR(B2:G2)

Note that a column has to be added for the initial outlay in time period 0 (column B) so that the spreadsheet recognises that the first cash inflow occurs at year 2.

The return generated by the project (IRR) is greater than the company's required return (cost of capital) of 8%, therefore this project would be undertaken.

Answer to Interactive question 2

1.1 To calculate the RATE, the following variables need to be input to the RATE function.

=RATE(B1,B2,B3,B4)		
	A	B
1	Nper = the number of periods	16 <sup>1</sup>
2	Pmt = the amount (of interest) paid in any single period	3 <sup>2</sup>
3	Pval = the present value of the asset (its market price ex- interest)	-107 <sup>3</sup>
4	Fval = the future value (the amount paid at maturity).	100
5	Yield to maturity	0.02465 <sup>4</sup>
6	Annual yield to maturity	0.04930 <sup>5</sup>

<sup>1</sup>This is the number of six-month periods over which payments are made. (Six months is used as they are semi-annual coupon debentures.)

<sup>2</sup>This is semi-annual coupon, calculated as £6 divided by 2 = £3.

<sup>3</sup>This is the market price, inserted as a negative value.

<sup>4</sup>This is the yield expressed in terms of the period assessed, which here is six months.

1.2 <sup>5</sup>This is the annualised yield to maturity, calculated as 0.0465 multiplied by 2. (As there are two six-month periods in a year) = 0.0493 or 4.93%.

To calculate the PV, the following variables need to be input to the PV function.

B5 =PV(B1,B2,B3,B4)		
	A	B
1	Rate of return required over the period	0.0493 <sup>1</sup>
2	Nper = the number of periods	5 <sup>2</sup>
3	Pmt = the amount (of interest) paid in any single period	4 <sup>3</sup>
4	Fval = the future value (the amount paid at maturity).	100
5	Present value (issue price)	-95.97 <sup>4</sup>

<sup>1</sup>This is the annualised rate of return for Company B × 2 ie, 2.465% × 2 = 4.93% or 0.0493.

<sup>2</sup>This is the number of 12-month periods over which payments are made. (12 months is used as the payments are made every 12 months.)

<sup>3</sup>This is coupon rate.

<sup>4</sup>This is the present value ie, the issue price, expressed as a negative number. So, the issue price is £95.97.

1.3 Company A has similar risk to Company B so it is reasonable to assume that debenture holders would require the same yield to redemption in return for investing with either company. However, Company A's debentures have only four years until redemption whilst Company B's debentures mature in eight years. It is likely that debenture holders would require a lower yield to redemption for investing in Company A's debentures since the period of the investment is half that of Company B.

# **Glossary of terms**



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**A firm commitment:**

is a binding agreement for the exchange of a specified quantity of resources at a specified price on a specified future date or dates.

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**A forecast transaction:** is an uncommitted but anticipated future transaction.

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**A hedged item:** is an asset, liability, firm commitment, highly probable forecast transaction or net investment in a foreign operation that:

- exposes the entity to risk of changes in fair value or future cash flows; and
  - is designated as being hedged.
- 

**A hedging instrument:** is a designated derivative or, for a hedge of the risk of changes in foreign currency exchange rates only, a designated non-derivative financial asset or non-derivative financial liability, whose fair values or cash flows are expected to offset changes in the fair value or cash flows of a designated hedged item.

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**A merger:** The joining of two separate companies to form a single company.

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**Abiotic services:** The benefits to people that do not depend on ecological processes but arise from fundamental geological processes and include the supply of minerals, metal, and oil and gas, as well as geothermal heat, wind, tides and the annual seasons.

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**Accounting estimate:** An accounting estimate is an approximation of a monetary amount in the absence of a precise means of measurement.

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**Actuarial risk:** This is the risk that the actuarial assumptions such as those on employee turnover, life expectancy or future salaries vary significantly from what actually happens.

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**Agile organisations:** An agile organisation is one that responds quickly to changes in the marketplace and trends in the workplace. Agile organisations react swiftly to competitor actions. They also review processes and working practices to encourage high levels of employee engagement and morale.

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**American swaption:** Allows the owner to enter into the swap on any date that falls within a range of two dates.

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**An acquisition:** The purchase of a controlling interest in another company.

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**An equity instrument:** is any contract that evidences a residual interest in the assets of an entity after deducting all its liabilities.

An instrument is an equity instrument if and only if:

- (a) The instrument includes no contractual obligation to:
- deliver cash or another financial asset to an entity; or
  - exchange financial assets or financial liabilities with another entity under conditions that are potentially unfavourable to the entity.
-



- (b) If the instrument will or may be settled in the issuer's own equity instruments, it is:
- A non-derivative that includes no contractual obligation for the issuer to deliver a variable number of its own equity instruments
  - A derivative that will be settled only by the issuer exchanging a fixed amount of cash or another financial asset for a fixed number of its own equity instruments

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**Arm's length standard:** Intra firm trade of multinationals should be priced as if they took place between unrelated parties acting at arm's length in competitive industries.

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**Artificial intelligence:** the ability of a machine or system to perform cognitive functions we associate with human minds, such as perceiving, reasoning, learning and problem solving, and acting in a way that we would consider to be 'smart'. Most advances in artificial intelligence have been achieved by applying machine learning to very large data sets.

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**Assurance engagement:** An assurance engagement is one in which a practitioner aims to obtain sufficient appropriate evidence to express a conclusion designed to enhance the degree of confidence of the intended users other than the responsible party about the outcome of the evaluation or measurement of an underlying subject matter against criteria.

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**Automation:** "the creation and application of technology to monitor and control the production and delivery of products and services". (The International Society of Automation).

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**Bargain purchase:** The purchase of a company for an amount that is less than the fair value of the net assets acquired.

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**Basis swap:** A series of payments which vary over time (floating), exchanged for a series of payments which also vary over time (floating), according to a different method of calculation or different schedule of payments.

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**Behavioural segmentation:** seeks to classify people and their purchases according to the benefits sought; the purchase occasion; purchase behaviour; usage; and perception, beliefs and values.

(Jobber, D. (2010) *Principles and Practice of Marketing*)

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**Bermudan swaption:** Allows the owner to enter the swap on multiple specified dates.

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**Big data:** 'relates to 'high volume, high velocity and high variety information assets that demand cost-effective, innovative forms of information processes, for enhancing insight and decision-making.' (Gartner)

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**Big data:** "High-volume, high-velocity and high-variety information assets that demand cost-effective, innovative forms of information processes for enhanced insight and decision making." (Gartner)

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**Blockchain:** (B)lockchain is a type of incorruptible, distributed ledger that allows information to be recorded and shared with a network of individuals. The public nature of blockchain

means that every individual can view the transactions made by participants in that network. Blockchain is the technology that enables the existence of, for example, cryptocurrencies.

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**Borderless business:** A borderless (or transnational) business is one which has operations in multiple countries other than its home country. The decision to expand production into new countries could be market-led (eg, to benefit from customer demand in that country) and/or cost- or competence-led (eg, to benefit from low cost, or high quality labour).

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**Business:** An integrated set of activities and assets capable of being conducted and managed for the purpose of providing:

- (a) a return in the form of dividends; or
  - (b) lower costs or other economic benefits directly to investors or other owners.
- 

**Business process re-engineering (BPR):** The fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service and speed.

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**Cap:** A series of interest rate call options with different expiry dates, on the same underlying amount of principal and the same exercise rate for each of the options.

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**Carve-out:** The creation of a new company, by detaching parts of the original company and selling the shares of the new company to the public.

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**Change management:** 'The continuous process of aligning an organisation with its marketplace and doing it more responsively and effectively than competitors.' (Berger)

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**Chatbot:** A service, powered by rules and artificial intelligence that people interact with via a chat interface. This chat interface can either be written or verbal.

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**Cloud computing:** the delivery of on-demand computing resources - everything from applications to data centres - over the internet on a pay-for-use basis. (IBM)

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**Cloud computing:** the delivery of on-demand computing resources - everything from applications to data centres - over the internet on a pay-for-use basis.

(IBM)

Although cloud services are often provided by an external provider and used by multiple customers on the same infrastructure, this is not always the case. Different types of cloud can be identified:

Private cloud - cloud services are supplied on an infrastructure that belongs to only one customer. The service can be managed by the customer themselves, or by the supplier.

Public cloud - the cloud service is owned and provided by a supplier who serves multiple organisations through the same infrastructure system.

Community cloud - a cloud shared by a particular community of organisations with common interests or data protection concerns.

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Hybrid cloud – a cloud that is a combination of two or more distinct cloud infrastructures (private, community or public).

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**Co-efficient of variation:** The standard deviation of a distribution divided by the mean or expected value.

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**Collar:** A combination of purchasing an interest rate call option and selling a put option, or a combination of purchasing an interest rate put option and selling a call option. Like caps and floors, collars can be arranged for a series of call/put options with different exercise dates.

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**Collateralised debt obligation:** is an investment-grade security that is backed or collateralised by a pool of actual bonds, loans or other assets.

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**Commercial paper (CP):** Short-term unsecured corporate debt with maturity up to 270 days (US dollar CP) or 364 days (euro CP). The typical term of this debt is about 30 days.

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**Competitive advantage:** How a firm creates value for its buyers which is both greater than the cost of creating it and superior to that of rival firms.

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**Component of an entity:** Operations and cash flows that can be clearly distinguished, operationally and for financial reporting purposes, from the rest of the entity.

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**Confirmation bias:** A type of cognitive bias that occurs when the person performing the analysis has already reached their conclusion, and is using data to support that conclusion. They may intentionally ignore data that they know will not support their conclusion.

---

**Contingent consideration:** is an obligation of the acquirer to transfer additional consideration to the former owners of the acquiree if specified future events occur or conditions are met.

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**Convertible debt:** A liability that gives the holder the right to convert into another instrument, normally ordinary shares, at a predetermined price/rate and time.

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**Corporate citizenship:** is: 'Business strategy that shapes the values underpinning a company's mission and the choices made each day by its executives, managers and employees as they engage with society. Three core principles define the essence of corporate citizenship, and every company should apply them in a manner appropriate to its distinct needs: minimising harm, maximising benefit, and being accountable and responsive to stakeholders.' (Boston College Carroll School of Management Center for Corporate Citizenship)

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**Corporate governance:** Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined. Good corporate governance should provide proper incentives for the board and management to pursue objectives that are in the interests of the company and its shareholders and should facilitate effective monitoring. (OECD Principles, 2004, Preamble)

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**Correlation:** Correlation is a measure of the extent to which changes in the dependent variable are explained by changes in the independent variable.

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**Coupon rate:** The amount the bondholder receives as interest payments based on the par value.

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**Credit derivative:** A derivative whose value is derived from the credit risk associated with an asset.

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**Credit risk:** also referred to as **default risk**, is the risk for a lender that the borrower will default either on **interest payments** or on the **repayment of principal** on the due date, or on both.

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**Credit risk:** Financial risks associated with the possibility of default by a counterparty. The most common form of credit risk for businesses is the risk of non-payment of a debt.

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**Credit spread:** is the premium required by an investor in a corporate bond to compensate for the **credit risk** of the bond.

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**Crowdsourcing:** The process by which an entity takes a function previously performed by employees and outsources it to an undefined and large community of people in the form of an open call.

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**Cryptocurrency:** A form of decentralised, digital currency, designed to serve as a medium of exchange, and which uses cryptography to secure and verify transactions.

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**Customer relationship management (CRM):** The use of database technology and ICT systems to help an organisation develop, maintain and optimise long-term, mutually valuable relationships between the organisation and its customers.

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**Data bias:** Data is biased when it is not representative of the population that is being analysed. Bias can be inherent in the data collected or introduced by those analysing the data.

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**Data mining:** The process of sorting through data to identify patterns and relationships between different items. Data mining software, using statistical algorithms to discover correlations and patterns, is frequently used on large databases. In essence, it is the process of turning raw data into useful information.

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**Data warehouse:** A data warehouse consists of a database containing data from various operational systems and reporting and query tools.

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**Database marketing:** An interactive approach which builds a database of all communications and interactions with customers (and other stakeholders) and then uses individually addressable marketing media and channels to contact them further (for promotional messages, help and support, or any other relationship-building contacts). Customer data held in computerised databases can be interrogated and manipulated in various ways, through the process of data mining.

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**Debenture:** A written acknowledgement of a debt by a company, usually given under its seal and normally containing provisions as to payment of interest and the terms of repayment of principal. A debenture is usually unsecured, which means that the investors rely on the creditworthiness of the borrower for repayment. In comparison, the term 'bond' is often used to mean a bond for which security has been given by the borrower.

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**Decision support system (DSS):** A system that combines data and analytical models or data analysis tools to support semi-structured and unstructured decision making.

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**Deep discount bond:** A bond offered at a large discount on the face value of the debt so that a significant proportion of the return to the investor comes by way of a capital gain on redemption, rather than through interest payment.

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**Defined benefit obligation:** The defined benefit obligation is the present value of all expected future payments required to settle the obligation resulting from employee service in the current and prior periods.

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**Demerger:** The opposite of a merger. It is the splitting up of a corporate body into two or more separate independent bodies.

---

**Derivative:** A financial instrument or other contract with all three of the following characteristics:

- (a) its value changes in response to the change in an underlying variable such as a specified interest rate, financial instrument price, commodity price or foreign exchange rate
  - (b) it requires no initial net investment, or only a small initial net investment
  - (c) it is settled at a future date
- 

**Descriptive statistics:** Descriptive statistics describes the properties of sample and population data

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**Digital Asset Management (DAM) software:** A business process management solution which enables organisations to create, manage, share, track and find digital assets.

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**Digital assets:** Assets which are held in digital form, that is to say assets which are not available in physical form. Common examples of digital assets include: electronic documents (eg, PDFs; 'Word' documents), presentations, images, logos, audio and video files.

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**Digital marketing:** involves the application of the technologies which form online channels - such as the internet, email, smartphones, tablets, digital televisions and games consoles - to achieve marketing objectives.

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**Digital strategy:** The use of digital technology and digital assets to challenge existing ways of doing things and to restructure accordingly, in particular in relation to the way businesses interact with their customers.

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**Discontinued operation:** A component of an entity that has either been disposed of, or is

classified as held for sale, and

- represents a separate major line of business or geographical area of operations;
- is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations; or
- is a subsidiary acquired exclusively with a view to resale.

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**Disintermediation:** describes a decline in the traditional deposit and lending relationship between banks and their customers and an increase in direct relationships between the **ultimate suppliers** and **users** of financing.

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**Disposal group:** A group of assets to be disposed of, by sale or otherwise, together as a group in a single transaction, and liabilities directly associated with those assets that will be transferred in the transaction. The group includes goodwill acquired in a business combination if the group is a cash-generating unit to which goodwill has been allocated in accordance with the requirements of IAS 36, *Impairment of Assets* or if it is an operation within such a cash-generating unit.

The definition includes, but is not limited to:

- a subsidiary which the parent is committed to selling
- a cash-generating unit of the entity, that is a group of assets which generates economic benefits that are largely independent of other activities of the entity

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**Divestment:** The partial or complete sale or disposal of physical and organisational assets, the shutdown of facilities and reduction in workforce in order to free funds for investment in other areas of strategic interest.

In a divestment the company ceases the operation of a particular activity in order to concentrate on other processes. The rationale for divestment is normally to reduce costs or to increase ROA. Divestments differ from the other forms of unbundling because they do not require the formation of a new company.

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**Double taxation agreement:** An agreement between two countries intended to avoid the double taxation of income which would otherwise be subject to taxation in both.

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**Due diligence:** Due diligence is a term that describes a number of concepts involving the investigation of a company prior to signing a contractual agreement. This assurance procedure is typically carried out by an external firm appointed by the purchasers. The provider of the due diligence will assume a duty of care towards the party that appoints them.

The term due diligence is fairly wide in its application and extends far beyond a review of the target company's financial statements. For instance, specialist firms could be appointed to review the following areas:

- information systems
- legal status
- marketing/brand issues
- macro-environmental factors
- management capabilities
- sustainability issues
- production capabilities

- plant and equipment

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**Duration:** The weighted average length of time to the receipt of a bond's cash flows, the weights being the present value of each cash flow. The calculation gives each bond an overall risk weighting that allows two bonds to be compared. In simple terms, it is a composite measure of the risk expressed in years.

---

**Dynamic capabilities:** An organisation's abilities to develop and change competences to meet the needs of rapidly changing environments (Johnson *et al*).

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**E-marketing:** is the application of electronic communication technologies – such as the internet, smartphones, tablets and digital televisions to achieve marketing objectives.

---

**Economic risk:** The risk that exchange rate movements might reduce the international competitiveness of a company. It is the risk that the present value of a company's future cash flows might be reduced by adverse exchange rate movements.

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**Ecosystem services:** The benefits to people from ecosystems, such as timber, fibre, pollination, water regulation, climate regulation, recreation, mental health, and others.

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**Enterprise risk management (ERM):** 'The culture, capabilities, and practices that organisations integrate with strategy-setting and apply when they carry out that strategy, with the purpose of managing risk in creating, preserving and realising value.'

(COSO, (2017) Executive Summary: Enterprise Risk Management - Integrating with Strategy and Performance.)

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**Environmental management accounting:** The generation and analysis of both financial and non-financial information in order to support internal environmental management processes.

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**Environmental, social and governance (ESG):** Environmental, social and governance (ESG) is a set of criteria used to measure and report sustainability.

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**Equity:** represents the **ordinary shares** in the business. Equity shareholders are the owners of the business and through their voting rights exercise ultimate control. Equity shares have the rights to participate in the distribution of residual assets after any fixed claims from loan holders or preference shareholders have been satisfied.

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**Eurobond:** A bond sold outside the jurisdiction of the country in whose currency the bond is denominated.

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**Eurocurrency:** Currency which is held by individuals and institutions outside the country of issue of that currency.

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**Eurodollars:** US dollars deposited with, or borrowed from, a bank outside the US.

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**European swaption:** Allows the owner to enter the swap only on the maturity date.

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**Exchangeable bonds:** Bonds that are convertible into the ordinary shares of a subsidiary or associate company of the issuer. This is therefore a different company to the issuer of the bond.

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**Executive information system (EIS):** A system that pools data from internal and external sources and makes information available to senior managers in an easy to use form. An EIS helps senior managers make strategic, unstructured decisions.

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**Expected loss (EL):** from credit risk shows the **amount of money the lender should expect to lose** from the investment in a bond or loan with credit risk.

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**Externality:** The difference between the market and social costs, or benefits, of an activity. An externality is a cost or benefit that the market fails to take into account.

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**Face (or par or nominal) value:** The amount of money the bondholder will receive when the bond matures (provided it is not redeemable at a premium or a discount). This is not the market price of the bond. If the market price is above par value, the bond is said to be trading at a premium; if price is below par value, the bond is trading at a discount.

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**Fair value:** Fair value is the price that would be received to sell an asset in an orderly transaction between market participants at the measurement date. (IFRS 13)

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**Feedback:** Feedback occurs when the results (outputs) of a system are used to control it, by adjusting the input or behaviour of the system. Businesses use feedback information to control their performance.

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**Finance lease:** A lease that transfers substantially all the risks and rewards incidental to ownership of an underlying asset.

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**Financial derivative:** A financial derivative is a financial instrument or contract with the following characteristics:

- (a) Its value is based on (derived from) the value of an underlying asset, such as a quantity of shares, bonds or foreign currency, or a bank deposit.
  - (b) Its value changes in response to the change in the price of the underlying item, such as a change in the share price, currency exchange rate or interest rate.
  - (c) It is a contractual agreement involving an agreement to buy or sell the underlying item, or to exchange payments based on the price of the underlying item.
  - (d) Acquiring a financial derivative requires no initial net investment, or only a small initial investment. Most of the eventual receipt or payment occurs at a future settlement date for the instrument.
  - (e) It is settled at a future date, specified in the agreement or contract creating the derivative.
- 

**Financial instrument:** Any contract that gives rise to both a financial asset of one entity and a financial liability or equity instrument of another entity.

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**Fixed charge:** The security given on the bond relates to a specific asset or group of assets, typically land and buildings. The company will be unable to dispose of the asset without providing a substitute asset or without the lender's consent.

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**Fixed interest securities:** are issued by companies or governments to borrow money from investors. Securities issued by the UK Government are known as 'gilts', while securities issued by companies are known as corporate bonds.

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**Floating charge:** The charge is on certain assets of the company and the lender's security in the event of a default of payment is whatever assets of the appropriate class the company then owns. The company would be able to dispose of the assets as it chose until a default took place.

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**Floor:** A series of interest rate put options with different expiry dates, on the same underlying amount of principal and the same exercise rate for each of the options.

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**Forward contract:** A forward contract is an off-exchange binding agreement to buy or sell an item for settlement at an agreed price on a future date.

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**Fraud:** An intentional act by one or more individuals among management, those charged with governance (management fraud), employees (employee fraud) or third parties involving the use of deception to obtain an unjust or illegal advantage. Fraud may be perpetrated by an individual, or colluded in with people internal or external to the business.

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**Functional currency:** The currency of the primary economic environment in which the entity operates.

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**Functional strategies:** Concerned with how the component parts of an organisation deliver effectively the corporate- and business-level strategies in terms of resources, processes and people.  
(Johnson, Scholes and Whittington)

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**Functional structure:** People are organised according to the type of work that they do.

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**Funding gap:** The amount of money needed to fund the ongoing operations or future development of a business or project that is not currently provided by cash, equity or debt.

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**Futures contract:** A future is an exchange-traded **standardised contract** to **buy** or **sell** a **specific amount** of a commodity, currency or financial instrument at an **agreed price** on a **stipulated future date**. Futures are the oldest form of investing in commodities.

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**Global outsourcing:** The purchase of inputs from foreign suppliers or the production of inputs in foreign countries to lower production costs or to improve product design and quality.

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**Globalisation:** The procurement, production, distribution and selling of products and services of a homogenous type and quality on a worldwide basis.

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**Going private:** for a public company When a small group of individuals, possibly including existing shareholders and/or managers and with or without support from a financial institution, buys all a company's shares.

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**Goodwill:** (acquired) is future economic benefits arising from assets that are not capable of being individually identified and separately recognised.

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**Green bonds:** Green bonds are any type of bond instrument where the proceeds will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible green projects, and those which are aligned with the four core components of the Green

Bond Principles (ICMA, 2018).

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**Hedge of a net investment in a foreign operation:** The hedged item is the amount of the reporting organisation's interest in the net assets of that operation.

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**Hedge ratio:** the relationship between the quantity of the hedging instrument and the quantity of the hedged item in terms of their relative weighting.

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**Hedging:** Taking an action that will offset an exposure to a risk by incurring a new risk in the opposite direction.

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**Held for sale:** Anon-current asset (or disposal group) should be classified as **held for sale** if its carrying amount will be recovered **principally through a sale transaction** rather than **through continuing use**. A number of detailed criteria must be met.

- (a) The asset must be available for immediate sale in its present condition.
- (b) Its sale must be highly probable (ie, significantly more likely than not).

For the sale to be highly probable, the following must apply.

- (a) Management must be committed to a plan to sell the asset.
- (b) There must be an active programme to locate a buyer.
- (c) The asset must be marketed for sale at a price that is reasonable in relation to its current fair value.
- (d) The sale should be expected to take place within one year from the date of classification.
- (e) It is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

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**Human resource management (HRM):** 'A strategic and coherent approach to the management of an organisation's most valued assets: the people working there who individually and collectively contribute to the achievement of its objectives for sustainable competitive advantage.' (Armstrong)

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**Human resource management (HRM):** 'A strategic approach to managing employment relations which emphasises that leveraging people's capabilities is critical to achieving sustainable competitive advantage, this being achieved through a distinctive set of integrated employment policies, programmes and practices.' (Bratton and Gold)

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**Hybrid bond:** A security that combines characteristics of both debt and equity.

**Independence:**

- (a) There should be a clear set of governance principles for anyone working in this capacity, addressing issues such as culture, incentives and ethics and how they promote effective stewardship.
- (b) Anyone signing up to these principles should respond appropriately to the risks presented by the market including those of an environmental, social and governance nature.

The avoidance of being unduly influenced by vested interests and being free from any constraints that would prevent a correct course of action being taken. It is an ability to stand apart from inappropriate influences and be free of managerial capture, to be able to make

the correct and uncontaminated decision on a given issue.

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**Independent events:** Two events are independent if the probability of one event occurring is not affected by the second event occurring (eg if a dice is rolled twice, the probability of scoring a six the second time is independent of the number scored on the first roll)

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**Inferential statistics:** Inferential statistics uses properties from descriptive statistics to test hypotheses and draw conclusions

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**Initial public offering (IPO):** An initial public offering (IPO) is an offer to sell shares in a company to the public for the first time.

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**Intangible assets:** are identifiable non-monetary assets without physical substance that are controlled by the entity as the result of past events and from which the entity expects a flow of future economic benefits.

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**Intellectual capital:** is knowledge which can be used to create value. Intellectual capital includes:

- Human resources: The collective skills, experience and knowledge of employees.
  - Intellectual assets: Knowledge which is defined and codified such as a drawing, computer program or collection of data.
  - Intellectual property: Intellectual assets which can be legally protected, such as patents and copyrights.
- 

**Intelligent system:** “a computer-based system that can represent, reason about, and interpret data. In doing so it can learn about the structure of the data, analyse the data to extract patterns and meaning, derive new information, and identify strategies and behaviours to act on the results of its analysis”. (University College London, 2018)

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**Intelligent systems:** “are technologically advanced machines that perceive and respond to the world around them.” (University of Nevada, 2018)

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**Internet of things:** A situation in which everyday objects have network connectivity, allowing them to send and receive data over the internet.

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**Investment risk:** This is the risk that, due to poor investment performance, there will be insufficient funds in the plan to meet the expected benefits.

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**Issuer:** The issuer’s stability is the bondholder’s main assurance for getting repaid. For example, the UK Government is much more secure than any company. Hence government-issued bonds are known as risk-free assets and will have lower returns than company-issued bonds.

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**Joint control:** The contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control. (IFRS 11)

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**Joint operation:** A joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets and obligations for the liabilities relating to the

arrangement.

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**Joint venture:** A joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the arrangement.

---

**Joint venture:** is the commitment, for more than a very short duration, of funds, facilities and services by two or more legally separate interests to an enterprise for their mutual benefit.

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**Just-in-time:** An approach to planning and control based on the idea that goods or services should be produced only when they are ordered or needed. JIT production can also be called **lean production**.

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**Lease:** is a contract, or part of a contract, that conveys the right to use an asset, the underlying asset, for a period of time in exchange for consideration.

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**Lease payments:** Payments made by a lessee to a lessor in order to use an underlying asset during the lease term, less any lease incentives.

IFRS 16 requires lease payments to also include the exercise price of a purchase option if the lessee is reasonably certain to exercise that option, and any penalty payments for terminating the lease.

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**Leveraged buyout:** is the purchase of another company using a very significant amount of debt (bonds or loans). Often the cash flows and assets of the company being purchased are used as collateral as well as the assets of the company making the acquisition.

Typically, the company acquiring the equity in a leveraged buyout (LBO) is a hedge fund.

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**Loss given default (LGD):** is the difference between the **amount of money owed** by the borrower and the **amount of money recovered**.

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**Machine learning:** Machine learning algorithms detect patterns and learn how to make predictions and recommendations by processing data and experiences, rather than by receiving explicit instructions. The algorithms also adapt in response to new data and experiences to improve efficacy over time. (McKinsey & Co)

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**Management Commentary:** "A narrative report that relates to financial statements that have been prepared in accordance with IFRSs. Management Commentary provides users with historical explanations of the amounts presented in the financial statements, specifically the entity's financial position, financial performance and cash flows. It also provides commentary on an entity's prospects and other information not presented in the financial statements. Management Commentary also serves as a basis for understanding management's objectives and its strategies for achieving those objectives." (*IFRS Practice Statement: Management Commentary - A Framework for Presentation*)

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**Management buyout:** The purchase of a business from its existing owners by members of the management team, generally in association with a financing institution.

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**Management information system (MIS):** A system that converts data from mainly internal sources into information (eg, summary reports, exception reports). This information enables managers to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible.

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**Market risk:** The financial risks of possible losses due to changes in market prices or rates.

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**Market segmentation:** The division of the market into homogeneous groups of potential customers who may be treated similarly for marketing purposes.

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**Marketing:** The management process responsible for identifying, anticipating and satisfying customer requirements profitably. (Chartered Institute of Marketing)

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**Marketing audit:** 'A systematic examination of a business's marketing environment, objectives, strategies, and activities, with a view to identifying key strategic issues, problem areas and opportunities.'

(Jobber, D. (2010) *Principles and Practice of Marketing*)

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**Marketing strategy:** A marketing strategy specifies which markets an organisation intends to compete in, what customer needs it will meet, and how it intends to meet them.

---

**Matrix structures:** Attempt to ensure coordination across functional lines by the embodiment of dual authority in the organisation structure. Matrix structures provide for the formalisation of management control between different functions, while at the same time maintaining functional departmentation. It can be a mixture of a functional, product and territorial organisation.

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**Maturity:** The date at which the principal will be repaid. Maturities can range from one day to as long as 30 years (although it has been known for 100-year bonds to be issued).

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**Modified duration:** Used to determine the effect that a change in interest rates will have on the price of a bond. Modified duration =  $\text{Duration}/(1 + i)$ , where  $i$  is the yield required by the bond investors.

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**Monetary items:** Units of currency held, and assets and liabilities to be received or paid in a fixed or determinable number of units of currency. (Examples of monetary items include: cash and bank balances; trade receivables and payables; loan receivables and payables.)

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**Multidivisional structure:** Divides the organisation into semi-autonomous divisions that may be differentiated by territory, product or market. The holding company structure is an extreme form in which the divisions are separate legal entities.

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**Mutually exclusive:** Outcomes where the occurrence of one of the outcomes excludes the possibility of another (eg if a score of six is achieved when a dice is rolled once, it is not possible to score a four (or any other value) from the same roll).

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**Natural capital:** The stock of renewable and non-renewable natural resources that combine to yield a flow of benefits or 'services' to people (eg, Biodiversity as plants and animals, air, water, soils, minerals). The flows can be ecosystem services or abiotic services; which provide value to business and to society.

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**Netting:** A process in which credit balances are netted off against debit balances so that only the reduced net amounts remain due to be paid by actual currency flows.

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**Non-controlling interest:** The equity in a subsidiary not attributable, directly or indirectly, to a parent.

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**Non-executive directors:** Directors who have no executive (managerial) responsibilities.

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**Non-financial performance measures:** These are measures of performance based on non-financial information which may originate in, and be used by, operating departments to monitor and control their activities without any accounting input. Non-financial performance measures may provide a more timely indication performance than financial measures do.

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**Non-monetary items:** A non-monetary item does not give the right to receive, or create the obligation to deliver, a fixed or determinable number of units of currency. (Examples of non-monetary items include: amounts prepaid for goods and services; goodwill; intangible assets; inventories; property, plant and equipment.)

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**Operating lease:** A lease that does not transfer substantially all the risks and rewards incidental to ownership of an underlying asset.

Lessor accounting	
Finance lease	Operating lease
Substance	
<ul style="list-style-type: none"><li>Risks and rewards with the lessee (or other third parties)</li></ul>	<ul style="list-style-type: none"><li>Risks and rewards with the lessor</li></ul>
Accounting treatment	
<ul style="list-style-type: none"><li>Recognise a receivable equal to 'net investment in the lease'. This is the gross investment (minimum lease payments plus any unguaranteed residual value accruing to the lessor) discounted at the interest rate implicit in the lease</li></ul>	<ul style="list-style-type: none"><li>Asset retained in the books of the lessor and is depreciated over its useful life</li></ul>
<ul style="list-style-type: none"><li>Initial direct costs incurred by the lessor are not added separately to the net investment, as they are already included in the discounted figures since they are included in the calculation of the interest rate implicit in the lease (reducing the return)</li></ul>	<ul style="list-style-type: none"><li>Rentals are credited to profit or loss on a straight-line basis over the lease term unless another systematic basis is more representative</li></ul>
<ul style="list-style-type: none"><li>Finance income is recognised reflecting constant periodic rate of return on the lessor's net investment outstanding</li></ul>	

- (a) **Operating segment:** This is a component of an entity:
- (b) That engages in business activities from which it may earn revenues and incur expenses (including revenues and expenses relating to transactions with other components of the same entity)
- (c) Whose operating results are regularly reviewed by the entity's chief operating decision maker to make decisions about resources to be allocated to the segment and assess its performance for which discrete financial information is available

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**Operational risk:** The risk of loss through a failure of business and internal control processes.

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**Operations management:** Concerned with the **design, implementation** and **control** of the **processes** in an organisation that transform inputs (materials, labour, other resources, information and customers) into output products and services.

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**Organisational configuration:** An organisation's configuration consists of the structures, processes and relationships through which it operates.

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**Payer swaption:** Gives the holder the right to enter into the swap as the fixed rate payer (and the floating rate receiver).

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**Personal data:** Any data related to a person such as a name, address, date of birth, bank details, medical records, photo, email address, or posts on social networking websites.

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**Plan assets:** Plan assets are defined as those assets held by a long-term benefit fund and those insurance policies which are held by an entity, where the fund/entity is legally separate from the employer and assets/policies can only be used to fund employee benefits.

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**Population:** the entire set of data from which a sample is selected for analysis (eg sales to all customers in the last year).

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**Positioning:** The 'act of designing the company's offer and image so that it occupies a distinct and valued place in the target customers' mind'. (Kotler and Keller, Marketing Management)

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**Presentation currency:** The currency in which financial statements are presented.

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**Probability distribution:** A probability distribution is a statistical function that describes the possible values and associated probabilities that a variable may take.

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**Project-based structure:** Employees from different departments work together on a temporary basis to achieve a specific objective or to address a specific issue. Employees within the team perform specific job functions.

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**Quality assurance:** Focuses on the way a product or service is produced. Procedures and standards are devised with the aim of ensuring defects are eliminated (or at least minimised) during the development and production process.

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**Quality control:** Concerned with checking and reviewing work that has been done. Quality control therefore has a narrower focus than quality assurance.

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**Rappaport's value drivers:** In relation to the shareholder value approach (as set out by Rappaport) - the value of a company is dependent on seven drivers of value. In effect, the drivers enable management to estimate the value of an investment by discounting forecast cash flows by the cost of capital.

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**Receiver swaption:** Gives the holder the right to enter into the swap as the fixed rate receiver (and the floating rate payer).

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**Redemption:** Repayment of the principal amount (for example a bond) at the date of maturity.

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**Refinancing:** The replacement of existing finance with new finance. Typically when existing debt matures and reaches its redemption date, new debt is issued and the proceeds from the new issue are used to redeem the maturing debt.

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**Regression analysis:** Regression analysis aims to specify the relationship between two or more variables. One of these variables is the dependent variable, whose value depends on the independent variable(s).

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**Regulation:** Any form of interference with the operation of the free market. This could involve regulating demand, supply, price, profit, quantity, quality, entry, exit, information, technology, or any other aspect of production and consumption in the market.

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**Repositioning:** A competitive strategy aimed at changing position in order to increase market share.

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**Repurchase agreement (repo):** An agreement between two counterparties under which one counterparty agrees to sell a quantity of financial instruments to the other on an agreed date for an agreed price, and simultaneously agrees to buy back the instruments from the counterparty at a later date for an agreed higher price.

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**Return on plan assets:** Is defined as interest, dividends and other revenue derived from plan assets together with realised and unrealised gains or losses on the plan assets, less any costs of administering the plan and less any tax payable by the plan itself.

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**Reward:** All the monetary, non-monetary and psychological payments that an organisation provides for its employees in exchange for the work they perform.

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**Right-of-use asset:** An asset that represents a lessee's right to use an underlying asset for the lease term.

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**Rights issue:** is an issue of new shares for cash to existing shareholders in proportion to their existing holdings.

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**Risk:** Risk refers to the quantifiable spread of possible outcomes.

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**Risk appetite:** is the nature and strengths of risk that an organisation is prepared to bear.

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**Risk attitude:** is the directors' views on the level of risk that they consider desirable.

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**Risk capacity:** describes the nature and strengths of risk that an organisation is able to bear.

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**Sampling:** analysing a sample of data from a population, and based on this, making inferences about the population.

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**Sampling distribution :** A sampling distribution is a probability distribution of a statistic taken from all possible samples of a given size from a population (eg the sampling distribution of the mean is a probability distribution that shows the distribution of sample means of a given size).

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**Selection bias:** Selection bias refers to situations where the method used to select a sample results in data with certain characteristics being less likely, or having no chance of being selected. As a result, the sample would not be representative of the population.

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**Sell-off:** A form of divestment, involving the sale of part of a company to a third party, usually another company. Generally cash will be received in exchange.

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**Social media marketing:** Refers to the process of acquiring customers, and attracting the attention of potential customers, through social media sites.

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**Spin-off:** The creation of a new company, where the shareholders of the original company own the shares.

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**Stakeholders:** Groups or persons with an interest in the strategy of an organisation, and what the organisation does.

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**Standard deviation:** A measure of the amount of variation or dispersion in a data set

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**Strategic capability:** The adequacy and suitability of an organisation's resources and competences to contribute to its long-term survival or competitive advantage.

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**Strategic financial management:** The identification of the possible strategies capable of maximising an organisation's net present value, the allocation of scarce capital resources among the competing opportunities and the implementation and monitoring of the chosen strategy so as to achieve stated objectives.

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**Strategic management accounting:** A form of management accounting in which emphasis is placed on information about factors which are external to the organisation, as well as non-financial and internally generated information.

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**Strategic risk:** Potential volatility of profits caused by the nature and type of the business's activities.

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**Supply chain management:** 'The planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes co-ordination and collaboration with channel partners, which can be suppliers, intermediaries, third- party service providers and customers.' (*The Council of Supply Chain Management Professionals*)

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**Sustainability:** The ability to meet the needs of the present without compromising the ability of future generations to meet their own needs. *Brundtland Report 1987*

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**Sustainable development:** Aims to ensure that economic activity can continue without causing permanent harm to society and the planet. It describes a world of thriving economies and just societies based on what nature can afford.

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**Swaptions:** Options on swaps, giving the holder the right but not the obligation to enter into a swap with the seller.

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**Synthetic collateralised debt obligation:** An issued security like a CDO but instead of being backed by a pool of actual underlying assets it is backed by a pool of CDSs.

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**The transnational structure:** Attempts to reconcile global scope and scale with local responsiveness.

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**Theft:** According to the UK Theft Act 1968, a person is guilty of theft if they dishonestly appropriate property belonging to another with the intention of permanently depriving the other of it.

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**Transaction processing systems:** A transaction processing system (TPS) performs and records the daily, routine transactions necessary to conduct business - for example, sales order entry and hotel reservations.

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**Transaction risk:** The risk of adverse exchange rate movements occurring in the course of normal international trading transactions.

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**Transfer price:** is the price at which goods or services are transferred from one process or department to another or from one member of a Group to another.

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**Translation risk:** The risk that the organisation will make **exchange losses** when the **assets and liabilities** of its foreign branches or subsidiaries are **translated** into the **home currency**.

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**Transnational audit:** means an audit of financial statements which are or may be relied on outside the audited entity's home jurisdiction for purposes of significant lending, investment or regulatory decisions. This will include audits of all financial statements of companies with listed equity or debt and other public interest entities which attract particular public attention because of their size, products or services provided.

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**Treasury management:** 'the corporate handling of all financial matters, the generation of external and internal funds for business, the management of currencies and cash flows, and the complex strategies, policies and procedures of corporate finance'. (The Association of Corporate Treasurers)

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**Underlying asset:** is an asset that is the subject of a lease, for which the right to use that asset has been provided by a lessor to a lessee.

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**Value added networks (VANs):** VANs are networks that facilitate the adding of value to products and (particularly) to services by the strategic use of information. Typically, VANs

will link separate organisations together through electronic data interchanges (EDIs), contributing to the development of **business networks**.

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**Value drivers:** In general terms, value drivers are crucial organisational capabilities that provide a competitive advantage to an organisation.

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**Value in use:** The present value of the future cash flows expected to be derived from an asset or cash-generating unit.

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**Value-based management:** A management process which links strategy, management and operational processes with the aim of creating shareholder value.

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**Warrant:** A right given by a company to an investor, allowing them to subscribe for new shares at a future date at a fixed, predetermined price (the exercise price).

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