# ACCA

## Diploma in Financial Management

MODULE B

Subject Area 4

# Risk Management

**This Interactive Text**

BPP is the **official provider** of training materials for the ACCA's DipFM qualification.

**In this July 2005 edition**

- The revised syllabus and study guide (effective from December 2005), cross-referenced to the Text
- Plenty of activities, examples and quizzes to demonstrate and practise techniques
- Full index
- Layout designed to be easy on the eye and easy to use
- Fully updated for developments to April 2005

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**Page**

**INTRODUCTION**

How to use this Interactive Text - Syllabus - Syllabus changes - Study Guide - Reading List – The Examination - Projects (v)

**PART A: ENTERPRISE RISK MANAGEMENT**

1 Managing risk 3

2 Risk and corporate characteristics 23

3 Risk management processes 49

4 Managing operational risk 79

5 Financial risk and financial instruments 119

**PART B: MANAGEMENT OF FINANCIAL RISK**

6 Currency risk 135

7 Interest rate risk 153

8 Futures 163

9 Options 183

10 Forward rate agreements 203

11 Swaps 213

**PART C: CAPITAL STRUCTURE AND DIVIDEND POLICIES**

12 Cost of capital 225

13 Gearing and beta factors 249

14 Optimal capital structure 259

15 Dividend policy 273

**PART D: CORPORATE GOVERNANCE**

16 Corporate governance 293

17 The Combined Code 311

18 Other codes 347

**LIST OF KEY TERMS** 363

**INDEX** 364

**REVIEW FORM**

**ORDER FORM**

# HOW TO USE THIS INTERACTIVE TEXT

This is the fifth edition of the BPP textbook for the Diploma in Financial Management Module B, subject area 4 – *Risk Management*. It has been specifically written to cover the revised Syllabus and Study Guide (effective from December 2005).

To pass the examination you need a thorough understanding in all areas covered by the syllabus and study guide.

## Recommended approach

(a) To pass you need to be able to answer questions on **everything** specified by the syllabus and study guide. Read the text very carefully and do not skip any of it.

(b) Learning is an **active** process. Do **all** the activities as you work through the text so you can be sure you really understand what you have read.

(c) After you have covered the material in the Interactive Text, work through the questions in the BPP Practice and Revision Kit for Module B.

(d) Before you take the exam, check that you still remember the material using the following quick revision plan.

  (i) Read through the chapter learning objectives. Are there any gaps in your knowledge? If so, study the section again.

  (ii) Read and learn the key terms.

  (iii) Read and learn the key learning points, which are a summary of each chapter.

  (iv) Do the quick quizzes again. If you know what you're doing, they shouldn't take long.

This approach is only a suggestion. You or your college may well adapt it to suit your needs.

Remember this is a **practical** course.

(a) Try to relate the material to your experience in the workplace or any other work experience you may have had.

(b) Try to make as many links as you can to subject area 3 of Module B, and also to Module A.

## Further question practice

### *Practice and Revision Kit*

A substantial further bank of questions including past exam questions is available in the BPP Practice and Revision Kit for this module.

### *i-Pass CD Rom*

The BPP i-Pass CD Rom is another valuable source of question practice. We produce one each for Module A and Module B. These interactive CD Roms provide numerous multiple choice and data response questions for each of the two subject areas in the module. Ideal for question practice and revision, they are designed to test knowledge and perfect exam technique.

You can order both these products by using the form at the back of this book, or telephone 020 8740 2211 or on line at www.bpp.com.

# SYLLABUS

## Aim

The aims of this syllabus are:

- To develop an understanding of the main frameworks and techniques concerning the management of financial risk and operating risk
- To achieve a sound appreciation of the theory and practical aspects of corporate governance
- To develop an understanding of the key issues surrounding the capital structure and dividend policies of businesses

## Objectives

On completion of this syllabus, candidates should be able to:

- Explain the nature of risk and the benefits of risk management
- Identify the main processes of risk management
- Explain the importance of aligning risk management processes to the culture and values of a business
- Identify the main forms of both financial and operating risk and describe the techniques that may be used to manage exposure to these two types of risk
- Discuss the frameworks of corporate governance regulations and the key issues relating to these frameworks
- Explain the role of the board of directors and discuss the main issues relating to its composition, responsibilities and functioning
- Identify and discuss the main social, environmental, political and ethical issues that businesses must confront
- Explain the effect of dividend policy on shareholder wealth and discuss the factors influencing the dividend policy of a business
- Explain the effect of capital structure on shareholder wealth and calculate the cost of capital of a business

# REVISED SYLLABUS

The revised syllabus that is set out below aims to:

– achieve a better balance between risk management and corporate governance

– broaden the scope of the risk management element and strengthen the framework within which risk management is considered

– reduce the level of detailed understanding required for financial risk management

– introduce a more analytical, problem-based approach to the corporate governance element

## SYLLABUS CONTENT

| | | Chapters where covered in Text |
|---|---|---|
| **1** | **Managing risk** (the risk element comprises 50% of the total syllabus) | |
| | (a) the nature of risk | 1 |
| | (b) risk concepts (exposure, volatility, severity, probability, etc) | 1 |
| | (c) the benefits of risk management | 1 |
| | (d) the framework for risk management (including the COSO ERM framework) | 1 |
| 2 | **Risk management processes** | |
| | (a) risk identification and awareness | 3 |
| | (b) risk measurement and assessment | 3 |
| | (c) risk response and control | 3 |
| | (d) risk monitoring and reporting | 3 |
| 3 | **Risk and corporate characteristics** | |
| | (a) risk appetite and policy | 2 |
| | (b) risk culture and corporate values | 2 |
| | (c) risk management and the implications for organisational structure | 2 |
| 4 | **Managing financial risk** | |
| | (a) the nature of financial risk | 5 |
| | (b) the main forms of financial risk (foreign exchange risk, interest rate risk, gearing risk, trading in other countries with less stable economies, etc) | 5, 6, 7 |
| | (c) the main techniques to manage financial risk (portfolio analysis, scenario analysis, stress testing, swaps, futures contracts, options, etc) | 3, 5, 6, 7, 8, 9, 10, 11 |
| 5 | **Managing operational risk** | |
| | (a) the nature of operational risk | 4 |
| | (b) the main forms of operational risk (process risk, people risk, systems risk, event risk, business risk) | 4 |
| | (c) risk management processes (risk policies, risk identification and assessment, risk mitigation and control) | 4 |
| | (d) the nature and scope of corporate governance | 16 |
| | (e) concepts and theories of corporate governance | 16 |
| | (f) models of corporate governance (including international comparisons) | 16 |
| 6 | **The framework of corporate governance regulations** (the corporate governance element comprises 30% of the syllabus) | |
| | (a) the role and nature of the regulatory framework | 17 |
| | (b) voluntary codes | 17 |
| | (c) financial reporting requirements | 17 |
| | (d) auditing and statutory requirements | 17 |
| | (e) issues relating to the regulatory framework | 17 |

| | | Chapters where covered in Text |
|---|---|---|
| 7 | **The board of directors** | |
| | (a) the role and composition of the board of directors | 16, 17 |
| | (b) theories of boards | 17 |
| | (c) appraising the performance of the board of directors | 17 |
| | (d) the role of non-executive directors | 17 |
| | (e) nomination, appointment and remuneration issues | 17 |
| | (f) the nature and role of board committees | 17 |
| | (g) issues relating to the role, responsibilities and functioning of the board | 17 |
| 8 | **Corporate citizenship** | |
| | (a) the nature of corporate social responsibility | 18 |
| | (b) social and environmental issues in corporate governance | 18 |
| | (c) ethical concepts and issues in corporate governance | 18 |
| 9 | **Dividend policy** (the financial management element covers 20% of the total syllabus) | |
| | (a) dividend policy and shareholder wealth (MM v traditional school) | 15 |
| | (b) the importance of dividends in practice | 15 |
| | (c) factors determining the level of dividends | 15 |
| | (d) dividend policy and management attitudes | 15 |
| | (e) alternatives to cash dividends | 15 |
| 10 | **Cost of capital and capital structure** | |
| | (a) costs of different elements of capital (inc. a basic understanding of CAPM) | 12 |
| | (b) weighted average cost of capital and NPV analysis | 12 |
| | (c) gearing and the evaluation of capital structure decisions | 13, 14 |
| | (d) factors affecting the level of gearing | 13, 14 |
| | (e) the capital structure debate | 14 |

**RISK MANAGEMENT**

**STUDY GUIDE**

**1-2 MANAGING RISKS**

- Explain the nature of risk and discuss the ways in which the key risks affecting a business may be identified
- Describe the attitudes to risk that may exist and discuss the relationship between risk and expected returns
- Discuss the main benefits to be derived from implementing risk management processes
- Identify and explain key risk concepts (including exposure, volatility, severity and probability) and discuss the tools and techniques that may be used to assess the impact of risks on the business
- Identify the main responses to risk (including risk avoidance, risk retention, risk reduction and risk transfer) and discuss the factors that determine the choice of an appropriate response
- Explain the relationship between risk management policies and the risk appetite and values of the business

**3-4 RISK MANAGEMENT PROCESSES**

- Identify and discuss the main elements of a risk management process (including risk identification and awareness, risk management and assessment, risk response and control, and risk monitoring and reporting)
- Describe the factors that need to be taken into account in order to successfully implement risk management processes
- Outline a framework for risk management (eg. the COSO ERM framework)
- Discuss the possible implications for the organisational structure of a business that is seeking to implement risk management policies and frameworks
- Discuss ways in which the 'ownership' of risk management may be spread and describe the responsibilities of key individuals and groups (including the board of directors, the audit committee, the risk management group, the chief risk officer and line managers) in managing risks

**5-6 MANAGING OPERATING RISK**

- Distinguish between operating risk and financial risk and identify the main forms of risk falling within each category
- Discuss the main forms of operating risk (process risk, people risk, systems risk, event risk and business risk)
- Provide examples of each form of operating risk and develop action plans for dealing with them
- Explain the importance of reviewing operational risk management procedures

**7-8 ASSESSING AND MANAGING FINANCIAL RISK**

- Demonstrate an understanding of key methods of assessing and managing financial risk including:
  - sensitivity analysis
  - scenario analysis
  - simulation
  - expected value and the use of probabilities
  - expected value/variance criterion
  - basic portfolio analysis (using a two asset portfolio)

  and make appropriate calculations
- Discuss Value at Risk and stress testing as methods of assessing financial risk

**9-12 FINANCIAL RISK AND INTERNATIONAL TRADING**

- Discuss the problems associated with foreign exchange transactions
- Explain the main elements of exchange rate risk (transaction risk, economic risk and translation risk)
- Discuss the main methods of dealing with transaction risk (including doing nothing, netting, trading in the home currency, using foreign bank accounts, forward contracts, money market hedges, and currency options and futures)
- Undertake simple calculations to show how hedging methods deal with transaction risk
- Discuss the main methods of dealing with translation risk
- Discuss the main methods of dealing with economic risk (including currency swaps)

**13 FINANCIAL RISK AND INTEREST RATE RISK MANAGEMENT**

- Explain the problem of interest rate risk
- Demonstrate an understanding of the main methods of dealing with interest rate risk including forward rate agreements, interest rate guarantees, options and swaps
- Undertake simple calculations to show how hedging methods can deal with interest rate risk

**14-16 COST OF CAPITAL**

- Define the concept of the cost of capital and explain its importance in decision making
- Discuss the differences in the cost of debt and equity and the methods used to determine the cost of each element of capital (including a basic discussion of CAPM)
- Calculate the cost of each element of capital and the weighted average cost of capital (WACC)
- Discuss the practical problems associated with establishing the cost of each element of capital and describe the assumptions underpinning the use of WACC as an appropriate discount rate in investment appraisal
- Explain the concept of gearing and demonstrate how gearing may be used to evaluate capital structure decisions
- Discuss the factors that may influence the level of gearing in practice
- Describe the traditional and MM (including an adjustment for taxes) views on capital structure and outline the assumptions underlying these views
- Explain the relationship between capital structure and business value

**17-18 DIVIDEND POLICY**

- Explain the relationship between dividend policy and shareholder wealth (including a discussion of the MM v traditional school debate)
- Discuss the notion of cash dividends as a residual
- Identify and discuss the factors determining the level of cash dividends
- Explain the importance of cash dividends in practice (clientele effect, signalling and agency problems)
- Discuss the main alternatives to cash dividends (scrip dividends and share repurchase)
- Discuss management attitudes towards dividend policy (including a discussion of the Lintner study)

**19-20 THE NATURE OF CORPORATE GOVERNANCE**

- Discuss the nature, role and scope of corporate governance
- Identify and discuss the main factors that have led to the development of corporate governance procedures
- Explain the main theoretical approaches to corporate governance (agency, stewardship and stakeholder theories)
- Explain the relationship between corporate governance and risk management
- Discuss alternative models of corporate governance (including a brief outline of governance procedures in the US, Japan, France and Germany)

**21-22 THE FRAMEWORK OF CORPORATE GOVERNANCE REGULATIONS**

- Discuss the role and nature of the Combined Code and briefly review its genesis
- Describe the main elements of the Combined Code
- Evaluate the arguments for and against the use of voluntary codes rather than statutory codes of corporate governance
- Demonstrate an understanding of the role of internal control and internal audit in effective corporate governance
- Demonstrate an understanding of the role of external audit in effective corporate governance and discuss the relationship between the internal and external auditors
- Discuss the ways in which corporate governance matters are reported to shareholders and other stakeholders
- Identify and discuss key issues relating to the corporate governance framework and to the role of external auditors

**23-25 THE FUNCTIONING OF THE BOARD OF DIRECTORS**

- Explain the roles (including the strategic, control and institutional roles) and legal responsibilities of the board of directors
- Describe the composition of the board of directors and explain the role of the chairman in the effective functioning of the board
- Explain the roles and responsibilities of executive and non-executive directors
- Discuss key issues relating to the effectiveness of non-executive directors and to their relations with executive directors
- Discuss key issues relating to the nomination, appointment and remuneration of directors
- Discuss the role and responsibilities of key board committees (including the audit, nominations and remuneration committees)
- Explain the relationship of the board with shareholders and with managers and discuss the problems and issues that may arise in managing these relationships

**26 APPRAISING AND REWARDING THE BOARD OF DIRECTORS**

- Evaluate methods that may be used to appraise the performance of the board of directors and of individual directors (including the use of financial measures based on accounting profit, economic profit and market values)
- Evaluate the main methods of remunerating and rewarding directors (including stock options and bonus schemes)

**27 CORPORATE CITIZENSHIP**

- Explain the concept of corporate citizenship and the different perspectives of the role of the corporation in society
- Describe and discuss the ways in which social and environmental issues may affect corporate governance decisions
- Explain the role of ethics in corporate governance and key ethical issues that the board of directors might face

**28 REVISION**

## READING LIST

This reading list has been compiled by the examiner. It includes several books which you may find useful for wider reading around topics, and in the course of research into the Module B Project.

- A Buckley
  **Multinational Finance**
  FT Prentice Hall

- G Arnold
  **Corporate Financial Management**
  FT Pitman

- R A Brealey, S C Myers, A J Marcus
  **Fundamentals of Corporate Finance**
  Mc Graw Hill

- R W Kolb
  **Futures, Options & Swaps**
  Blackwell Business

- R J Schwartz, G W Smith
  **The Derivatives Handbook**
  Wiley

- R A G Monks, N Minow
  **International Corporate Governance**
  Blackwell

- J Charkam
  **Keeping Good Company**
  OUP

- R I Tricker
  **Corporate Governance**
  Dartmouth

## WEBSITES

www.oecd.org/daf/corporate-affairs
www.iia.org.uk/knowledge/archive
www.qcanet.co.uk

Wider reading is also desirable, particularly relevant articles in *Finance Matters*.

## THE EXAMINATION

The examination for each module will cover the two subject areas in that module. The examination for Module B will cover both 'Financial Strategy' (subject area 3) and 'Risk Management' (subject area 4) topics.

The structure of the examination for Module B will be as follows.

*Section A*

20 multiple choice questions (10 covering subject area 3 and 10 covering subject area 4) of 2 marks each.

*Section B*

3 written questions of 20 marks each - covering subject area 3.

*Section C*

3 written questions of 20 marks each - covering subject area 4.

Candidates will be required to attempt all questions in Section A, one question from Section B, one question from Section C and one final question from either Section B or C.

The time allowed will be 3 hours.

The structure of the Module A examination follows the same format, but will cover Interpretation of Financial Statements and Performance Management.

The pass mark for each examination is 50%.

### Analysis of papers

The following analysis shows the topics which have been covered in the Risk Management written sections of the pilot paper and the exams set to December 2004. Bear in mind that all the exams set to date have related to the syllabus prior to the revisions effective from December 2005.

Remember that the aims of the revised syllabus were to achieve a better balance between risk management and corporate governance, to broaden the scope of the risk management element and strengthen the framework within which risk management is considered, to reduce the level of detailed understanding required for financial risk management and to introduce a more analytical, problem-based approach to the corporate governance element. All of these aims may well mean that the emphasis of future questions is likely from be different from those already seen. In particular there are likely to be fewer, and simpler, questions on financial risk management, more on the non-financial aspects of risk management and a more practical approach to questions concerning corporate governance.

| | *Marks* |
|---|---|
| *December 2004* | |
| Dividend policy | 20 |
| Interest rate risk and options | 20 |
| Securitisation | 20 |
| *June 2004* | |
| Futures, options and hedging | 20 |
| Capital structure and company valuation | 20 |
| External audit and internal audit | 20 |

*December 2003*

| | |
|---|---|
| Interest rate swaps | 20 |
| Dividend policy and investment strategies | 20 |
| The role of the audit committee and the qualities of its members | 20 |

*June 2003*

| | |
|---|---|
| Weighted average cost of capital – discussion and calculation | 20 |
| Foreign exchange risk management | 20 |
| Role of non-executive directors and associated problems | 20 |

*December 2002*

| | |
|---|---|
| Forward Rate Agreement | 20 |
| Cost of borrowing, Caps, Floors and Collars | 20 |
| Framework of and improvement in corporate governance | 20 |

*June 2002*

| | |
|---|---|
| Swaps: benefits, risks, calculation | 20 |
| Cost of capital, Modigliani and Miller with and without tax | 20 |
| Types of risk faced by companies and effect of corporate governance codes | 20 |

*Pilot paper*

| | |
|---|---|
| Measurement of corporate performance | 20 |
| Dividend policy | 20 |
| Equity betas | 20 |

## PROJECTS

*General*

Candidates are required, as part of their assessment, to submit a project for each module of the Diploma in Financial Management qualification.

The Module B project is a 5,000 word project which covers both Financial Strategy (subject area 3) and Risk Management (subject area 4).

The nature of the assignments is such that they will not require extensive research and can be completed without reference to sensitive work situations. The assignments will relate to the subject matter of the individual papers, and candidates who have studied the syllabus of each paper should be able to have a good attempt at the assignments. Each project should be approximately 5,000 words in length, including appendices, but excluding the bibliography. The assignments will involve a mixture of calculation and narrative.

The BPP Project textbook will help you prepare for the Project element of Module B. See the order form at the back of this book for details of how to order.

# *Part A*

## *Enterprise risk management*

# Chapter 1 Managing risk

## Chapter topic list

1 The nature of risk

2 Risk categories and concepts

3 The benefits of risk management

4 Frameworks for risk management

## Learning objective

On completion of this chapter you will be able to:

- explain the nature of risk and the benefits of risk management

The detailed syllabus areas covered in this chapter are:

*Managing risk*

- the nature of risk
- risk concepts (exposure, volatility, severity, probability etc)
- the benefits of risk management
- the framework for risk management (including the COSO ERM framework)

# 1 THE NATURE OF RISK

## Hot topic!

1.1 Risk Management (RM), and especially Enterprise Risk Management (ERM), is perhaps the hottest of all current business topics, supplanting favourites of the 1990s and early 2000s, like empowerment, quality management, business process re-engineering, knowledge management and so on.

*Why is risk management important?*

1.2 You only need to glance at the business pages of a newspaper on any day you like to find out why risk management is a key issue in today's business world. For example, look at some of the main stories on the *Telegraph's* business pages on the day this paragraph was written (early April 2005).

(a) A story about the then likely failure of **MG Rover** in spite of the fact that the four owners of Phoenix Venture Holdings, who bought MG Rover for just £10 in 2000, have made more than £30m for themselves since and have been heavily criticised for handing themselves a four-way split of a £10m 'IOU' note within months of the deal's completion in 2000. They also set up a £16.5m pension fund for company directors and separately took control of a lucrative car financing business.

(b) A story about employees of the Bermuda office of the insurer **American International Group (AIG)**, who were caught trying to destroy documents as the company faced ever-expanding enquiries into the conduct of the business.

(c) A story about how **Glaxo** faces claims in the US courts that its patents for the Aids drug AZT are invalid. The patents are worth around £1.1bn a year to Glaxo which controls 40% of the lucrative Aids drug market.

(d) A story about clothing retailer **Alexon**, which estimated that £3m would be knocked off its profits in 2005 as a result of the collapse of **Allders**, the stores where it ran 118 concessions. The story also notes poor sales at the Alexon group's youth fashion chain Bay Trading. 'The company refused to blame the weather. Robin Piggot, finance director, said: "We were trimming the value of our garments, making them cheaper and cheaper but less interesting".'

(e) A story about how shoppers may face shortages of pasta and garlic bread as a result of a fire in a factory at Burton-on-Humber owned by chilled food producer **Geest**.

1.3 Here we can observe risks to the well-being of companies arising from questionable dealings by **directors**, questionable actions of **employees**, the actions of competitors, the problems of **customers/partners**, the **weather**, poor **product design**, and **fire**. And all on a single day!

### Case example: Enron

The most notorious case of mismanagement of risk in recent years is the collapse of Enron in late 2001. You will invariably see this referred to in books and articles on the subject of risk management and corporate governance, but if you are new to this subject you may not remember the details. Here are some of the key points in a very complex case.

- Enron's bankruptcy in late 2001 is the largest collapse in corporate history. Enron was a US-based company involved in energy trading and distribution. It was the seventh largest corporation in the U.S and the sixteenth largest in the world.

- Enron had thousands of offshore partnerships, an accounting mess, and hid over $1 billion in debt through some of them. It is this complex arrangement that led to its downfall when this hidden debt information was disclosed in October 2001
- Enron admitted it had previously inflated its profits by hiding debt. Consequently, the share price collapsed, which led to the company's credit rating being slashed, leaving it unable to borrow its way out of trouble.
- Enron's Chair of the Board and CEO Kenneth Lay dishonestly told employees and others that Enron stock was 'an incredible bargain' even after he had been warned of 'potential scandal' by an Enron executive.
- Employees' retirement savings that were tied to Enron stock were essentially wiped out. As the stock was plummeting, employees were unable to sell their stock for weeks due to what Enron disclosed as 'a management change'.
- Enron's auditors, Andersen did not disclose how bad Enron's financial situation was, saying its books were good until Enron failed.
- Andersen and Enron shredded thousands of documents connected to Andersen's audits of Enron. Andersen lost its auditing licence and was convicted of obstruction of justice. The firm (one of the then 'Big Five' accounting firms) collapsed.

## Opportunity and risk

1.4 You know what risk is in **everyday terms**. You know it is **risky** to climb a tall ladder, no matter what you may think there is at the top. You know it is **risky** to bet your life savings on a horse race, no matter how much you might win.

1.5 These things are **risky** because at the point when you decide to do them you can't be sure **how bad** the outcome will be. You may fall off the ladder and injure yourself when you are half-way up. You may get to the top only to find that what you expected is not there. The horse you back may be in the lead until almost the end of the race … and then be beaten at the winning post.

1.6 On the other hand, you can't be sure **how good** the outcome may be, either: you can't be sure that the **opportunities** will ever amount to anything. If you don't risk climbing the ladder you will never be the owner of whatever it is at the top (though you can be pretty sure that **somebody else will risk it**). Most people would think it is too risky to throw away their life savings on a race, but there is **always the chance** that your horse will win. If you don't place the bet you will miss the **opportunity**.

## Managing the future

1.7 Risks and opportunities exist because nobody knows what will happen in the future, and nobody can control it. Of course you can **control** whether or not you climb the ladder, but you **can't stop others** from doing so, and you **can't stop entirely unexpected things** from happening. For instance, whatever it is at the top of the ladder may fall on you!

### Activity 1.1

Would it be 'good' (an opportunity) or 'bad' (a risk), if the thing at the top of the ladder fell on you?

1.8 You can never avoid this uncertainty, in anything you do: it is something that you have to **make decisions** about, something you need to **manage**. If you decide to take a risk, or follow up an opportunity, the outcome may be hugely beneficial or it may ruin you.

1.9 Hopefully this is not all too scary for you! We have made these points at the outset to encourage you to think outside the box, for the Risk Management part of the Module B paper. A significant proportion of the latest syllabus has more to do with the practical risks of climbing ladders than with the financial risks of activities like gambling.

## Definitions

1.10 Some definitions of risk emphasise that it is a **measurable** thing, unlike uncertainty.

> **Risk** is a condition in which there exists a quantifiable dispersion in the possible outcomes from any activity. **Uncertainty** is the inability to predict the outcome from an activity due to a lack of information.
>
> Risk is the standard deviation of the return on total investment.

1.11 Both of these definitions imply that events could turn out either better or worse than expected, sometimes called **two-way risk** or **symmetrical risk**.

1.12 When the risk is that something could go wrong, you may see the term '**downside risk**', and if it is most likely that things will go right the term '**upside risk**' might be used.

1.13 These definitions and terms are not invalid, but some more recent ones are preferable, in our opinion, because they force you to think about the topic in the context of **managing events** with an eye on your **objectives**. Here are the definitions given in the COSO *Enterprise Risk Management Framework* (2004).

### KEY TERMS

**Risk** is the possibility that an event will occur and **adversely** affect the achievement of objectives.

**Opportunity** is the possibility that an event will occur and **positively** affect the achievement of objectives.

## Risks for companies

1.14 The risks faced by a company can be looked at from the point of view of both:

(a) The company itself and its management, and also
(b) Providers of capital to the company, both debt finance and equity finance

*The company itself*

1.15 If the objective of a company is to maximise shareholder wealth then risks for a company are risks of losses, resulting (directly or indirectly) in negative cash flows. When losses become severe, there might be a risk of insolvency, leading to the liquidation of the company.

1.16 The activities of certain companies are inherently risky because they are potentially dangerous to public well-being: transport companies and pharmaceutical companies are obvious examples.

1.17 The risks faced by companies in general are as follows.

(a) There are risks that business might be poor, and sales might fall or costs might rise. A new product launch might be unsuccessful, or an expensive research and development project might fail to produce a new commercial product.

(b) A risk of losses might also arise from **inadequate controls** (quality controls, administrative controls, controls over people etc) within the organisation, resulting in losses through inefficiency, damage to company reputation, or deliberate fraud.

(c) A company might face risks of a financial nature, and losses might occur because of the way it has financed an operation. The larger the company the more varied are the risks. **Financial risks** and how they are managed are explained in outline in Chapter 5 and in detail in Part B of this text.

*Risks for providers of capital (investors)*

1.18 Investors also bear risks. Providers of **debt capital** to a company have to bear the risk that the company will default on its debt obligations, and fail to make an interest payment or might even become insolvent and unable to repay the loan principal. A lender or investor in company bonds will expect a higher yield than that offered on, say, Government gilts, to compensate for higher risk.

1.19 **Shareholders** are the ultimate bearers of risk. If a company becomes insolvent, they will lose all their investment. More important, if company profits fall, dividends and the share price are also likely to fall. Providers of debt capital are entitled to interest before any profits can be paid as dividend, so that the risk to income is much less for debt providers than for equity shareholders.

1.20 Risk for shareholders is two-way: there is the possibility of poor returns (no dividends or low dividends, and a fall in the share price), or profits and dividends might be higher than expected, and the share price might rise by more than anticipated. Risk is greater for shareholders when there is a greater possibility of wide variations in profits, dividends and share prices from year to year. The range of potential variation in returns is known as the **volatility of returns**. Volatility varies between different companies.

## 2 RISK CATEGORIES AND CONCEPTS

### Fundamental, particular, speculative and pure

2.1 Various types of risk exist in business and in life generally. Insurance terminology might identify the following types.

(a) **Fundamental risks** are those that affect society in general, or broad groups of people, and are beyond the control of any one individual. For example there is the risk of atmospheric pollution which can affect the health of a whole community but which may be quite beyond the power of an individual within it to control.

(b) **Particular risks** are risks over which an individual may have some measure of control. For example there is a risk attached to smoking and we can control that risk by refraining from smoking.

(c) **Speculative risks** are those from which either good or harm may result. A business venture, for example, presents a speculative risk because either a profit or loss can result.

(d) **Pure risks** are those whose only possible outcome is harmful. The risk of damage to property by fire is a pure risk because no gain can result from it.

## Financial and operational

2.2 In very broad terms (for example in your syllabus) the risks faced by a business may be divided into **financial** risk and **operational** risk. (Operational risk is sometimes called 'operating risk', but not by most recent writers on the subject, and not in this book.)

2.3 There are numerous sub-categories of both types of risk. James Lam, for example (*Enterprise Risk Management* (2003)) divides **financial risk** into credit risk and market risk.

(a) **Credit risk** is 'the economic loss suffered due to the default of a borrower or counterparty' (e.g. a customer or supplier). In other words it is highly relevant to large financial institutions such as banks, and also is the main type of financial risk faced by small businesses, particularly the risk that their customers won't pay them, or won't pay them quickly enough. This is covered in Chapter 5 and also in **Subject 3** under the heading working capital management.

(b) **Market risk** is 'the exposure to potential loss that would result from changes in market prices or rates'. The relevant prices or rates might include market equity, commodity prices, interest rates and foreign exchange rates. Market risk is introduced in Chapter 5 and covered in some detail in Parts B and C of this book.

2.4 **Operational risk** is possibly best regarded as all risks faced by a business that are not financial risks. These can also be divided into numerous sub-categories, for example the risk that people will make errors (people risk), the risk of floods and fires (event risk) and so on. Operational risk is covered specifically in **Chapter 4**.

2.5 Risks are naturally **interrelated**. An operational error by an employee may have adverse financial consequences; a serious loss in a financial transaction may have operational consequences such as the closure of part of the business.

2.6 Unfortunately there is no universally accepted glossary of risk terms and if you read around the subject you may well find that different writers use the same terms in different ways. For example there are probably as many different definitions of the term 'business risk' as there are books on the subject of risk.

2.7 In general, therefore, it is probably best to describe the type of risk you mean as specifically as possible rather than agonising over which category it belongs to: 'the risk that a customer may be physically harmed by a product and sue the company' is clear enough on its own, without worrying whether it is an 'operational risk', a 'legal risk', a 'product risk', a 'credit risk' or some other sort of risk.

### Activity 1.2

As a useful exercise, and without worrying too much about terminology if this is your first attempt, try listing as many significant risks that you think might be of relevance to major international banks. Try to list at least ten risks.

## Risk concepts: exposure, volatility, severity and probability

2.8 The scale and size of any risk for a business depends upon four key **risk concepts**:

- exposure
- volatility
- severity
- probability

(a) **Exposure** is the measure of the way in which a business is faced by risks. Some businesses will by their very nature be less exposed than others. A transport company such as an airline or a railway operator is considerably more exposed to the operational risk that its customers will be injured whilst using its services than is a bank or a firm of accountants. A business that has minimal debt finance and no overseas customers or suppliers has little or no exposure to the financial risks of either interest rate movements or exchange rate movements.

(b) **Volatility** is how the factor to which a company is exposed is likely to alter. A coffee producer is dependent on good weather; businesses like fashion and music are subject to changes in public taste. Some businesses operate in regions that are politically unstable.

(c) S**everity** of a risk (or **impact**) refers to a measure or measures of the amount of the loss if the undesired outcome occurs. Severity might be measured purely in financial terms, or in terms of delay, or in terms of injuries/loss of life, or in other ways depending on the type of risk.

(d) **Probability** means how likely it is that a particular outcome will occur.

In some cases it is possible to estimate probability on the basis of **past experience** (historical records) combined with **information** about all the variables involved and how they interact. For example a supermarket may estimate the operational risk of running out of stock of a particular item at a particular time on a Saturday by looking at past sales records and taking account of internal factors like the amount of stock held and of external factors that might affect demand, such as the weather or the fact that the FA cup final is being played on that day.

In other cases it is much harder to estimate probability because no historical data exists. The development of an entirely **new product** is an example. Until the product is developed, at least in prototype form, it is very difficult to estimate the probability that it will be successful.

### Activity 1.3

How might you attempt to manage the risk that you would lose money developing an entirely new product that turned out to be unsuccessful?

2.9 The greatest risks facing a business will be those where exposure is high, the underlying factor is volatile, the impact is severe and the probability of occurrence is high. Different combinations of these four risk concepts will require a differing level of **response** from the business, a topic which will be considered in more detail in subsequent chapters.

## 3 THE BENEFITS OF RISK MANAGEMENT

### What does 'management' mean?

3.1 'Managing' a risk, in simple terms, means doing whatever is possible to **minimise the adverse effect**.

### Managing risk if there is no other option

3.2 Sometimes there is **no choice** but to manage a risk. To put it another way the **benefit** is that by managing risk you will avoid breaking the law or being prevented from doing what you are trying to do by others.

(a) In some cases there are **legal requirements** to manage risk: you are required to insure your car, for instance. Businesses are required to take out **motor insurance** for their vehicles, too, and to take out **employers' liability insurance** in case the jobs they ask their employees to do cause them injury.

(b) Risk management in the form of insurance may be required by **licensing authorities** and **regulatory bodies**. For example a football stadium would not be allowed to operate if it did not have **public liability insurance**; food manufacturers would not be able to sell their wares without **product liability insurance**. Consultants are typically required by their professional bodies to have **professional indemnity insurance**.

(c) **Financial organisations** can also require risk management: if you have a mortgage your lender no doubt requires you to have **buildings insurance**. A business loan may only be given subject meeting conditions about insurance in the event of **non-repayment**.

3.3 Although it is not a major part of your syllabus we will discuss **insurance** in more detail in Chapter 3.

3.4 **Health and safety** is an issue for all organisations, although obviously the risks for a company that requires its employees to engage in dangerous activities like mining or diving or construction are much greater than for more sedate industries. This matter is covered by the Health and Safety at Work Act 1974 (and a huge number of subsequent regulations) under which employers have a general duty to ensure the health, safety and welfare of their employees while they are at work and also a duty to non-employees who use the business premises.

3.5 There are regulations relating to ventilation, lighting, cleanliness, doors, lifts, toilets and all other aspects of the working environment. Probably most relevant to your own job are the regulations about **display screen equipment** (ie computers and the associated working space). Organisations with five or more employees must, by law, have a health and safety **policy statement** and keep it up to date. If there are more than ten employees the organisation must maintain an **accident book** to record details of any accidents to employees. Further regulations require that certain matters must be **reported** to the government **Health and Safety Executive** – deaths or major injuries at work, injuries that require being off work over three days, work-related diseases, and dangerous occurrences.

*Listed company requirements*

3.6 Listed companies are compelled to manage risk – or at least to disclose to shareholders the extent to which they have considered the risks facing their business – for additional reasons.

(a) A **risk-based management approach** is now effectively a requirement for all UK listed companies, under the **Combined Code on Corporate Governance** (2003). Listed companies must comply with this, simply as a condition of their listing. The Code includes guidelines on the management of risk (commonly referred to as '**Turnbull**' at present, though possibly to be renamed '**Flint**' in the near future: see Chapter 17).

(b) The *Companies Act 1985 (Operating and Financial Review and Directors' Report etc.) Regulations 2005* stipulates that a listed company's published accounts must contain a description of the principal risks and uncertainties facing the company. This is subject to audit by external auditors.

(c) Listed companies in the US have to comply with the Sarbanes-Oxley Act 2002 which requires that annual reports should contain internal control reports that state the

responsibility of management for establishing and maintaining an adequate internal control structure and procedures for financial reporting. Annual reports should also contain an assessment of the effectiveness of the internal control structure and procedures for financial reporting. Auditors should report on this assessment.

3.7 It may occur to you that a company could just say it is managing risk, in its reports, without actually doing so, and this is true. The point is that if risks have been identified and disclosed then it will be very difficult for the directors to avoid claims of negligence, in the event that disasters happen.

## Reducing losses: a traditional approach

3.8 Beyond complying with laws and regulations the benefit of managing risk, in a nutshell, is that it should **reduce losses**. Any business action can be seen in terms of risk and reward. Investment in a capital asset or a new member of staff exposes the organisation to the possibility that the investment or new recruit may work out better than expected or not work out as well. A decision not to make the investment or appointment may be a missed opportunity.

3.9 Businesses therefore generally give some thought to the precautions that need to be taken. The new employee may be put on a probationary period, and some of the recruitment agency's fee may be retained subject to satisfactory performance. The financing of the investment may be protected against adverse changes in interest rates using a variety of methods, as described in Chapter 5 and Part B.

3.10 But this implies an approach that is *ad hoc* and unconnected. As James Lam points out (*Enterprise Risk Management*, 2003), traditionally companies have managed risks in **organisational silos**. One person (the company secretary perhaps) would be responsible for company insurances; another, say the Treasury department, would handle financial risks. Health and safety might be dealt with by human resources, customer contracts by sales managers, IT by systems managers, and so on.

3.11 Risk management typically involved setting conservative limits on the extent of any risky activity, thus preventing any adverse consequences from escalating, within given parameters. These parameters were normally based on simple estimates of the risk, usually considered on a **case by case** basis, with little or no reference to the risk profile of the organisation as a whole.

3.12 With this approach there may be no clear priorities, no common systems, and no common language for describing risks. There is every chance that risk 'gaps' will arise because manager A does not consider the implications of an action for managers B and C.

## Enterprise Risk Management (ERM)

3.13 This approach is not adequate, according to Lam and most other modern commentators, because risks are by their very nature dynamic, fluid and highly interdependent. They cannot be broken into separate components and managed independently, especially in a modern business world characterised above all by **uncertainty** as a result of ever-increasing globalization, fast-changing technology, streamlined cross-functional processes, changing markets and competitive environments, new regulations and so on.

3.14 Managing risk in the modern environment requires a comprehensive and integrated approach this is most commonly called **Enterprise Risk Management (ERM)**.

**KEY TERM**

**Enterprise Risk Management** is 'a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of the entity's objectives'.

(COSO *Framework*, covered in more depth shortly)

3.15 This definition is deliberately broad and captures the key concepts fundamental to how companies manage risk. The definition reflects the following fundamental concepts about enterprise risk management.

(a) It is a **process,** a means to an end, that should ideally be intertwined with existing operations and exist for fundamental business reasons.

(b) It is operated by **people at every level** of the organisation and is not just paperwork. It provides a mechanism helping people to understand risk, their responsibilities and levels of authority.

(c) It applied in **strategy setting,** with management considering the risks in alternative strategies

(d) It is applied **across the enterprise.** This means it takes into account activities at all levels of the organisation from enterprise-level activities such as strategic planning and resource allocation, to business unit activities and business processes. It includes taking an entity level portfolio view of risk. Each unit manager assesses the risk for his unit. Senior management ultimately consider these unit risks and also **interrelated risks.** Ultimately they will assess whether the overall risk portfolio is consistent with the organisation's risk appetite.

(e) It is designed to **identify events** potentially affecting the entity and manage risk within its **risk appetite,** the amount of risk it is prepared to accept in pursuit of value. The risk appetite should be aligned with the desired return from a strategy.

(f) It provides **reasonable assurance** to an entity's management and board. Assurance can at best be reasonable since risk relates to the uncertain future

(g) It is geared to the **achievement of objectives** in a number of categories, including **supporting** the **organisation's mission**, making **effective and efficient use** of the **organisation's resources**, ensuring **reporting is reliable**, and **complying** with **applicable laws and regulations.**

### Activity 1.4

Risk management techniques can be applied in any type of organisation, although they are more commonly associated with large companies.

If you were involved in the management of a secondary school, what might be some of the risks that you would need to consider and adopt a policy for managing?

## The benefits of enterprise risk management

3.16 Enterprise risk management is designed to help management achieve the entity's performance and profitability targets, prevent losses of resources, ensure effective reporting

and compliance with laws and regulations. Enterprise risk management helps an entity to get where it wants to go and avoid pitfalls and surprises along the way.

*Making the business more flexible and responsive to a changing environment*

3.17 As Lam says, the establishment of an enterprise risk management function (and probably the appointment of a dedicated Chief Risk Officer) provides the top-down co-ordination necessary to make the various individual functions work efficiently, and so it increases **organisational effectiveness**.

(a) ERM focuses management attention on risks that matter by expressing disparate risks in a common language.

(b) ERM assists in identifying and managing multiple and cross-enterprise risks - an entity will face risks affecting different parts of the organisation and enterprise risk management facilitates an effective response to the interrelated impacts and responses to these multiple risks . Managers can understand and aggregate connected risks. For example risks associated with purchasing, over and under supply, prices and dubious supply sources might be reduced by an inventory control system that is integrated with suppliers.

(c) ERM can help the business to seize new opportunities – by considering a full range of possible events management may be in a position to identify and exploit opportunities as well as risks.

(d) An organisation wide perspective will help the company to spot and exploit natural hedges and portfolio effects. (These concepts will be explained in later chapters.)

*Improving the responses of the business to risk and the likelihood of achieving strategic goals*

3.18 ERM both increases the probability of success, and reduces the probability of failure.

(a) It enhances risk response decisions - enterprise risk management provides the framework to identify and select among alternative risk responses. Enterprise risk management helps the organisation select whether to reduce, eliminate or transfer risk.

(b) It reduces operational surprises and losses – an entity should gain an improved capability to identify potential events and establish responses which should reduce surprises and any associated costs or losses.

*Providing a clearer link between risk and return*

3.19 Successful risk management decisions accept the fact that risk cannot be wholly eliminated but organisations can try to strike an appropriate balance between the risks and returns associated with a particular decision or course of action. Value is maximized when management sets strategy and objectives to strike an optimal balance between growth and return goals and related risks, and efficiently and effectively deploys resources in pursuit of the entity's objectives.

*Making the risk appetite of the business explicit*

3.20 If no-one takes responsibility for overall risk management then it is likely that senior management will be supplied with inconsistent or even contradictory reports that make it impossible to determine what is the current risk appetite of a business (in simple terms risk appetite means the amount of risk the organisation is prepared to tolerate). Risk appetite **should** be determined by the most senior management, usually the board of directors, in the light of what the organisation is trying to achieve, but mismatches can readily occur.

3.21 ERM can do much to align risk appetite with strategy. Lam recommends the development of a tool such as a 'risk dashboard' that indicates timely and concise information on the company's key risks, giving 'an enterprise-wide perspective on aggregate losses, policy exceptions, risk incidents, key exposures and early warning indicators'. This, claims Lam, goes beyond senior management: the objective of ERM reporting is to increase risk transparency throughout an organisation. (Transparency, in this sense, means full, accurate, and timely disclosure of information, in other words risks can be clearly seen, they are not hidden in aggregated data.)

*Capital allocation and the cost of capital*

3.22 ERM should improve the deployment of capital because a better understanding of the true risk and return economics of the business means that the company can take more of the profitable risks and less of the unprofitable ones.

3.23 Lam points out how ERM supports key management decisions such as whether or not to develop a product, how to price it, whether to undertake a merger or acquisition, and a risk-based approach should reduce losses, lead to lower volatility in earnings and improved shareholder value. These improvements come about by taking a portfolio view of all the company's risks and managing the linkages between risk, capital and profitability.

3.24 Less volatility – or perhaps we should say greater stability – in earnings should reduce the cost of capital for the organisation, because the organisation as a whole is perceived as less risky by providers of capital.

### Limitations of enterprise risk management

3.25 Most of the limitations of enterprise risk management stem from the human aspect of the system. Decisions made can be faulty due to poor human judgement, errors or mistakes can be made, controls can be circumvented by collusion and management may have the ability to override enterprise risk management decisions, particularly in smaller companies.

3.26 Even in the best managed system the company will be left with a residual risk, which the board of directors should assess and keep under review. This residual risk is in effect the risk that investors in the business will have to accept when purchasing shares in the company. Management must try to assess this **value proposition** of the company's business for its equity investors. It should try to see the company as a **portfolio of risks** that amounts to the value offered by those shares. It must then manage the company's returns relative to the amount of capital that has been put at risk to obtain the returns.

## 4 FRAMEWORKS FOR RISK MANAGEMENT

4.1 A variety of organisations and individual writers have developed frameworks for risk management. For example, in the UK the Institute of Risk Management (IRM), The Association of Insurance and Risk Managers (AIRMIC) and ALARM (The National Forum for Risk Management in the Public Sector) have developed a *Risk Management Standard* (2002). Other examples include the *Integrated Risk Management Framework* issued by the Treasury Board of Canada Secretariat and the *Australian and New Zealand Standard on Risk Management* (AS/NZS 4360: 2004).

4.2 We will summarise these at the end of this section for comparative purposes. You will find that they are broadly similar to the framework that is specifically referred to in your syllabus, the *ERM Framework* issued by a US organisation called COSO in 2004.

## COSO Enterprise Risk Management - Integrated Framework (2004)

4.3 COSO is the short name for the Committee of Sponsoring Organisations of the Treadway Commission, originally set up in 1985 to look into fraudulent financial reporting. James Treadway was the first Chairman of the Commission and the US 'sponsoring organisations' in question are the American Accounting Association, the American Institute of Certified Public Accountants, Financial Executives International, The Institute of Internal Auditors, and the Institute of Management Accountants.

4.4 In 1992 COSO issued *Internal Control - Integrated Framework* to help businesses to assess and enhance their internal control systems. That framework has since been incorporated into policy, rules and regulations and has been used by many enterprises in practice to better control their activities in moving towards achievement of their established objectives.

4.5 In 2001 COSO widened their remit still further in response to the heightened concern and focus on risk management brought about by high-profile business scandals and failures. They engaged PricewaterhouseCoopers to develop a framework that would be readily useable by management to evaluate and improve their organisations' enterprise risk management (ERM). The result was their *Enterprise Risk Management - Integrated Framework* (2004) which is intended to provide key principles and concepts, a common language and clear direction and guidance for management.

4.6 The COSO framework is aimed at achieving the entity's objectives set out in four categories.

- **Strategic** - high-level goals aligned with, and supporting, its mission
- **Operations** - effective and efficient use of resources
- **Reporting** - reliability of reporting
- **Compliance** - compliance with applicable laws and regulations.

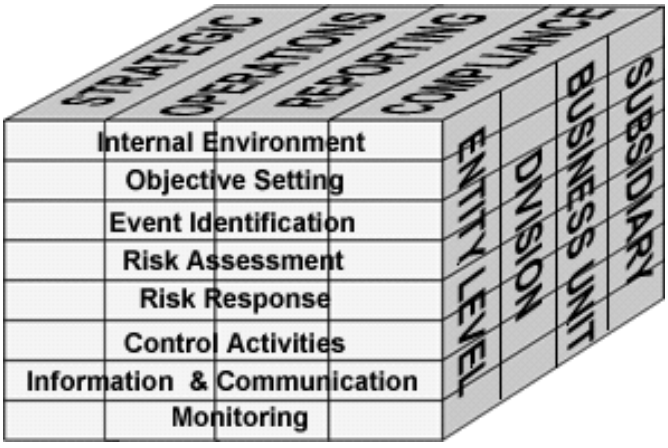
Although these four categories are distinct it is recognised that they are also overlapping where a particular objective can fall into more than one category. The framework emphasises that risk management should be considered at all levels in the organisation. (It distinguishes between 'entity-level', 'divisions', 'business units' and 'subsidiaries', but what the levels of an organisation are called is arbitrary: the point is that risk management is required from top to bottom of the enterprise. )

4.7 Within these objectives, enterprise risk management consists of **eight** interrelated components. The Chapter references below indicate the main chapters in this book where the topic is covered, although there will of course be references elsewhere.

| Component | Explanation |
|---|---|
| **Internal environment** (Chapter 2) | This covers the tone of an organisation, and sets the basis for how risk is viewed and addressed by an entity's people, including risk management philosophy and risk appetite, integrity and ethical values, and the environment in which they operate. This component is very similar to the 'control environment' described earlier in this chapter. |
| **Objective setting** (Chapter 2) | Objectives for the entity should be in place and the chosen objectives should support and align with the entity's mission and be consistent with its risk appetite. |
| **Event identification** (Chapter 3) | Both internal and external events which affect the achievement of an entity's objectives must be identified, distinguishing between risks and opportunities. |

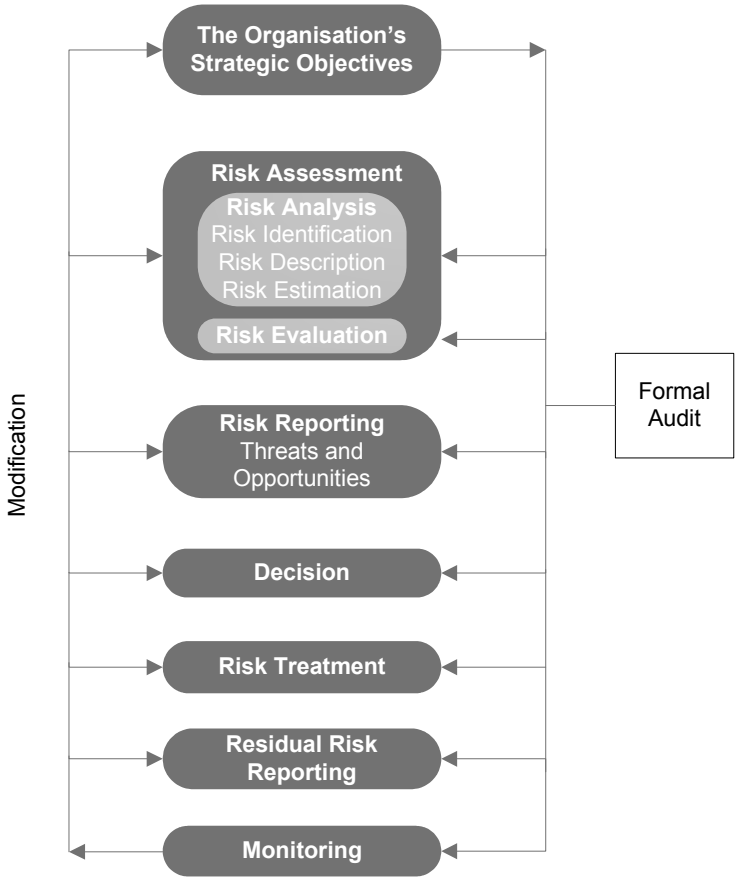
| Component | Explanation |
|---|---|
| **Risk assessment** (Chapter 3) | Risks are analysed, considering likelihood and impact, as a basis for determining how they should be managed. |
| **Risk response** (Chapters 3, 4) | Management selects risk responses such as avoidance, reduction sharing, or acceptance which are used to develop a set of actions to align risks with the entity's risk tolerances and risk appetite. |
| **Control activities** (Chapter 3, 4) | Policies and procedures are established and implemented to help ensure the risk responses are effectively carried out. |
| **Information and communication** (Chapters 2, 3) | Relevant information is identified, captured and communicated in a form and timeframe that enable people to carry out their responsibilities. Effective communication should be broad – flowing up, down and across the entity. There should also be effective communication with third parties such as shareholders and regulators. |
| **Monitoring** (Chapter 3) | Risk management processes are monitored and modifications are made if necessary. |

4.8 Diagrammatically all of the above may be summarised as follows.



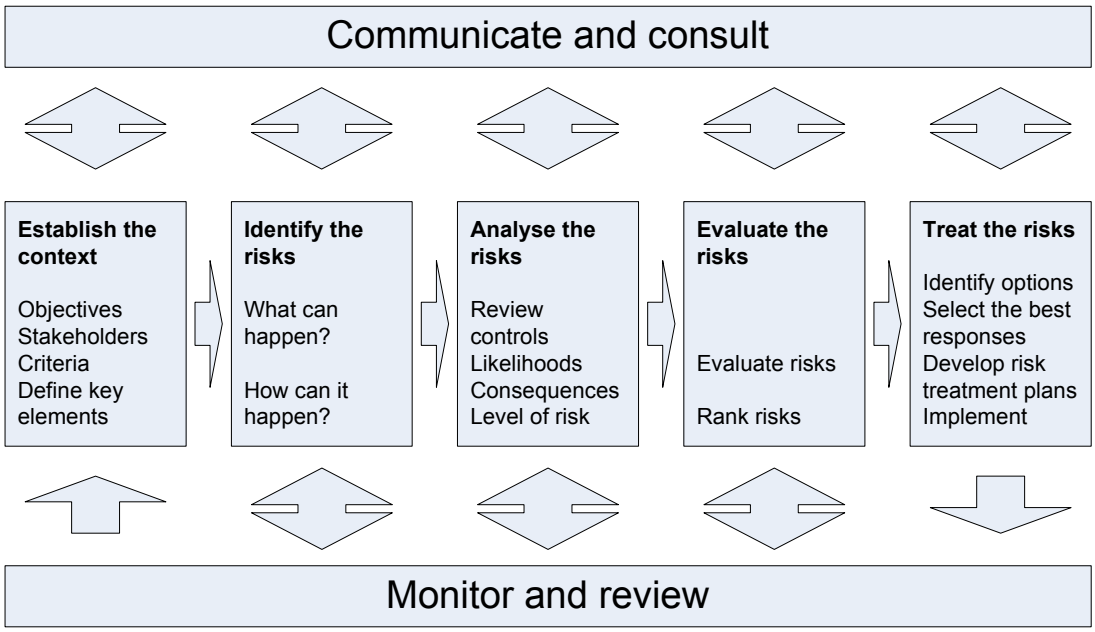

## Other frameworks

4.9 For comparative purposes, the risk management process described in the UK IRM/AIRMIC/ ALARM *Risk Management Standard* may be summarised diagrammatically as follows.




4.10 The Canadian *Integrated Risk Management Framework* summarises the process like this.

4.11 The *Australian and New Zealand Standard on Risk Management* looks like this.




**Activity 1.5**

Although we would suggest that you concentrate on the COSO standard, since this is mentioned in your syllabus, you may find it helpful to look at each of the diagrams above and try to find the similarities and differences. This will help to fix the process in your mind.

## Chapter roundup

- Risk management is a key issue in today's business world.
- Risks and opportunities arise because the **future is not known** with certainty.
  - **Risk** is the possibility that an event will occur and **adversely** affect the achievement of objectives.
  - **Opportunity** is the possibility that an event will occur and **positively** affect the achievement of objectives.
- Insurance identifies **fundamental** risks (eg pollution), **particular** risks (eg smoking), **speculative** risks (eg a business), and **pure** risks (eg fire).
- The risks faced by a **business** can be divided into financial risks and operational risks.
  - **Financial** risk subdivides into **credit risk** (eg loss due to the default of a borrower) and **market risk** (eg interest rate risk).
  - **Operational** risk is al the risks faced by a business that are not financial risks.
- There are four key **risk concepts**.
  - **Exposure** is the measure of the way in which a business is faced by risks.
  - **Volatility** is how the factor to which a company is exposed is likely to alter.
  - **Severity** (or **impact**) is a measure of the amount of the loss.
  - **Probability** means how likely it is that a particular outcome will occur.
- **Managing** a risk means doing whatever is possible to minimise the adverse effect.
- Some risks **must** be managed because insurance in compulsory by law or because regulations require risk management measures.
- **Listed companies** are required to **disclose** to shareholders the extent to which they have considered the risks facing their business.
- Traditionally companies have managed risk in **organisational silos**, but this approach is not adequate because risks are highly dynamic and highly interdependent, and because the modern business world is characterised above all by uncertainty.
- **Enterprise risk management (ERM)** takes a **comprehensive** approach with management **integrated** across the organisation and from top to bottom.
  - ERM makes the business **more flexible and responsive** to a changing environment.
  - ERM improves the likelihood of **achieving strategic goals**.
  - It provides a clearer link between **risk and return**.
  - It makes the **risk appetite** of the business explicit.
  - It improves **capital allocation** and reduces **cost of capital**.
- A variety of **frameworks** for risk management exist, most notably COSO's *Enterprise Risk Management – Integrated Framework*. The COSO ERM Framework suggests that risk management has eight components.
  - Internal environment
  - Objective setting
  - Event identification
  - Risk assessment
  - Risk response
  - Control activities
  - Information and communication
  - Monitoring

## Quick quiz

1 What is the difference between risk and uncertainty?

2 What three risks are faced by companies in general?

3 What is meant by the terms credit risk and market risk?

4 In what circumstances is it possible to estimate the probability of a particular outcome?

5 When is there no option by to manage risks and what forms might 'management' take?

6 Traditionally risk management took account of the risk profile of the organisation as a whole but paid little attention to individual risks. True or false?

7 How does Enterprise Risk Management make an organisation more flexible and responsive?

8 How might ERM help reduce a company's cost of capital?

9 What are the limitations of ERM?

10 What are the eight components of the COSO *ERM Framework*?

## Answers to quick quiz

1 **Risk** is a condition in which there exists a quantifiable dispersion in the possible outcomes from any activity. **Uncertainty** is the inability to predict the outcome from an activity due to a lack of information.

2 Risks that business might be poor, and sales might fall or costs might rise; risk of losses might also arise from inadequate controls; risks that losses might occur because of the way the business has financed an operation.

3 **Credit risk** is 'the economic loss suffered due to the default of a borrower or counterparty' (e.g. a customer or supplier). **Market risk** is 'the exposure to potential loss that would result from changes in market prices or rates'.

4 It is possible to estimate probability if there are historical records of previous occurrences of the event and information about all the variables involved and how they interact.

5 Some risks must, by law, be insured against. Some risks must be managed under regulations that require the business to provide appropriate facilities and safeguards, control behaviour and record incidents.

6 False. The opposite is true.

7 ERM establishes a common language, identifies interrelated impacts and responses, helps to identify and exploit opportunities and helps the company to spot and exploit natural hedges and portfolio effects.

8 ERM should reduce losses and lead to lower volatility in earnings, and this should reduce the cost of capital because the organisation is perceived as less risky by providers of capital.

9 Limitations of enterprise risk management stem from the human aspect of the system. Decisions made can be faulty due to poor human judgement, errors or mistakes can be made, controls can be circumvented by collusion and management may have the ability to override enterprise risk management decisions, particularly in smaller companies.

10 Internal environment
Objective setting
Event identification
Risk assessment
Risk response
Control activities
Information and communication
Monitoring

## Answers to activities

### Answer 1.1

It depends, of course. **Your** answer will depend on your own **attitude to risk**, or risk appetite, a subject we shall return to in Chapter 2.

### Answer 1.2

There isn't a 'correct' answer to this question, but shown below are the top 18 risks mentioned by senior bankers in a survey of risks in the banking industry, and published by the Centre for the Study of Financial Innovation in March 2005 (*Banana Skins 2005*). This list is not comprehensive, and you might have thought of others.

And please don't worry about any terms you don't understand yet: you are only at the beginning of Chapter 1, after all, so we wouldn't expect you to.

Too much regulation
Credit risk
Corporate governance
Complex financial instruments
Hedge funds
Fraud
Currencies
High dependence on technology
Risk management techniques
Macro-economic trends
Insurance sector problems
Interest rates
Money laundering
Commodities
Emerging markets
Grasp of new technology
Legal risk
Equity markets

A notable extra was environmental risk which, while positioned low in the overall ranking (28th), was seen to be gaining strongly because of fears about the impact of pollution claims and climate change on bank assets and earnings.

### Answer 1.3

Conduct market research, even if it is only possible to describe the concept of the new product to potential customers.

Perhaps only develop product ideas that derive from customers. (Though there is a risk that they might not be good ideas, and you may miss the opportunity to develop ideas that would appeal to customers, if only they were asked.)

Do not commit to major expenditure (for example a new factory, large stocks of raw materials) without creating and market testing a prototype.

You may have had other ideas. The key is to gather as much **information** as possible.

### Answer 1.4

Of course there is no definitive solution to this question. In no particular order a list of risks to be assessed might include:

1 The risk of failing to attract sufficient numbers of students
2 The risk of poor examination results
3 The risk of inadequate numbers of students going on to higher education
4 The risk of focusing too much on academic subjects, and ignoring broader aspects of education
5 Physical security: risks to students, teachers and school property
6 The risk of theft of individuals' property
7 Inability to recruit sufficient teachers
8 Not having enough money to spend on essential or desirable items
9 The risk of an adverse report from school inspectors
10 The risk of an adverse report from Jamie Oliver! (This is a little tongue in cheek, but a serious point could be made, given the recent adverse publicity given to school dinners and the impact on pupils concentration and behaviour.)

## Answer 1.5

Note that each approach emphasises the **organisational** context of risk management and aligning risk management with strategy and objectives (see **Chapter 2**). Despite differing terminology the common elements may be summarised as:

- Risk **identification** and **awareness**
- Risk **measurement** and **assessment**
- Risk **response** and **control**
- Risk **monitoring** and **reporting**

These just happen to be the topics listed in the 'Risk management process' part of your syllabus (see **Chapter 3**)!

# Chapter 2 Risk and corporate characteristics

## Chapter topic list

1 Risk appetite

2 The internal environment: corporate culture

3 Organisation structure and risk management

4 Ownership of risk management

## Learning objective

On completion of this chapter you will be able to:

- explain the importance of aligning risk management processes to the culture and values of a business

The detailed syllabus areas covered in this chapter are:

*Risk and corporate characteristics*

- risk appetite and policy
- risk culture and corporate values
- risk management and the implications for organisational structure

# 1 RISK APPETITE

1.1 To paraphrase the various frameworks introduced in the previous chapter the approach when undertaking any venture should be as follows.

1. Decide what you want to achieve.
2. Decide what your 'risk appetite' is, in other words the extent to which you are prepared to take on risks in order to achieve your objectives.
3. Find methods of achieving what you want to achieve that do not involve more risk than you are willing to accept.
4. If there are no methods of reducing the risk to an acceptable level, then don't do the first thing: think of something else to achieve (in other words back to step 1).

## Setting objectives

1.2 An organisation's objectives **derive** from its overall '**mission**', or 'vision' or 'purpose', its basic function in society, 'what it wants to achieve'. This is sometimes expressed in a **mission statement** such as: 'Our corporate purpose is to create, discover, develop, manufacture and market throughout the world, safe, effective medicines of the highest quality which will bring benefit to patients through improved longevity and quality of life, and to society through economic value'.

1.3 **Objectives** are goals that are consistent with the organisation's mission. **Strategic** objectives are **high-level** goals that may relate to matters such as profitability or return on capital employed, market share, quality of products or services, and customer satisfaction. In the case of the company above some of the (many) strategic objectives, at a particular point in time, might be:

| | |
|---|---|
| *Quality* | To create a medicine to cure condition X that is deemed 100% safe by the regulatory authorities of the countries in which the medicines will be marketed. Work should commence now and be complete by the end of 2007. |
| *Customer satisfaction* | To operate manufacturing facilities that can continuously produce sufficient quantities of medicine Y to meet all demand in the market for which they are intended |

### Question: SMART objectives

Objectives should be **SMART**: Specific, Measurable, Achievable, Relevant, Timed. So far as you can, assess the objectives above on this basis, and also see if you can think of any risks that might prevent the objectives from being achieved.

1.4 With such objectives as the starting point **lower-level objectives** can be set for all the parts of the organisation that will contribute to their achievement, perhaps right down to the level of individuals.

1.5 The relevance of this for **risk management** is simple and self-evident: there must be **objectives first**, before management can identify and assess risks to the achievement of objectives and take necessary actions to manage the risks. A certain country may have a particularly fierce regulatory regime, or have an interest in protecting its own industry in preference to yours. A manufacturing facility may face problems such as shortage of staff with appropriate skills.

1.6 If the risks that are identified relating to an objective are greater than the organisation is usually prepared to accept and attempt to manage then the organisation must either **change the objective** or **accept more risk**, to bring the two into line.

1.7 This begs the question: how does the organisation decide how much risk it is prepared to take on?

## Risk appetite

**KEY TERM**

The term '**risk appetite**' refers to the extent to which a company is prepared to take on risks in order to achieve its objectives.

1.8 In broad terms we can distinguish **risk averse** attitudes, **risk neutral** attitudes and **risk seeking** attitudes.

**KEY TERMS**

(a) A **risk averse attitude** is that an investment should not be undertaken if there is an alternative investment offering either the same return but with a lower risk or a higher return for the same risk. However, an alternative investment might be undertaken if it has a higher risk, but offers a higher expected return.

(c) A **risk neutral attitude** is that an investment should be undertaken with an eye only on the expected (most likely) return, irrespective of the risk.

(b) A **risk seeking attitude** is that an investment should be undertaken if it offers higher possible returns, even if the risk is higher.

1.9 For example, suppose a company is considering investing in four mutually exclusive projects, for which the following expected returns and risk (measured as the standard deviation of expected returns, as explained in Chapter 3) have been measured.

| | *Expected return* | *Risk* |
|---|---|---|
| Project W | 10% | 4% |
| Project X | 12% | 4% |
| Project Y | 14% | 9% |
| Project Z | 12% | 6% |

A **risk-averse** company:

(a) would not invest in project W, because project X offers a higher expected return for the same risk;

(b) would not invest in project Z, because project X offers the same return but for a lower risk;

(c) might choose either project X or project Y, because X offers a lower return but a lower risk, and Y offers a higher return but a higher risk.

A **risk seeking company** would select either project Z or project Y, depending just how much risk it was seeking. Project Z would be preferable to X because the expected return is the same, but there is a chance of a higher return due to the higher risk.

A **risk neutral** company would invest in project Y because it has the highest expected return.

*Can anyone really be risk neutral?*

1.10 It may seem difficult to understand how anyone could be risk neutral: surely anyone taking a risk would be disappointed if they made less than they expected to make, and pleased if they made more than they expected? It is probably best to think of this as a long-run attitude: a risk neutral investor would invest the same amount over a considerable number of trials and would sometimes gain and sometimes lose. The wins and losses would balance out over time and the investor would at least be no worse off. In fact the investor would expect to be better off over time, otherwise there would be no point in investing in the first place.

1.11 Although it is not an exact analogy, if you spend £1 on a lottery ticket every week then you are probably risk neutral about the outcome of this investment, and perhaps more concerned about the known outcome that some of your money goes to a good cause. That is not to say that you won't be pleased if you occasionally win £10, and extremely pleased if you win more than that, but you will not be surprised or concerned if the usual outcome is that you 'lose' £1.

### Activity 2.1

In the past a company has been prepared to tolerate risk of up to 12.5%, but it is stagnating and is considering being more adventurous in future. It is deciding between four mutually exclusive projects for which the following expected returns and risk have been measured.

| | *Risk* | *Expected return* |
|---|---|---|
| Project A | 10% | 25% |
| Project B | 15% | 27% |
| Project C | 8% | 23% |
| Project D | 12% | 25% |

Which projects would be chosen if the company is risk-averse, risk-seeking or risk neutral? Explain your answers.

## How is risk appetite determined?

1.12 Some risks in business are unavoidable. Other risks can be avoided, but at a cost. Avoiding risks entirely is often undesirable, because a safety-first approach will result in low profits and poor returns.

1.13 What is an **acceptable amount of risk** will of course **vary from organisation to organisation**. To some extent the answer to the question 'what do you want to achieve' implies a certain appetite for risk, because some things are inherently riskier than others. It is riskier to invest in an innovative high-tech venture with no proven market than it is to set up a firm of accountants. At a more detailed level, however, when deciding between different possible ways of doing the same thing the decision will be far less clear cut.

1.14 For large public companies it is largely a question of **what is acceptable to the shareholders**.

(a) A 'safe' investment like Tesco will attract investors who are to some extent **risk averse**, and the company will thus be obliged to follow relatively '**safe**' **policies**.

(b) A company that is recognised as being an **innovator** or a '**growth**' **stock** in a relatively new market will attract investors who are looking for **high performance** and are prepared to accept some **risk** in return. Such companies will be expected to make '**bolder**' **(more risky) decisions.**

1.15 In fact the evidence suggest that **most investors are risk-averse** and so companies' risk policies should normally reflect this.

**KEY TERM**

The word **policy** is used with various meanings: it means a chosen course of action, and so could be considered part of risk response and control (see Chapter 3), but it may convey a principle of action, too, as in the phrase 'honesty is the best policy', or in this case 'risk-aversion is the best policy'.

1.16 However, companies are not human beings, and so cannot have an attitude to risk. **Risk attitudes belong to the individuals** making decisions on behalf of their company, and individual attitudes to risk are likely to vary considerably. The **top management** of the company therefore needs to form an attitude to risk and take measures to ensure that that their view is **communicated and understood throughout** the company.

1.17 This brings us full circle of course: short of consulting them on every decision how does **top management** decide precisely what level of risk will be acceptable to shareholders?

## Risk appetite and need

1.18 To some extent it must be true that risk appetite is allied to **need**. If Company A is cash rich in a stable industry with few competitors and satisfied shareholders it has little need to take on any more risky activities. If, a few years later, a significant number of competitors have entered the market and Company A's profits start to be eroded then it will **need** to do something to stop the rot, and it will face demands for change from investors.

1.19 A classic example is **Marks and Spencer**. For decades M&S has been regarded as a British institution. The brand never traded on cutting-edge trends, but it did stand for quality, even a kind of 'posh-ness'. Consumers were not distracted by the likes of Topshop, New Look, Monsoon, Next, and so on because they either hadn't been thought of or they existed in a very different formula from their modern incarnations. M&S was considered a safe and highly stable investment, and there is little doubt that it became complacent. In the late 1990s M&S profits declined sharply and since then a number of management teams have attempted to restore its fortunes, so far with not much success. That is to say the fortunes of the company have forced it to adjust its risk appetite.

1.20 The latest move (as at November 2004) is informative:

**Case example: Marks and Spencer**

M&S chief executive Stuart Rose will signal the end of the troubled store's flirtation with young fashion when he delivers a recovery strategy to the City on Tuesday.

Per Una Due, one of the sub-brands placed 'under evaluation' when Rose arrived last May, was supposed to win teenage custom. But it has flopped and will be axed, joining other brands that have already been abandoned, such as the David Beckham boys' range.

The move is part of a simplification process to be outlined by Rose. Its aim is to win back core customers and halt sliding sales figures. Abandoning teenagers means M&S will no longer compete in the under-30s market with chains such as Topshop and Zara.

1.21 Although we are not privy to the M&S boardroom this would seem to imply that for a while the more risk-seeking directors had the upper hand, but now the more risk-averse ones are back in the driving seat.

## Quantitative or qualitative?

1.22 Some industries, especially those in financial services and the oil and gas sector, are able to adopt sophisticated approaches, using **quantitative techniques and models** to express risk appetite. Such organisations might express risk appetite using market measures or risk-based capital. For example one utility company focuses on generating **stable cash flows** and **earnings**, and sets **risk appetite in precisely those terms**. Therefore, all enterprise -level risks are expressed in relation to the effect on earnings and cash flow volatility, and when the trend line in volatility approaches the limits of the company's risk appetite, management takes actions as necessary.

1.23 This is **the exception** rather than the norm, however. One of the major criticisms of 'official' writings like the COSO *ERM Framework*, the Turnbull guidance and so on, is that while they stress the crucial importance of risk appetite they do not give guidance on how to analyse and measure it. For example the ACCA contribution to the current review (the Flint review) of the Turnbull guidance says specifically that 'In risk management, risk appetite is an important consideration that the review should address. We believe that few organisations have more than a rudimentary understanding of analysis of risk appetite.'

1.24 In this connection the COSO *ERM Framework* identifies a concept known as **risk tolerance**. Risk tolerances are 'the acceptable levels of variation relative to the achievement of objectives'. For example a company may have a target for on-time delivery of 98%, but with acceptable variation in the range of 97%–100% of the time. However, not everyone would agree that risk tolerance is a different thing from risk appetite.

1.25 Most organisations consider risk appetite **qualitatively**, with such categories as high, medium, or low, and make decisions that are ultimately based on the 'gut-feeling' of those at the top of the organisation.

## Risk appetite and no need

1.26 At the other extreme to Marks and Spencer, consider a company such as **Virgin**. It has many stable and successful brands, and healthy cash flows and profits: little need, one would have thought, to consider risky new ventures.

1.27 Yet in 2004 Virgin has established a new company called **Virgin Galactic** that will own and operate privately-built spaceships, and intends to offer 'affordable' sub-orbital **space tourism to everybody** – or everybody willing to pay an $200,000 for the pleasure. The risks are enormous: developing the project will involve investing very large amounts of money, there is no guarantee that the service is wanted by sufficient numbers of people to make it viable, and the risks of catastrophic accidents are self-evident.

1.28 There is little doubt that Virgin's risk appetite derives directly from the risk appetite of its chief executive, **Richard Branson –** a self-confessed adrenaline junkie - who also happens to own most parts of the Virgin Group privately, and so faces little pressure from shareholders.

1.29 Risk appetite for **individuals** tends to be associated with whether or not they enjoy the psychological **thrill** of doing risky things and not knowing what the outcome will be. Some people find it 'thrilling' to climb steep mountains; others would never dare climb a staircase without handrails. Some people enjoy card games like poker, or regularly bet on sporting events, or play on fruit machines in the pub, while others would regard such things as a foolish waste of money.

1.30 No-one actually knows why people have such different attitudes, but the following case study may help you to understand some of the possible issues. (We make no apologies either for the length of this case or for departing a little from the syllabus, because it is hugely interesting. )

Are **you** the one-in-five?

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### Case Example. Risk-taking: is it behavioural, genetic, or learned?

**Risky business has never been more popular.** Mountain climbing is among the fastest growing sports. Extreme skiing – in which skiers descend cliff-like runs by dropping from ledge to snow-covered ledge – is drawing ever-wider interest. The adventurer-travel business, which often mixes activities like climbing or river rafting with wildlife safaris, has grown into a **multimillion-dollar** industry.

Under conventional personality theories, **normal individuals** do everything possible to **avoid tension and risk**, and in the not-too-distant past, students of human behaviour might have explained such activities as an abnormality, a kind of death-wish. But in fact researchers are discovering that the psychology of risk involves far more than a simple 'death wish'. Studies now indicate that the inclination to take high risks may be **hard-wired into the brain**, intimately linked to **arousal and pleasure mechanisms**, and may offer such a thrill that it functions like an addiction. The tendency probably affects **one in five** people, mostly young males, and declines with age.

It may **ensure our survival**, even **spur our evolution** as individuals and as a species. Risk taking probably bestowed a crucial evolutionary advantage, inciting the fighting and foraging of the hunter-gatherer.

In mapping out the mechanisms of risk, psychologists hope to do more than explain why people climb mountains. **Risk-taking**, which one researcher defines as **'engaging in any activity with an uncertain outcome'** arises in nearly all walks of life.

Asking someone on a date, accepting a **challenging work assignment**, raising a sensitive issue with a spouse or a friend, **confronting an abusive boss** – these all involve uncertain outcomes, and present some level of risk.

Researchers don't yet know precisely how a risk-taking impulse arises **from within** or what role is played by **environmental factors**, from **upbringing** to the **culture** at large. And, while some level of risk taking is clearly necessary for survival (try crossing a busy street without it!), scientists are divided as to whether, in a modern society, a **'high-risk gene'** is still advantageous.

Some scientists see a willingness to take big risks as **essential for success**, but research has also revealed the **darker side** of risk taking. High-risk takers are easily bored and may suffer low job satisfaction. Their craving for stimulation can make them more likely to abuse drugs, gamble, commit crimes, and be **promiscuous**.

Indeed, this peculiar form of dissatisfaction could help explain the explosion of high-risk sports in post-industrial Western nations. In **unstable cultures**, such as those **at war** or **suffering poverty**, people rarely seek out additional thrills. But in rich and safety-obsessed countries, full of guardrails, seat belts, and with personal-injury claims companies swamping TV advertising, **everyday life may have become too safe, predictable, and boring** for those programmed for risk-taking.

Until recently, researchers were baffled. Psychoanalytic theory and learning theory relied heavily on the notion of **stimulus reduction**, which saw all human motivation geared toward eliminating tension. Behaviours that created tension, such as risk taking, were deemed **dysfunctional**, masking anxieties or feelings of inadequacy.

Yet as far back as the 1950s, research was hinting at alternative explanations. British psychologist Hans J. Eysenck developed a scale to measure the personality trait of **extroversion**, now one of the most consistent predictors of risk taking. Other studies revealed that, contrary to Freud, the brain not only **craved arousal**, but somehow regulated that arousal at an optimal level. Researchers have extended these early findings into a host of **theories about risk taking**.

Some scientists concentrate on risk taking primarily as a **cognitive or behavioural** phenomenon, an element of a larger personality dimension which measures individuals' sense of **control over their environment** and their willingness to **seek out challenges**.

A second line of research focuses on risk's **biological** roots. Due to relatively low levels of certain **enzymes and neurotransmitters** the cortical system of a risk taker can handle higher levels of stimulation without overloading and switching to the fight-or-flight response. Their brains automatically dampen the level of incoming stimuli, leaving them with a kind of excitement deficit. The brains of people who don't like taking risks, by contrast, tend to augment incoming stimuli, and thus desire less excitement.

Even then, enzymes are only part of the risk-taking picture. **Upbringing, personal experience, socio-economic status, and learning** are all crucial in determining how that risk-taking impulse is ultimately expressed. For many climbers their interest in climbing was often **shaped externally**, either through contact with older climbers or by reading about great expeditions. Upon entering the sport, novices are often immersed in a tight-knit climbing **subculture, with its own lingo, rules of conduct, and standards of excellence**.

This **learned** aspect may be the most important element in the formation of the risk-taking personality.

*This is much abridged and somewhat adapted from an article in* Psychology Today*: it is a very fascinating article which also attempts to explain, in risk terms, matters like why some people are more* ***sexually permissive*** *than others, why some are attracted to* ***drugs*** *and so on.*

*The article can be read in full at: http://cms.psychologytoday.com/articles/pto-19941101-000027.html (but please read it later!)*

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1.31 To what extent can these ideas be **applied to organisations?** The case indicates that the tendency to take risks or not depends on cognitive psychological factors (willingness to take on challenges), and genetic factors (the relative absence of certain chemicals in the brain that suppress the fear that most people feel when confronted with risk). None of this makes much sense when talking about an abstract non-living thing like a company, which exists only on paper and in the eyes of the law.

1.32 But the case also indicates that upbringing, personal experience, socio-economic status, and learning play a part and that risk-takers tend to be immersed in a subculture, with its own language, rules of conduct, and standards of excellence.

1.33 Equally, organisations have a history and have unique experiences, and are wealthy or struggling. They set rules of conduct and standards of excellence. Their people possess knowledge and talk in organisational jargon. This is commonly called the organisation's **culture**.

# 2 THE INTERNAL ENVIRONMENT: CORPORATE CULTURE

## The way we do things round here

2.1 You will know, if you have had more than one job (even in the same industry), that all organisations are different from each other. Organisational culture is a catch-all term for the large number of things that characterise one organisation as opposed to another: the way bosses and staff interact, the way decisions are made and rules followed, the dress code, the amount people socialise, plus a huge host of other factors, both tangible and intangible.

2.2 Organisational culture is a very hard thing to define. Possibly the best definition that anyone has yet come up with is quite intentionally vague: organisational culture is '**the way we do things round here**' (Charles Handy). A similar, but more formal, definition is given by Edgar Schein:

> Culture is 'the pattern of basic assumptions that a given group has invented, discovered, or developed, in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to these problems.'

### Case Example: Learning a culture

Suppose you get a new job which involves operating a machine of some kind. Your induction training taught you that you are expected to spend 15 minutes at the beginning of every production session (morning and afternoon) carrying out routine maintenance on the machine you operate: checking the oil levels, looking out for wear and tear, making sure all the parts are in alignment and properly sharp, and so on. The detailed checks to do are set out in your new department's procedures manual.

Of course you will diligently do all this on your first few days, but let's suppose you quickly become aware that the other machine operators around you start productive work long before you do, and are laughing at you for being so cautious.

By Wednesday lunchtime you have received a visit from your manager who wants to know why your daily output is so much lower than that of the other members of the team. You are also concerned about this because along with your basic pay you are paid a small bonus for every job that you finish, and your colleagues seem to produce far more per day than you do.

You explain that you are just doing what you were taught to do in induction but the manager takes you aside and explains that the more experienced operators 'know' when their machines need oiling or adjusting and so on, just from the sound they make and how much they vibrate, and you will soon get to know too. The manager admits that if machines are not properly maintained there is a risk that they will be seriously damaged and production will be lost. But the manager also says that if your machine goes wrong you won't actually be seriously affected anyway: you will get the rest of the day off, on whatever is your average day's pay, while it is being fixed. So, 'between you and your manager', it is actually in your interests to produce as much as you possibly can, and ignore your supposed maintenance responsibilities.

The manager then mentions that a more senior manager has asked the department to fulfil an unusually large order that week, and your relative lack of productivity may mean that the more senior manager is let down.

By Wednesday afternoon, at the latest, you will probably have concluded that your supposed routine maintenance responsibilities are not actually necessary at all and will get on with productive work immediately. Perhaps you will be looking around to see if, when, and why your colleagues get the oil can out, if they ever do, but you will care a lot less about your machine going wrong.

You have learned a lot about the culture of your department and will be keen to learn more.

**Activity 2.2**

What organisational problems are revealed by the case study above?

2.3 You probably don't operate machines that need oiling and sharpening if you are doing the Diploma in Financial Management qualification, but the case study above may well remind you of similar situations in your own working life.

## Cultural influences

2.4 There are many factors that influence an organisation's culture, including the following.

(a) **Economic conditions and strategy**

In prosperous times organisations will either be complacent or adventurous, full of new ideas and initiatives. In recession they may be depressed, or challenged. The struggle against a main competitor may take on 'heroic' dimensions.

(b) **The nature of the business and its tasks**

The types of technology used in different forms of business create the pace and priorities associated with different forms of work, for example the hustle and frantic conditions for people dealing in the international money market compared with the studious life of a research officer.

(c) **Leadership style and ethics**

The approach used in exercising authority (for example punishing mistakes or learning from them) will determine the extent to which subordinates feel alienated and uninterested or involved and important. Leaders are also the creators and 'sellers' of organisational culture: it is up to them to put across the vision. If the leader demands that profit be pursued irrespective of who is harmed along the way then that may well translate into **ruthlessly unethical behaviour** right through the organisation. (Corporate ethics is highly relevant to this chapter but in line with the syllabus we save our discussion of this topic for part D of this book.)

(d) **Policies and practices**

The level of trust and understanding which exists between members of an organisation can often be seen in the way policies and objectives are achieved, for example the extent to which they are imposed by tight written rules and procedures or implied through custom and understanding.

(e) **Structure**

The way in which work is organised, authority exercised and people rewarded will reflect an emphasis on freedom or formal control, flexibility or rigidity.

(f) **Characteristics of the work force**

Organisation culture will be affected by the demographic nature of the workforce, for example its typical manual/clerical division, education, age, sex and personality.

## Types of culture

2.5 Different writers have identified different types of culture, based on particular aspects of organisation and management. Of course you are not facing an exam in organisation theory,

but some background knowledge of some of the most prominent ideas may be helpful in **tackling exam questions**, both on risk management in general and on corporate governance, especially as the examiner has indicated that questions will be more 'problem-based' in the future

## Miles and Snow: strategic cultures

2.6 *Miles and Snow* identify three 'superior performing' cultures.

(a) *Defenders*. Firms with this culture like low risks, secure markets, and tried and trusted solutions. These companies have cultures whose stories and rituals reflect historical continuity and consensus. Decision taking is relatively formalised. (There is a stress on 'doing things right', that is, efficiency.)

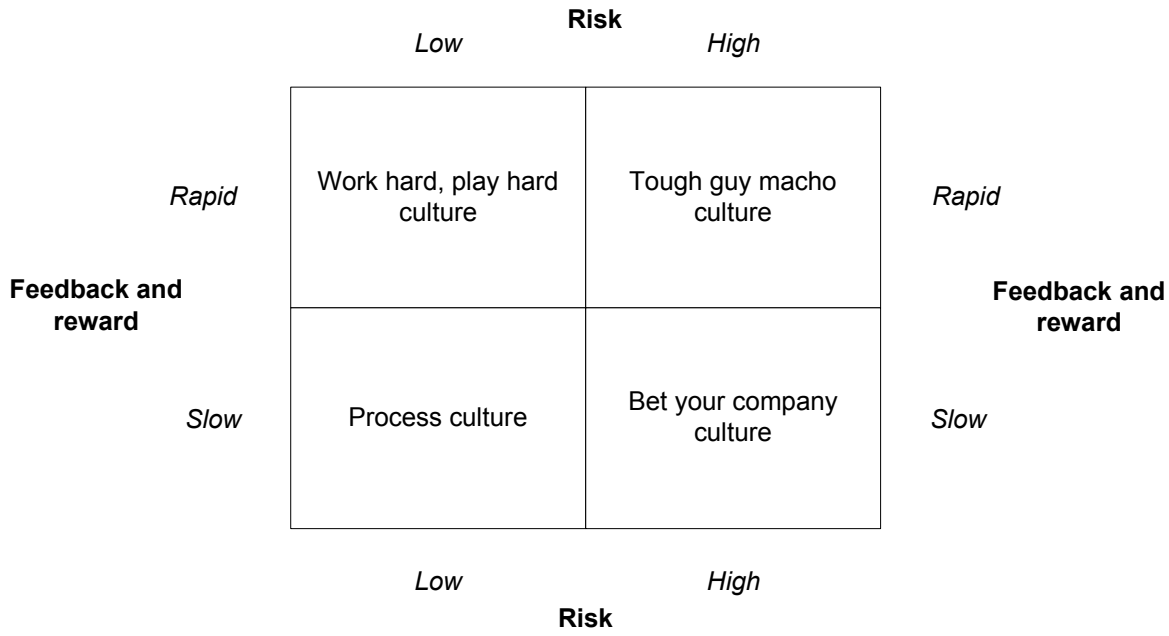
(b) *Prospectors* are organisations where the dominant beliefs are more to do with results (doing the right things, that is, effectiveness), and therefore prospectors take risks.

(c) *Analysers* try to balance risk and profits. They use a core of stable products and markets as a source of earnings to move into innovative prospector areas. Analysers follow change, but do not initiate it.

*Reactors*, unlike the three above, do not have viable strategies. Arguably, they do not have a strategy at all, unless it is simply to carry on living from hand to mouth, muddling through.

## Deal and Kennedy: risk, feedback and reward

2.7 Deal and Kennedy (*Corporate Cultures*) consider cultures to be a function of the level of **risks** that **employees** need to take, and how quickly they get **feedback** on whether they got it right or wrong and/or rewards for doing so.



(a) **Low risk cultures**

(i) **Process culture**

The process culture occurs in organisations where there is low risk and little or no feedback. People become bogged down with how things are done not with what is to be achieved. This is often associated with bureaucracies. Whilst it is easy to criticise these cultures for being over-cautious or bogged down in red tape, they do produce consistent results, which is ideal in, for example, public services, banking and insurance.

(ii) **Work hard, play hard culture**

This culture is characterised by few risks being taken, all with rapid feedback. This is typical in large organisations such as retailers which strive for high quality customer service. They are often characterised by team meetings, jargon and buzzwords.

(b) **High risk cultures**

(i) **Bet your company culture**

In the bet your company culture big stakes decisions are taken, but it may be years before the results are known. Typically, these might involve development or exploration projects, which take years to come to fruition, such as could be expected with oil exploration, development of drugs or aircraft manufacturers.

(ii) **Tough-guy macho culture**

Feedback is quick and the risks and rewards are high. This often applies to fast-moving financial activities such as brokerage, but could also apply to the police, athletes competing in team sports, advertising and certain types of construction. This can be a very stressful culture in which to operate.

## Handy: power, role, task and person cultures

2.8 Charles Handy discusses four cultures and their related structures.

(a) A **Power Culture** which concentrates power in a few pairs of hands. Control radiates from the centre like a web. Power Cultures have few rules and little bureaucracy; swift decisions can ensue.

(b) In a **Role Culture**, people have clearly delegated authorities within a highly defined structure. Typically, these organisations form hierarchical bureaucracies. Power derives from a person's position and little scope exists for expert power.

(c) By contrast, in a **Task Culture**, teams form to solve particular problems. Power derives from expertise so long as a team requires expertise. These cultures often feature the multiple reporting lines of a matrix structure.

(d) In a **Person Culture** the individual and individual talent is the central point, but if it is appropriate within an organisation the assumption is that people will contribute out of a sense of commitment to a group or organisation of which they feel they are truly members and in which they have a personal stake. Examples of this culture are universities, barristers, architects, and doctors.

### Case example: cultures to manage different risks

Handy acknowledges that different cultures may exist in different parts of the organisation, and in different circumstances, in order to best manage the sort of risks that may arise in different parts of the organisation.

For example an airline operates and maintains aircraft and gets passengers from one place to another. It would be reasonable in this case that engineering is essentially a **Role** culture, and administration, accounting and the administrative parts of personnel should be so too. The customer-facing divisions should be essentially **Task** cultures, getting passengers and planes to their destinations on time, to quality and budget. The (non-executive) board and possibly some other parts of the organisation such as training/people development, should perhaps be **Person** cultures. But when crises hit there is likely to be an ultimate **Power** culture based on the dominant personalities, who will take the toughest decisions. Hopefully this will be the board.

(Adapted from Garratt, *The Fish Rots from the Head* (2003))

## National culture

2.9 Many large companies are multinationals and research has found that **national differences** can be a major influence on how people behave. In general, for example, in the UK and Scandinavia people are better able to tolerate uncertainty and ambiguity than in countries such as Germany, the Latin countries and Japan. In the US people regard themselves primarily as individuals whereas the Japanese regard themselves as part of a community.

2.10 These are vast generalisations of course, but national culture is a matter to consider when trying to establish an organisation-wide risk culture: a highly procedural approach, say, that is quite acceptable in the country where the head office is based may be difficult to implement in other countries.

## Changing a culture

2.11 If an organisation is taking an **enterprise view** of its risk culture for the first time, or if it **takes over another business**, it is likely that **anomalies** will be found, and decisions will need to be made as to whether to embrace the differences or eliminate them.

2.12 It is usually possible to **change** an inappropriate culture, but this **will not happen overnight**.

(a) The **beliefs expressed by managers** and staff can be used to 'condition' people, to sell a new culture to the organisation by promoting a new sense of corporate mission, or a new image. Slogans and so on can be used to energise people and to promote **particular values** which the organisation wishes to instil in its members. For example corporate advertising may appear to be aimed at customers ('XYZ Company–for a world that revolves around YOU!') but of course it also sends a message to employees (to provide exceptional customer service, in this case).

(b) **Leadership** provides an impetus for cultural change: attitudes to trust, control, formality or informality, participation, innovation and so on will have to come from the top - especially where changes in structure, authority relationships or work methods are also involved. The first step in deliberate cultural change will need to be a 'vision' and a sense of 'mission' on the part of a powerful individual or group in the organisation.

(c) The **reward** system can be used to encourage and reinforce new attitudes and behaviour, while those who do not commit themselves to the change miss out or are punished, or pressured to 'buy in or get out'.

(d) The **recruitment and selection** policies should reflect the qualities desired of employees in the new culture. To an extent these qualities may also be encouraged through induction and training.

2.13 We will return to this question of how to change a culture at the end of this chapter when we consider how **ownership** of risk management can be **spread** throughout the organisation, but first we will consider where in an organisation responsibilities may lie.

### Activity 2.3

Think about your own organisation: do you feel that you are required to be too cautious, or are you sometimes required to do things that you are uncomfortable about? Is that because of your own personal appetite for risk or is it part of the general culture? Does your organisation fit into any of the types identified above?

## 3 ORGANISATION STRUCTURE AND RISK MANAGEMENT

### Related parts

3.1 An organisation's 'structure' refers to the **parts** of the organisation and the way they are **related** to each other. For instance marketing and sales find out what customers want and communicate this to production. Production make the product and tell marketing and sales about its special features and how long it takes to make one. Other departments may get involved such as accounting, who may talk to both marketing and production to determine pricing, or research and development, who may develop the new product based on what marketing tells them about features required and what production tells them about what is feasible. Human resources will supply all the departments with staff and organise training.

3.2 Organisations develop the structure that best suits their activities and their size. Some may be organised by function, as in the example above, others by product line, others by geographical region. Numerous combinations and variations are possible.

3.3 Not surprisingly, in view of the diversity of structures, the COSO framework can only tell us that: 'Whatever the structure, an entity should be organised to enable effective enterprise risk management and to carry out its activities so as to achieve its objectives.' In fact it is more fruitful to think about the risk management **roles and responsibilities** that may be assigned to different parts of the organisation.

### Board of directors

3.4 The board is responsible for **overseeing** risk management in the organisation. It may not actually set the **risk appetite** since, as indicated earlier, this may derive from a complex variety of factors, but it should be **aware of** the risk appetite and **agree** that it is appropriate (or take action if not). This means that the board must be **informed** of the most significant risks facing the organisation and how they interrelate (a portfolio view), they should know how management is attempting to deal with these risks, and they should be kept up to date with how effective these attempts are.

3.5 In public companies in the UK the board has specific risk-related responsibilities under the Combined Code (which requires them set up an **audit committee** and to report on the effectiveness of 'internal controls') and under the *Companies Act 1985 (Operating and Financial Review and Directors' Report etc.) Regulations 2005*, which stipulate that a listed company's published accounts must contain a description of the principal risks and uncertainties facing the company. These matters are all discussed in more detail in several later chapters.

3.6 Other organisations (notably in the public sector) will set up a **risk management group** usually comprised of senior people. The following examples will give you a flavour.

## Case example: Risk management groups

**Strode's College**

The key tasks of the Risk Management Group are to:

- Take overall responsibility for the administration and implementation of the risk management process;
- Identify and evaluate the significant risks faced by the College and produce a Risk Management Action Plan for consideration by the Senior Management Team and the Board of Governors;
- Provide adequate information in a timely manner to the Board of Governors and its committees on the status of risks and controls;
- Report regularly on the Risk Management Action Plan implementation to the Senior Management Team and the Board of Governors and to undertake an annual review of effectiveness of the system of internal control to be presented to the Board of Governors.

The membership of the Risk Management Group will reflect the full range of the College's activities and will include the Principal, Vice Principal, Finance Manager, Resources Manager, Estates Manager and a Director of Faculty.

The Risk Management Group will report on a regular basis to the Senior Management Team.

The Risk Management Group will prepare a report of its review of the effectiveness of the internal control system annually for consideration by The Senior Management Team, the Audit Committee and the Board of Governors.

**Argyll & Clyde NHS board**

The Risk Management Steering Group will be responsible for Strategic Planning. Its purpose and remit will be to: -

- Identify risk.
- Review Directorate risk registers and action plans.
- Provide assurance to the Health Governance Committee that all identified risks are being managed.
- Raise awareness of risk throughout the organisation.
- Provide education on risk throughout the organisation.
- Provide regular reports to the Health Governance Committee highlighting risks which are more severe due to change in circumstances i.e. organisational, legal or environmental.
- Review incident reporting statistics and investigation reports.
- Effectively communicate risk issues within the organisation.
- Monitor and review the risk management process.

The Risk Management Steering Group will receive reports from an established network of groups dealing with Risk Management as part of its remit. These groups will reflect the joint clinical and non-clinical approach to Risk Management.

The Membership of the Risk Management Steering Group is:

Chief Executive (Chair)
Director of Public Health or Representative
Director of Corporate Affairs
Health and Safety Adviser
Chief Internal Auditor
Organisational Performance Manager
Emergency Planning Officer
Director of Information
Assistant Director – Planning and Performance

The Risk Management Steering Group will meet every 2 months and report to the Health Governance Committee quarterly.

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## Senior management

3.7 The chief executive has ultimate responsibility for the overall enterprise's risk management, and therefore will wish to ensure that appropriate risk management components are in place wherever necessary in the organisation. Together with senior functional managers and perhaps a chief risk officer (see below) the CEO will consider the appropriateness of the organisation's risk culture and set changes in motion if necessary, review emerging risks and decide on the responses that should be adopted, and review the progress of ongoing risk management efforts and consider what improvements could be made, and what lessons can be learned.

3.8 Other senior managers will do the same for the risks that relate specifically to **their own unit's** objectives. They may be aided by functions that cut across the different units such as human resources, who will help to ensure that the organisation has appropriate risk management skills via training programmes and recruitment, and the legal department will advise on how new laws and regulations may impact on each unit's operations.

## Middle and junior management

3.9 Responsibility will cascade down the organisation with each manager being accountable to the next higher level for his or her portion of enterprise risk management.

3.10 Lower level managers will typically be responsible for devising and implementing particular risk procedures such as event identification and risk assessment, for determining responses, such as procedures for selecting suppliers or approving new customer applications, and for monitoring whether the responses are effective.

3.11 As we will see in the final section of this chapter, responsibility **does not stop at manager level**: everyone in the organisation can contribute to risk management.

## Chief Risk Officer

3.12 Given the complexity of the issues many organisations are delegating the task of co-ordinating risk management to an **individual** who is expert in the task. This person will need technical skills in credit, market, and operational risk, and leadership and persuasive skills are likely to be necessary to convert sceptics into believers and overcome resistance from those who may believe that risk management is an attempt to stifle initiative.

3.13 Lam (*Enterprise Risk Management*) includes a detailed description of this role, and the COSO framework also has a list of responsibilities and conflating these sources we can say that the Chief Risk Officer is typically responsible for:

(a) Providing the overall leadership, vision and direction for ERM

(b) Establishing an integrated RM framework for all aspects of risk across the organisation: integrating enterprise risk management with other business planning and management activities. Framing authority and accountability for enterprise risk management in business units.

(c) Promoting an enterprise risk management competence throughout the entity, including facilitating development of technical enterprise risk management expertise and helping managers align risk responses with the entity's risk tolerances and developing appropriate controls

(d) Developing RM policies, including the quantification of management's risk appetite through specific risk limits, defining roles and responsibilities and participating in setting goals for implementation

(e) Establishing a common risk management language that includes common measures around likelihood and impact, and common risk categories. Developing the analytical systems, and data management capabilities to support the risk management programme.

(f) Implementing a set of risk indicators and reports including losses and incidents, key risk exposures, and early warning indicators. Facilitating managers' development of reporting protocols, including quantitative and qualitative thresholds, and monitoring the reporting process.

(g) Allocating economic capital to business activities based on risk, and optimising the company's risk portfolio through business activities and risk transfer strategies

(h) Reporting to the chief executive on progress and recommending action as needed. Communicating the company's risk profile to key stakeholders such as the board of directors, regulators, stock analysts, rating agencies and business partners

## Internal audit

**KEY TERM**

**Internal auditing** is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes.

*Institute of Internal Auditors*

3.14 The function of internal auditors is to look at whatever operational, financial and compliance areas management want to check. As well as specific accounting matters the responsibilities of the internal audit team might cover economy, efficiency and effectiveness in general, reviewing compliance with laws and regulations, and reviewing risk, risk controls and risk management. Although internal auditors are typically employees of the organisation, and so not fully independent, they are nevertheless not attached to any specific part of it and should therefore be able to look at matters from a **more objective** perspective.

3.15 In particular an internal audit function can help management to ensure that the **internal control system** is functioning effectively. We will look at internal controls in more detail in Chapter 3.

3.16 Besides promoting risk management systems in general the role of the internal audit department in **risk management** might include matters such as the following.

(a) **Identifying** risk areas where no risk management systems currently exist. Given that they look at these matters in all parts of the organisation, internal auditors are likely to be much more keenly aware of what can go wrong.

(b) **Providing assurance** to managers on the effectiveness of their risk management procedures. This might range from reviews of incidents where controls broke down, highlighting lessons to be learned, to detailed scrutiny of the logic and validity of computer models used to measure risk.

(c) Providing **advice** on the ways in which risk management systems and procedures may be improved, for example devising new ways of measuring risk and setting priorities for managing them.

(d) Providing **training** programmes or relevant information to employees. Internal auditors might facilitate brainstorming sessions to help business unit managers and staff to 'think outside the box'. Tools used in some organisations such as the Excel/Project-based @Risk program (www.palisade.com) are not for the faint-hearted and require a good understanding of probabilities, probability distributions, simulation techniques and so on.

(e) Providing a **more objective** view of the risks facing the business than that provided by operational managers. Operational managers may be naturally inclined to play down the risks that are faced by their part of the business, to show it in a better light, or they may see risk management measures as unnecessarily restrictive.

### Activity 2.4

Explain the reasons why internal auditors should, or should not, report their findings on internal control to the board of directors.

## Finance

3.17 As mentioned earlier the activities of accounting and finance cut right across the organisation. They develop budgets and plans in line with the organisation's objectives and they track and analyse performance from a variety of perspectives, both to manage operations and to comply with reporting requirements.

3.18 Because everything an organisation does involves money the people in the financial function are central to the way management exercises enterprise risk management. They will play a critical role in the design, implementation, and monitoring of all the company's reporting systems.

## External parties

3.19 Although not part of the internal environment a number of external parties may contribute significantly to an enterprise's risk management, particularly as sources of information.

*External auditors*

3.20 The primary function of the **external auditors** of a company is to express an opinion as to whether the company's accounts give a true and fair view of its affairs as at the end of the financial year, and of its profit or loss for the year.

3.21 As a part of this function, the auditor is required to assess the adequacy of the company's accounting system as a basis for preparing the financial statements. This assessment will include an appraisal of the company's control systems. Any perceived weaknesses in the internal control systems, which could give rise to error, loss or fraud, should be reported to management.

3.22 In future, under the recently implemented *Companies Act 1985 (Operating and Financial Review and Directors' Report etc) Regulations 2005* auditors will be required to assess and report on the adequacy of the directors' description of the principal risks and uncertainties facing the company.

*Legislators and regulators*

3.23 This category includes government bodies such as the Health and Safety Executive and regulators such as the Financial Services Authority amongst many others relevant to specific types of industry.

3.24 Legislators and regulators affect organisations' risk management in the sense that they establish rules and standards that provide the impetus for management to ensure that risk management and control systems meet minimum requirements, and because they conduct inspections and audits they provide useful information and recommendations regarding improvements that may be needed.

*Customers and suppliers*

3.25 Customers and suppliers obviously do not have any responsibility within the organisation but they may often provide information that brings attention to problems.

*Market analysts, rating agencies, and media*

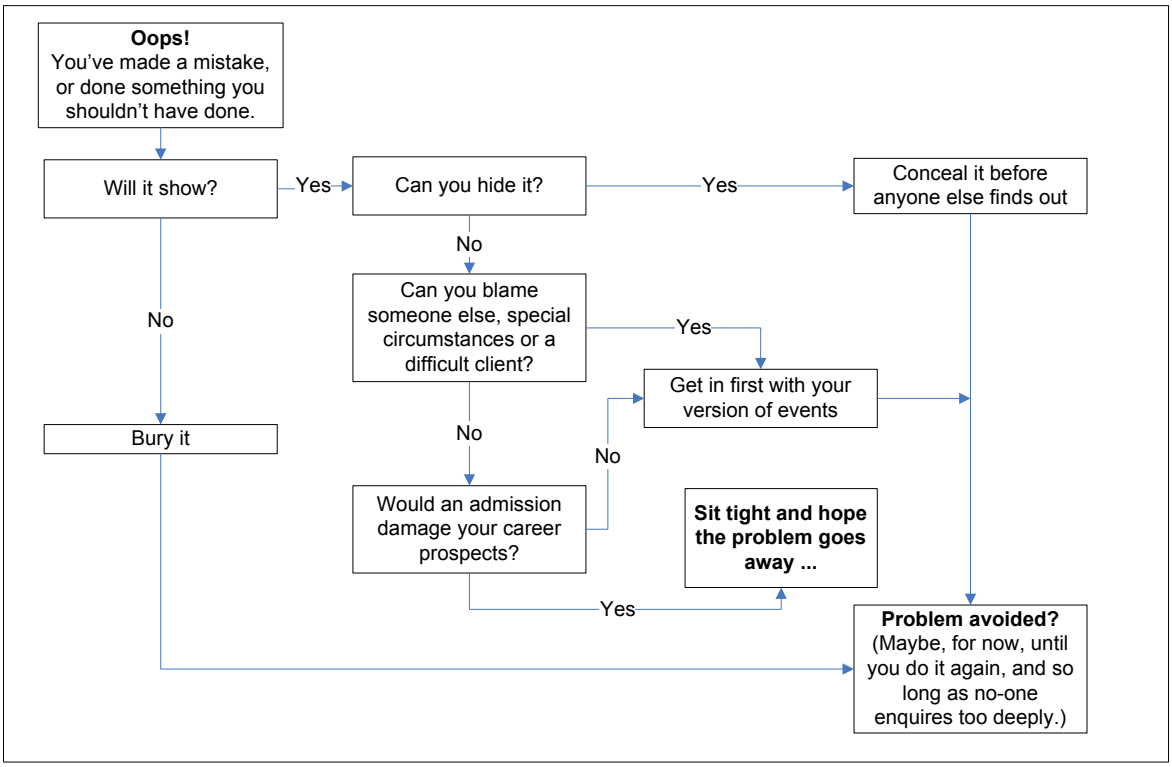
3.26 Market analysts and rating agencies analyse a company's strategy and objectives, historical and prospective financial results, actions taken in response to conditions in the economy and marketplace, and potential for success, and they make industry performance and peer group comparisons. The media undertakes similar analyses. Although aimed at their own customers this information may also be useful for the organisation itself to provide insights on how others perceive its performance, the industry and economic risks it faces, innovative operating or financing strategies that may improve performance, and industry trends.

## 4 OWNERSHIP OF RISK MANAGEMENT

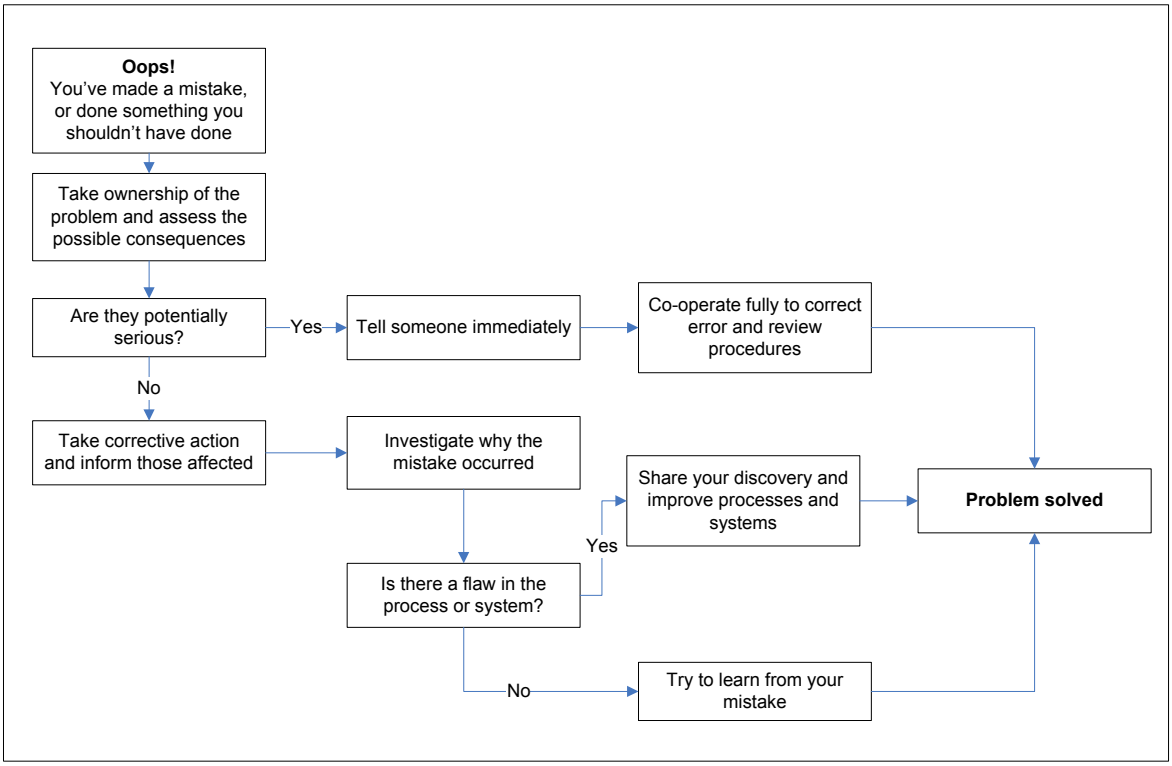
4.1 Ownership of risk management is a question of **who takes responsibility** for managing it. In principle **everyone** in the organisation, from top to bottom, should take responsibility for the **areas under their control**, but this is probably rare in practice.

4.2 A useful starting point is to consider **what happens when a mistake occurs** in an organisation. How is it handled? Look at the two flow charts below and think about your own thought processes and actions when you make a mistake, and also about how other people in your organisation appear to behave when they make a mistake.

(a) Is it handled like this? Start from 'Oops' and work through to each of the two possible 'end' points (but is it really the end?).



(b) Or is it handled more like this?




The flow charts are adapted from Bob Garratt, *The Fish Rots from the Head* (2003).

4.3 The first approach is probably far more common. Most of us don't like getting things wrong, and most of our bosses don't like us getting things wrong either. But it is not an innate part of human nature to hide mistakes or blame others. It is only natural in circumstances where we **fear the consequences** of mistakes being found out, especially where bosses **penalise mistakes** irrespective of the circumstances: we will only be scared of the consequences if the prevailing culture gives us a reason to be scared. Let's think about how this can be avoided or changed.

## Risk awareness and communication

4.4 In the first place people cannot be expected to avoid risks if they are not aware that they exist in the first place. Embedding a risk management frame of mind into an organisation's culture will be facilitated by top-down communications on what the risk philosophy is and what is expected of the organisation's people.

4.5 Here is an example of an internal communications programme slightly adapted from an example in the COSO *Framework*.

### Case example: Internal communications programme

- Management discusses risks and associated risk responses in regular briefings with employees.
- Management regularly communicates entity-wide risks in employee communications such as newsletters, an intranet.
- Enterprise risk management policies, standards, and procedures are made readily available to employees along with clear statements requiring compliance.

- Management requires employees to consult with others across the organization as appropriate when new events are identified.
- Induction sessions for new employees include information and literature on the company's risk management philosophy and enterprise risk management program.
- Existing employees are required to take workshops and/or refresher courses on the organization's enterprise risk management initiatives.
- The risk management philosophy is reinforced in regular and ongoing internal communication programs and through specific communication programs to reinforce tenets of the company's culture.

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4.6 The COSO framework also recommends certain organisational measures for spreading ownership of risk management.

(a) Enterprise risk management should be an explicit or implicit part of **everyone's job description**.

(b) Personnel should understand the need to **resist pressure from superiors to participate in improper activities,** and **channels outside normal reporting lines** should be available to permit reporting such circumstances.

## Training and involvement

4.7 **Training** is of course essential, especially for new employees and for all when new procedures are introduced. Aside from practical matters like showing employees which buttons to press or how to find out the information they need training should include **explanation** of why things are done in the way that they are. If employees are asked to carry out a new type of check but are **not told why** there is every chance that **they won't bother** to do it, because they don't understand its relevance: it just seems to mean more work for them and to slow up the process for everyone.

4.8 The people who are expected to own risks and risk management will be more inclined to do so if they are **involved** in the process of identifying risks in the first place and in developing responses and controls. This enhances understanding and gives them a stake in risk management.

## Changing attitudes

4.9 The biggest problems are likely to arise when a risk culture already exists but has become inappropriate and needs to be changed. Some people embrace change and thrive on it, but many resist it. There may be a variety of reasons.

(a) Change involves the **extra effort** of 'unlearning' old knowledge and the learning of new knowledge.

(b) **Self-interest** may be a factor: a new procedure may entail the involvement of another person or department and be seen as an erosion of power.

(c) People may **misunderstand** the nature of the change.

(d) People may simply **mistrust** management.

(e) They may **not agree** that the change is needed.

4.10 Coercion and autocratic methods may be necessary on occasions, especially when time is limited, but in the longer term **resistance must be overcome** if people are ever to accept ownership of risk management. As usual, communication and dialogue are key to this, and here are some other possible methods.

(a) **Incentives:** those driving the change must identify as well what constitutes job satisfaction for the relevant group in the organisation and provide incentives as appropriate. This may entail setting performance targets and tying results to performance pay. Promotions and desirable assignments should also partly depend on performance. Rewards must be tied to actions that promote the new practices and behaviours. Depending on the nature of the job one incentive might be that the change clearly delivers new benefits to the persons (internal or external) for whom the job is done, in which case it is important to demonstrate and explain the benefits.

(b) **Learning experiences:** a change is more likely to be accepted if people have the opportunity to experience first hand what it means for them in a 'safe' environment that allows them to make mistakes and to experiment and ask questions to resolve personal concerns. It is often useful to involve people from other parts of the organisation who have already made the transition and can help ease the fears of those who have yet to experience it.

(c) **Key personnel**: some individuals are more important than others, for example, individuals with significant **power to disrupt**, individuals with important **technical expertise**, or individuals whose **influence** over other people is significant. These people need to be persuaded to buy in to the change as a first priority.

(d) **Infrastructure:** change – especially sudden change – is often hampered because staff do not have adequate tools. For example it may be more difficult to obtain the information needed, or staff may have to override old software controls while programs are being rewritten. These are problems that need to be addressed as soon as possible.

## Chapter roundup

- There must be **objectives** first, before management can identify and assess risks to the achievement of objectives and take necessary actions to manage the risks.
- **Risk appetite** is the extent to which a company is prepared to take on risks in order to achieve its objectives.
- For public companies risk appetite is largely a question of **what is acceptable to the shareholders**. In general shareholders are risk-averse.
- To some extent risk appetite is allied to **need.**
- In some industries risk appetite can be expressed **quantitatively** using market measures or risk-based capital, but many consider risk appetite **qualitatively**, and make decisions based on the gut-feeling of those at the top of the organisation.
- Culture is 'the pattern of basic assumptions that a given group has invented, discovered, or developed, in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to these problems.
- Many writers have attempted to identify different **types of organisational culture** and national culture, for example Defenders, Prospectors, Analysers and Reactors; Process, Work hard, play hard, Bet your company, Tough-guy macho; Power, Role, Task, Person.
- Culture might be **changed** via beliefs expressed by managers, strong leadership, reward systems, recruitment and selection procedures and training.
- Whatever its **organisation structure**, an entity should be organised to enable effective enterprise risk management and to carry out its activities so as to achieve its objectives.
    - The **board** is responsible for **overseeing** risk management and reporting to shareholders. It may fulfil its responsibilities via an **audit committee** or a **risk management group**.
    - The **chief executive** has **ultimate responsibility** for risk management of the organisation as a whole. Top management take responsibility for the risks that relate specifically to their own unit, and are aided by functions that cut across organisational boundaries such as human resources, the legal department and so on.
    - Some organisations appoint a **chief risk officer** who will be a specialist in risk issues and have the task of co-ordinating risk management right across the organisation.
    - The **internal audit** function looks at whatever operational, financial and compliance areas management want to check. As well as specific accounting matters the responsibilities of the internal audit team might cover economy, efficiency and effectiveness in general, reviewing compliance with laws and regulations, and reviewing risk, risk controls and risk management.
    - Everything an organisation does involves money, so the **finance department** will have a key role in the design, implementation, and monitoring and the company's systems.
    - A number of **external parties** my contribute to risk management, including external auditor, regulators, customers and suppliers, analysts, rating agencies and the media.
- **Ownership** of risk management is a question of **who takes responsibility** for managing it. In principle **everyone** in the organisation, from top to bottom, should take responsibility for the **areas under their control**.
- Ownership of risk management can be **spread** by ensuring that staff are **aware** of risks through **communications** programmes, through **training**, and through **involvement** in the processes of identifying risks and developing responses. Attitudes might be changed through incentives, learning experiences, targeting key personnel and ensuring that the right tools are provided.

## Quick quiz

1 What is a strategic objective?

2 What is risk appetite and what is the link between risk appetite and objectives?

3 How is risk appetite measured?

4 Organisational culture can be defined as 'the correct way to perceive, think and feel'. True or false? Explain your answer.

5 What factors influence an organisation's culture?

6 A 'Bet your company' culture is characterised by high risk and high rewards. True or false?

7 The main responsibility of the board is to set risk appetite. True or false?

8 What are the typical responsibilities of a chief risk officer?

9 How may an internal audit department contribute to risk management?

10 List some of the components of a communications programme designed to spread ownership of risk management.

## Answers to quick quiz

1 **Strategic** objectives are **high-level** goals that may relate to matters such as profitability or return on capital employed, market share, quality of products or services, and customer satisfaction.

2 Risk appetite is the extent to which a company is prepared to take on risks in order to achieve its objectives. If the risks that are identified relating to an objective are greater than the organisation is usually prepared to accept the organisation must either change the objective or accept more risk, to **bring the two into line**.

3 Often it is measured in qualitative terms (eg high, medium low), but some organisations express risk appetite quantitatively, using market measures or risk-based capital

4 False. It is the actual way people perceive, think and feel but not necessarily the 'correct' way, in the sense that it may not be how management want people to behave.

5 Economic conditions and strategy; the nature of the business and its tasks; leadership style and ethics; policies and practices; structure; the characteristics of the work force.

6 Deal and Kennedy's analysis says that risks may be low or high, but rewards/feedback are rapid or slow, so strictly this is false (the rewards might be high, but it is the fact that they will be a long time coming that affects behaviour).

7 False. The board is responsible for overseeing risk management in the organisation. It may not actually 'set' the risk appetite since this may derive from a complex variety of factors, but it should be **aware of** the risk appetite and agree that it is appropriate (or take action if not).

8 Providing the overall leadership, vision and direction for ERM; establishing an integrated RM framework; promoting risk management competence throughout the entity; developing RM policies; establishing a common risk management language; implementing a set of risk indicators and reports; allocating economic capital to business activities based on risk; and reporting to the chief executive.

9 Identifying risk areas where no risk management systems currently exist; providing assurance to managers on the effectiveness of their risk management procedures; providing advice on the ways in which risk management systems and procedures may be improved; providing training programmes or relevant information to employees; providing a more objective view of the risks facing the business than that provided by operational managers.

10 Regular briefings with employees; communication of entity-wide risks in employee communications such as newsletters, an intranet; risk management policies, standards, and procedures that are readily available to employees; clear statements requiring compliance; a requirement to consult with others when new events are identified; induction sessions for new employees; workshops and refresher courses for existing employees.

## Answers to activities

### Answer 2.1

If the company is risk-averse it will not choose project D because A gives the same return for lower risk. It will not choose B because it is beyond its risk appetite. Both A and C are within its risk appetite but A gives a higher return, so that will be chosen.

If the company is a risk-seeker or is risk-neutral it will choose project B.

### Answer 2.2

The procedures laid down are probably inappropriate: the people who actually do the job understand the risks far better than the people who devised the induction training and the people who wrote the procedures manual.

The motivation and rewards systems is badly designed: for experienced machine operators the risk is that they will lose a small amount of bonus, but even if they do they get a day off.

For the company the risk is lost production and extra expense on repairing machines that have not been as well maintained as they should have been.

'You' (the new employee) are a problem, though this is harsh: strictly you should have reported the fact that you were being pressured into doing something that was in breach of official procedures, but this is very hard. Most people tend to try to fit in, at least at first. In any case, who would you report to?

You may have had additional ideas.

### Answer 2.3

There is no specific answer to this activity.

### Answer 2.4

A high level of independence is achieved by the internal auditors if they report directly to the Board. However, there may be problems with this approach.

(1) The members of the Board may **not understand all the implications** of the internal audit reports when accounting or technical information is required.

(2) The Board may **not have enough time** to spend considering the reports in sufficient depth. Important recommendations might therefore remain unimplemented.

A way around these problems might be to delegate the review of internal audit reports to an **audit committee**, which would act as a kind of sub-committee to the main board. The audit committee should be made up largely of non-executive directors who have more time and more independence from the day-to-day running of the company, and who possess the necessary financial knowledge. Chapter 17 contains more information on audit committees.

# Chapter 3 Risk management processes

## Chapter topic list

1 Risk management processes
2 Risk identification and awareness
3 Risk measurement and assessment
4 Risk response and control
5 Risk monitoring and reporting

## Learning objectives

On completion of this chapter you will be able to:

- identify the main processes of risk management
- describe the techniques that may be used to manage exposure to … risk

The detailed syllabus areas covered in this chapter are:

*Risk management processes*

- risk identification and awareness
- risk measurement and assessment
- risk response and control
- risk monitoring and reporting

*Managing financial risk*

- techniques to manage financial risk (portfolio analysis, scenario analysis, stress testing)

## 1 RISK MANAGEMENT PROCESSES

1.1 You may like to flick back to Chapter 1 and glance at the diagrams at the end to remind yourself of the principal risk management processes.

- Risk **identification**, using techniques such as brainstorming as well as taking account of past experience.
- Risk **assessment and measurement**: this considers the probability of an event occurring and the severity of the impact if it does. Measurement may be qualitative or quantitative.
- Risk **response** and **control**: in essence a risk can be avoided (don't do the risky activity), reduced (eg by strictly controlling processes), shared (eg with an insurer) or simply accepted and retained.
- Risk **monitoring** and **reporting**

1.2 Both **this chapter and the next** should be regarded as covering these topics, although in fact you could regard the whole of the remainder of this book as being about risk response, control and monitoring.

## 2 RISK IDENTIFICATION AND AWARENESS

### Risk awareness

2.1 Risk **awareness** is partly a state of mind, and we discussed the importance of being aware of risk in the previous chapter. But it is also dependent upon how well the matter under consideration is **understood**. You may be aware that it is risky to attempt to repair an electrical item when it is plugged in, and hopefully you would never do this, but an experienced electrician, familiar with the workings of the item, may be able to repair it perfectly safely, whether or not it is plugged in, because he or she has greater **knowledge** of what is and is not safe.

2.2 For a business example, suppose an organisation were considering launching a new product in China but knew absolutely nothing about doing business in China. It is highly likely that it will not be aware of many of the risks that could be encountered, because of factors such as different regulations, different ways of approaching customers, differences in disposable income and so on. The risks remain to be **identified** by means such as those described in this section.

### Risk identification

2.3 Risk identification is a **continuous process**, so that new risks and changes affecting existing risks may be identified quickly and dealt with appropriately, before they can cause unacceptable losses.

2.4 In a **top-down approach** the identification of potential risks is undertaken by the board of directors. The directors might meet in brainstorming sessions, and call in selected key employees to help them to identify key risks that the organisation is faced with. They might call on the experience of their non-executive directors, or consider problems faced by the company or its competitors in the recent past.

2.5 A top-down approach could begin by focusing on the critical success factors for the organisation. These are the factors that will determine whether or not the organisation achieves its overall objectives. Senior management could ask the question, for each critical

success factor: 'What might realistically happen that would put successful achievement in doubt?'

2.6 In a **bottom-up approach**, the task of risk identification and assessment is delegated to a number of focus groups of local employees, each under the supervision of an expert in risk management. The focus groups identify the risks and the expert helps them to assess the controls that are in place to manage these risks. The data produced by the individual focus groups is then consolidated and reported to the board of directors. The advantage of a bottom-up approach is that risks at an operational level will be more easily identified.

2.7 To identify all strategic and operational risks, a **combination** of a top-down and a bottom-up approach is probably required, because relevant information about risks will be obtained from individuals throughout the organisation.

## Event identification techniques

2.8 A key aspect of risk identification, emphasised by the COSO *Enterprise Risk Management Framework* is identification of **events** that could impact upon implementation of strategy or achievement of objectives.

(a) **External events** such as political developments, economic changes, social considerations or technological advances (PEST factors).

(b) **Internal events** such as equipment problems, human error or difficulties with processes and systems.

2.9 Identification techniques may make use of **past** data: for example it may be possible to assess how likely it is that suppliers will deliver late on the basis of suppliers' historical delivery records. It may also try to take account of possible **future** data: for example if company starts offering such and such a service it may consider how easy would it be for competitors to do likewise, and if they do what impact that would have on their own plans and projections.

### *Event inventories*

2.10 An event inventory is a checklist of events that are known to arise in a particular context. This is useful in the sense that it helps to make sure that nothing important is forgotten or taken for granted, but such a pre-programmed approach may prevent the identification of risks that go beyond previous experience. A checklist may be one of the outputs of a **risk register** database: this lists all the risks that have been identified in the past together with standard information for each one such as category, priority, ownership, and response. We will look at risk registers in more detail in the next chapter.

### *Brainstorming*

2.11 An alternative or additional approach is to hold a brainstorming session attended by appropriate people, possibly from different functions or different levels in the organisation, to get as many perspectives as possible. In a brainstorming session members of the group are asked to produce as many ideas as possible, bouncing ideas off each other and 'hitch-hiking' – combining ideas to develop new ones. **Quantity**, not quality of ideas is sought at this stage. No suggested ideas are evaluated, criticised or rejected: discussion comes at a later stage, and is not allowed to inhibit the free flow of creative thinking (however unsuitable) during the brainstorming session itself.

2.12 A typical approach to a brainstorming session is as follows.

(a) The number of group members is kept within manageable proportions. Between four and seven people is reckoned to be ideal.

(b) The session should last only about 30 to 45 minutes.

(c) The session must concentrate on idea generation. The aim should be to generate the greatest possible number of ideas in the shortest time. There should be no evaluation or judgement: this can come later.

(d) One person should lead the group and encourage each person to contribute as much as possible. This will probably entail going round and round the table, with people saying 'Pass' if they have nothing to add when their turn comes round. The leader can contribute ideas too.

(e) There needs to be a scribe who writes the ideas down (as well as offering ideas). Alternatively the session could be recorded on tape or video and written up later.

(f) Funny or ridiculous ideas should be encouraged, as should laughter (but not ridicule).

2.13 We'll look at a fictional example of this in action in the next chapter.

**Case example: HAZOP**

The Hazard and Operability (HAZOP) process, pioneered by ICI, is used primarily for identifying safety hazards and operability problems of continuous process systems, especially fluid and thermal systems. It is based on the principle that a team approach to hazard analysis will identify more problems than when individuals working separately combine results. The HAZOP team is made up of individuals with varying backgrounds and expertise. The expertise is brought together during HAZOP sessions and through a collective brainstorming effort that stimulates creativity and new ideas, a thorough review of the process under consideration is made.

Hazard - any operation that could possibly cause a catastrophic release of toxic, flammable or explosive chemicals or any action that could result in injury to personnel.

Operability - any operation inside the design envelope that would cause a shutdown that could possibly lead to a violation of environmental, health or safety regulations or negatively impact profitability.

*Interviews and questionnaires*

2.14 If a brainstorming approach is not practical, for example because of the difficulty of gathering all interested parties into one place at one time, alternatives such as structured interviews by skilled consultants or questionnaires and surveys can be used.

*Leading event indicators and escalation triggers*

2.15 A leading event indicator is a qualitative or quantitative measure that gives insight into potential events, for example ongoing market research that measures consumer attitudes to a product or a company. An escalation trigger compares current events with predefined criteria such as a threshold. Here are some examples from the COSO framework. (Tolerance is the acceptable level of variation, which will depend on the organisation's risk appetite.)

| Business Unit Objective | Measure | Target and Tolerance | Potential Event | Leading Indicator | Escalation Trigger for Business Unit |
|---|---|---|---|---|---|
| Develop product promotional campaign with supermarket chain in key region | Number of units sold per month per store | *Target*: 1,000 units of new product sold per month per store during promotional campaign<br><br>*Tolerance*: 900 – 1,250 units sold per month per store | Consumer confidence decreases, resulting in decreases in purchases of the company's products | Consumer confidence indicators | Consumer confidence decreases by more than 5 % |
| Maintain stable high-quality workforce | Turnover of staff rated as high performers | *Target*: Turnover of high performers less than 10%<br><br>*Tolerance*: Between 2% and 12% | High performers resign | Staff morale of high performers | High performers responding as 'very dissatisfied' or 'somewhat dissatisfied' in an employee survey |

*Benchmarking*

2.16 Benchmarking exercises, where results and work processes of one company, department or office are compared with other businesses, departments or offices may yield useful risk information. It may be difficult to obtain information about direct competitors but this approach may be particularly appropriate for branch-based businesses: what is it, say, that the Bristol branch does, or does not do, that leads to a higher incidence of risk events than, say, the Leeds branch?

*Auditing and official inspections*

2.17 As discussed in the previous chapter risks may be identified as a part of the process of internal audit, either in general or following investigation of a specific incident, or through external audit. They may also come to light as a result of an inspection by some government body (for example a health and safety inspection) or by a professional or standard-setting organisation.

2.18 Arguably if third parties are the first to identify a risk the company's own risk identification processes are not functioning properly, but it is still worth mentioning this as a possible source of information.

## Event interdependencies

2.19 The organisation should also look at interdependencies between events, identifying how one event can trigger another and how events can occur concurrently. For example a decision to defer investment in an improved distribution system might mean that downtime increases and operating costs go up

2.20 Once events have been identified, they can be **classified** horizontally across the whole organisation and vertically within operating units. By doing this management can gain a

better understanding of the interrelationships between events, gaining enhanced information as a basis for risk assessment.

### Activity 3.1

Here are two more objectives and associated risk events and measures. Identify a leading indicator and an escalation trigger for each one.

| Business Unit Objective | Measure | Target and Tolerance | Potential Event |
|---|---|---|---|
| Comply with standards governing the movements of hazardous material | Volume of spills of hazardous materials transported by company staff | *Target:* <100 gallons per year<br>*Tolerance:* 0 – 125 gallons | Corrosion on barrels causes material to leak from trucks during transport |
| Maintain stable high-quality workforce | Turnover of staff rated as high performers | *Target:* Turnover of high performers < 10%<br>*Tolerance:* 2% – 12% | High performers resign |

## 3 RISK MEASUREMENT AND ASSESSMENT

### Risk assessment

3.1 After risks have been identified, there should be a process of judging whether each risk is serious, and which are more serious than others.

**KEY TERM**

**Risk assessment** involves, for each risk:

(a) Considering the nature of the risk, and what implications it might have for the organisation.

(b) Making an initial judgement about the seriousness of the risk.

An aim of risk assessment should be to identify those risks that have the greatest significance, and so should receive the closest management attention.

3.2 Each risk can be assessed from two aspects:

(a) Its potential **impact**. Without necessarily quantifying the likely consequences, the risk assessment process should result in each risk being given a grading for impact, in other words how serious it would be.

(b) Its **probability of occurrence**. Again without necessarily quantifying the probability of an unexpected outcome, management should try to grade each risk for probable occurrence.

3.3 The total potential losses arising as a result of the risk depend on both severity and frequency. The term '**gross risk**' refers to the combination of the impact and the frequency of the risk, before taking into account any control measures to deal with it. A risk of frequent small losses could be a greater threat to the business than the risk of an infrequent but severe loss. The most significant risks are those that could result in frequent severe losses.

3.4 A **risk map** can be drawn for each risk in the form of a matrix with one axis for impact of loss and the other axis for probability of loss (it does not matter which axis you use for which, but be consistent).

| IMPACT | | | | |
|---|---|---|---|---|
| | **High** | *High impact, low probability* | *High impact, medium probability* | *High impact, high probability* |
| | **Medium** | *Medium impact, low probability* | *Medium impact, medium probability* | *Medium impact, high probability* |
| | **Low** | *Low impact, low probability* | *Low impact, medium probability* | *Low impact, high probability* |
| | | **Low** | **Medium** | **High** |
| | | | **PROBABILITY** | |

3.5 Such a diagram can help management to reach a view about:

(a) Which risks seem more serious than others, and

(b) The nature of the risk management measures that might be appropriate for dealing with each risk.

3.6 Here is a simple example: the identification of risks and their placement is arbitrary, of course because this would be different for every organisation.

| IMPACT | | | | |
|---|---|---|---|---|
| | **High** | *Failure of computer systems* | *Loss of sales due to macroeconomic factor* | *Loss of senior or specialist staff* |
| | **Medium** | *Loss of key customers* | | |
| | **Low** | | *Loss of suppliers* | *Loss of lower-level staff* |
| | | **Low** | **Medium** | **High** |
| | | | **PROBABILITY** | |

## Measuring risk

*Probabilities*

3.7 For some risks a 'high-medium-low' assessment may be all that is possible, but for events that recur regularly **mathematical estimates** of probability can be derived from analysing historical information and trends.

3.8 You studied probability for Subject Area 2, Performance Management. As a very brief reminder, if you roll a dice there are six possible outcomes, so the chance of getting a six,

say, is one in six, or 1/6 or approximately 0.167. The probability of getting any one of the other five numbers is also 0.167, or 16.7%. The probabilities of all the possible outcomes always sums to 1 (100%): it is 100% probable (ie certain) that you will get a number between 1 and 6.

3.9 Risks of adverse events such as ill health, accidents, theft and property damage can be measured by probability because it is possible to collect information about how often these events happen to different types of people, and so insurance companies have offered insurance policies charging premiums based on the measured probabilities of the adverse event occurring. If you have a car alarm and an immobiliser there is less probability that your car will be stolen, and so you pay a lower insurance principle. Exactly the same applies to the risks businesses face: if you take measures to avoid the adverse event you will save money.

*Expected values*

3.10 There are different ways of quantifying the **impact** of risk. One method is to use **expected values** where the risk can be measured as the expected value of loss. You studied expected values in detail for **Subject 2**.

Expected value of loss = Probability of loss × Size of potential loss

3.11 For example suppose that a bank has loans to small business customers of £100 million. The bank has estimated, from its past experience, that 5% of the borrowers will default and the bank will have to take action to recover the money they are owed. When the bank takes action to recover a debt its experience shows that 80% of the debt will be recovered.

The bank could quantify its risk of loss using expected values as follows:

Expected value of loss = 5% × £100 million × 20% = £1 million

**FORMULA TO LEARN**

The **expected value** of an event is equal to the sum of the probabilities of an outcome occurring multiplied by the return expected if it does occur:

$EV = \sum px$

where p is the probability of an outcome occurring and x is the value (profit or cost) of that outcome. Σ means 'the sum of'.

## Activity 3.2

A manager has to choose between mutually exclusive options C and D and the probable outcomes of each option are as follows.

| *Option C* | | *Option D* | |
|---|---|---|---|
| *Probability* | *Profit* | *Probability* | *Profit* |
| | £ | | £ |
| 0.30 | 15,000 | 0.05 | 14,000 |
| 0.55 | 20,000 | 0.30 | 17,000 |
| 0.15 | 30,000 | 0.35 | 21,000 |
| | | 0.30 | 24,000 |

Which should be chosen?

3.12 As the answer above indicates expected values may be very **sensitive** to the accuracy of estimates of both profit and probability.

3.13 Moreover, as you will remember from your previous studies, the expected return is the **average long-run** result: if you toss an unbiased coin 10,000 times you will get about 5,000 heads and about 5,000 tails, because the probability of getting either heads or tails is 50%. However if you only toss the coin three times you might get heads every time. For this reason, some measure of the **variability of actual results** is also useful.

*Volatility*

3.14 Risk might also be assessed by taking a measure of the **volatility** in a key item. Volatility is the extent to which an outcome **varies** over time. For example currency risk can be measured by the volatility in exchange rate movements.

3.15 A statistical measure of volatility is the **standard deviation** of the outcomes of an event (or sometimes the **variance** of the outcomes, which is the square of the standard deviation). The standard deviation measures **how widespread the possible deviations from the expected value** of the outcome the actual outcomes are likely to be.

3.16 For example, suppose the expected return on an investment is 20%. If this type of investment has a standard deviation of 3% (in other words the actual return might be anything from 17% to 23%) it will be viewed as less risky (less volatile) than an investment with a standard deviation of 8% (where the actual return could be anything from 12% to 28%). This applies around two-thirds of the time; for the rest of the time the return would be expected to fall further outside the boundaries.

3.17 To take another example, suppose, that a company is considering two mutually exclusive investments, Project A and Project B, both costing £200,000.

(a) Project A is certain to produce a return of £250,000 after one year.

(b) Project B has a 50% chance of producing a return of £400,000 after one year but a 50% chance of making only £100,000 after one year. The expected value of the return from Project B is (50% × £400,000) + (50% × £100,000) = £250,000.

So, both projects have the **same expected value**, but the key difference is that:

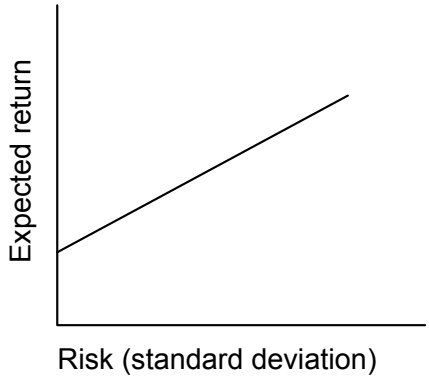
(a) With Project A there is no risk: standard deviation from the expected value is nil.

(b) With Project B actual profits could be £400,000 but there is also a risk of making a loss if the actual return on the outlay of £200,000 is only £100,000. The standard deviation from the expected value is £150,000.

(You can see what the extent of the variation is intuitively in this example because there are only two possible outcomes, but the formula for the standard deviation if you want to calculate it 'properly' is $\sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$ where $\sum$ means 'the sum of', $x$ represents the possible returns (£100,000 or £400,000) and n is the number of values in the sample (2). So far as we are aware statistics like these are **not examinable**. With an Excel spreadsheet the formula to use in this case is =STDEVPA(100,400), but bear in mind that Excel has a number of different functions for different circumstances.)

3.18 To allow for the greater risk with Project B, the company's management would want Project B to have a higher expected return than Project A. For instance if the possible returns were £250,000 or £400,000 (expected value £325,000) then Project B is a much better proposition.

3.19 It is generally assumed that there is a positive linear relationship between expected return and risk (standard deviation): in other words the higher rate of return investors expect the greater the risk they must be prepared to bear.




## Portfolio analysis

3.20 Portfolio analysis considers the standard deviation of outcomes such as the returns on investments in different projects, but not in isolation. The purpose of portfolio analysis is to attempt to find two investments which when combined reduce the overall risk or standard deviation below that of the sum of the two individual standard deviations. This is known as **diversification of risk**.

3.21 In order to find ways of diversifying or reducing risk the standard deviations of the two investments are not just considered separately but the relationship of their standard deviations is also considered. This relationship is measured by the **covariance** of the returns of the two investments which examines the degree to which the returns on the investments move together. In particular we are concerned about the **correlation coefficient** of the two returns which tells us how closely the two sets of returns move together.

The correlation coefficient will range from -1 to +1 which is from perfect negative correlation to perfect positive correlation. If the correlation coefficient is between 0 and +1 this means that generally the returns move in the same direction but to different degrees. If the correlation coefficient is negative then the returns tend to move in different directions.

3.22 If we consider a portfolio of just two investments portfolio analysis looks at the proportion of funds invested in each of the two investments, the standard deviation of the individual returns from the investments and the correlation of the returns of the two investments. The risk of the combined portfolio of these investments can then be expressed as follows:

$$\sigma p = \sqrt{x^2 \sigma a^2 + (1-x)^2 \sigma b^2 + 2x(1-x) \times (\sigma a \times \sigma b \times r)}$$

Where $\sigma p$ = portfolio risk
$x$ = proportion of funds invested in A
$1 - x$ = proportion of funds invested in B
$\sigma a$ = standard deviation of returns of A
$\sigma b$ = standard deviation of returns of B
$r$ = correlation coefficient between A and B

## 3.23 EXAMPLE: PORTFOLIO ANALYIS

Suppose that a company has two potential investments A and B with the following expected returns and standard deviations (risk).

| | |
|---|---|
| Expected return A = 12% | Expected return B = 8% |
| Standard deviation A = 4% | Standard deviation B = 3% |

As you would expect the risk of A is higher (as measured by the standard deviation) than B as A gives a higher return than B.

A slightly more sophisticated approach would be to examine the relative risk of each investment by calculating the expected return divided by the variance.

For investment A, $\frac{\text{expected value}}{\text{variance}} = \frac{12}{4^2} = \frac{12}{16} = 0.75$

For investment B, $\frac{\text{expected value}}{\text{variance}} = \frac{8}{3^2} = \frac{8}{9} = 0.89$

Using this measure of risk, we can see that investment B has a larger expected return per unit of variance, so would be preferred to investment A by a risk-averse investor.

The intention of the company is to invest 60% of its funds in A and 40% in B. The expected return on this two asset portfolio is simply the expected returns of the individual investments weighted according to the proportion of funds invested:

Expected return on portfolio $= (0.6 \times 12\%) + (0.4 \times 8\%)$
$= 10.4\%$

However the risk of this two asset portfolio will depend upon the correlation of the returns between A and B. Let us consider three possibilities:

(i) Correlation coefficient = +1
(ii) Correlation coefficient = +0.3
(iii) Correlation coefficient = –0.4

We can now use the formula to calculate the risk of the two asset portfolio in each case.

(i) Correlation coefficient = +1

Portfolio risk $= \sqrt{(0.6^2 \times 4\%^2) + (0.4^2 \times 3\%^2) + (2 \times 0.6 \times 0.4 \times 4\% \times 3\% \times +1)}$
$= \sqrt{5.76 + 1.44 + 5.76}$
$= 3.6\%$

As these investments are perfectly positively correlated this risk measure is simply the weighted average of the individual risk of each investment:

Portfolio risk $= (0.6 \times 4\%) + (0.4 \times 3\%)$
$= 3.6\%$

(ii) Correlation coefficient = +0.3

Portfolio risk $= \sqrt{(0.6^2 \times 4\%^2) + (0.4^2 \times 3\%^2) + (2 \times 0.6 \times 0.4 \times 4\% \times 3\% \times +0.3)}$
$= \sqrt{5.76 + 1.44 + 1.728}$
$= 2.99\%$

In this case as the two investments are less than perfectly positively correlated there has been a diversification of risk and the portfolio risk is 2.99% compared to the weighted

average risk of the two separate investments of 3.6%. Remember that the expected return on the portfolio remains the same at 10.4% but now this return is less risky.

(iii) Correlation coefficient = –0.4

$$\text{Portfolio risk} = \sqrt{(0.6^2 \times 4\%^2) + (0.4^2 \times 3\%^2) + (2 \times 0.6 \times 0.4 \times 4\% \times 3\% \times -0.4)}$$

$$= \sqrt{5.76 + 1.44 - 2.304}$$

$$= 2.21\%$$

In this case as the returns are negatively correlated, ie they tend to move in opposite directions, the risk of the portfolio has been reduced even further. However in practice it is harder for a company to find business investments with negative correlation: different activities within the same industry are likely to be subject to similar risks, and both are subject to the same external environmental factors.

## Coping with uncertainty

3.24 Recognising the fact that the values projected are not certain, attempts to measure risk quantitatively may be supplemented to include sensitivity and scenario analysis tests.

- **Sensitivity analysis**, in its simplest form, involves changing the value of a variable in order to test its impact on the final result. It is therefore used to identify the project's most important, highly sensitive, variables.
- **Scenario analysis** remedies one of the shortcomings of sensitivity analysis by allowing the simultaneous change of values for a number of key project variables thereby constructing an alternative scenario for the project. In its simplest form pessimistic, most likely and optimistic scenarios are presented.

## Sensitivity analysis

3.25 Sensitivity analysis can be used for capital expenditure decisions, to identify the extent to which the profitability of the investment is susceptible to adverse variations in the value of key variables of cost, revenue and project duration.

3.26 An estimate will be made of the profitability of the project (or, more correctly, its expected net present value). Each item of income or expense can then be looked at in turn, with the aim of assessing the sensitivity of the project to the risk that the actual outcome will be worse than the estimate. A measurement can be made of what the percentage fall in the income or percentage increase in the cost would need to be before the project ceased to be profitable. When this percentage change is fairly small, and within the range of what is possible, the project would be judged risky. The decision whether or not to go ahead with the project would be made on the basis of an assessment of risk as well as an estimate of the return.

## 3.27 EXAMPLE: SENSITIVITY ANALYSIS

A company is considering a new investment in a project. The capital outlay would be £100,000 and the project would last for six years. The annual income would be £50,000 and the annual cash expenses would be £30,000.

(The time value of money is ignored in this example, but in practice, present values should be used.)

The estimated profit from the investment is as follows:

| | £ | £ |
|---|---|---|
| Revenue (6 years × £50,000) | | 300,000 |
| Capital outlay | 100,000 | |
| Annual expenses (6 years × £30,000) | 180,000 | |
| | | 280,000 |
| Profit | | 20,000 |

The expected profit is £20,000, and the project will not be profitable if income is more than £20,000 lower, or costs are more than £20,000 higher than expected, or if the project does not last as long as expected.

The sensitivity of the project to the cost of the equipment, the estimate of annual income, the estimate of annual cash expenses and the project duration can be measured. The project will not be profitable if the key variables are different from the estimate as follows.

| | | |
|---|---|---|
| **Capital outlay** | If the initial capital outlay is more than £20,000 higher, ie higher than the estimate by more than (20,000/100,000) | 20% |
| **Revenue** | If total revenue is more than £20,000 lower, ie lower than the estimate by more than (20,000/300,000) | 6.7% |
| **Annual expenses** | If the annual running costs total more than £20,000 more, ie are higher than the estimate by more than (20,000/180,000) | 11.1% |
| **Project duration** | Since annual profits are (£50,000 - £30,000) £20,000, the project will be unprofitable if it is shorter than its estimated duration by more than (£20,000/ £20,000 pa) 1 year. This is shorter than the estimate by (1 year/6 years) | 16.7% |

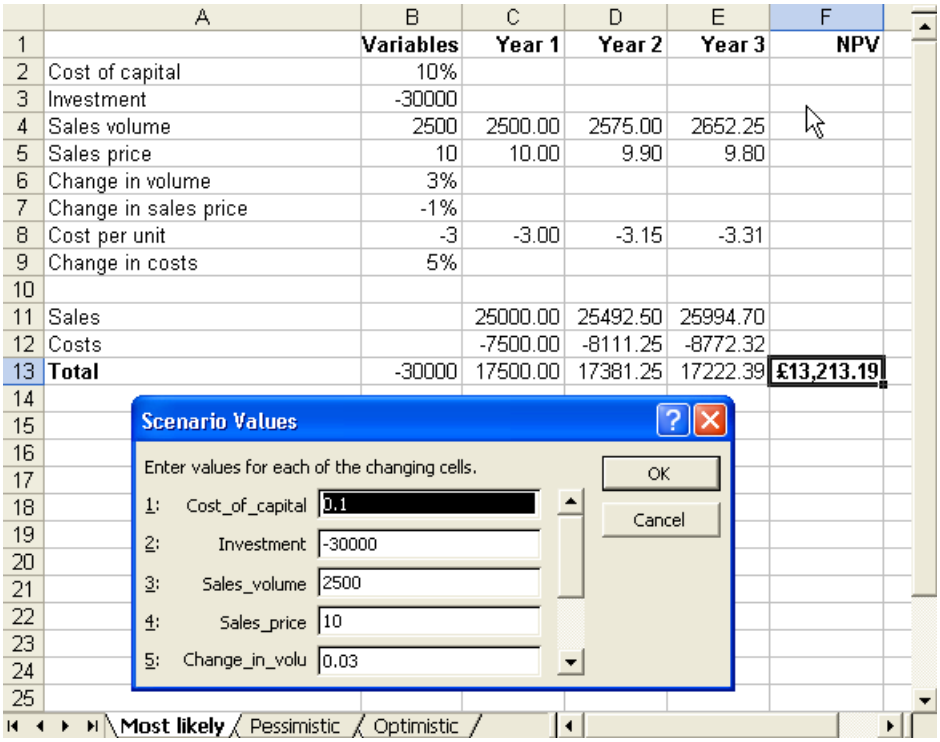
Management can consider the likelihood of any of these variables differing adversely from the forecast by more than the critical percentage amount. In this example, the project is most sensitive, in percentage terms, to the estimate of annual revenue.

With this information about the sensitivity of the project to variations in the key factors, the decision whether or not to undertake the capital expenditure can be based on an assessment of both return and risk.

## Scenario analysis

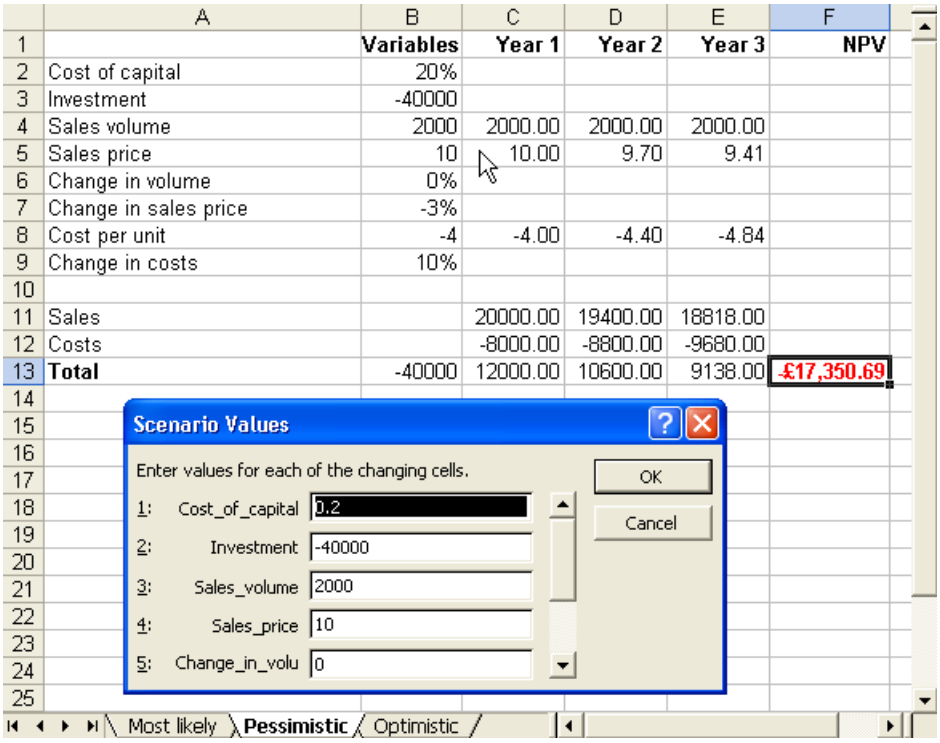
3.28 As already noted the problem with sensitivity analysis is that it assumes that only one of the variables changes. **Scenario analysis** allows the simultaneous change of variables. This would typically be done with a spreadsheet, and Excel actually has a 'scenario' tool to help with the process.

3.29 Below is a simple example of the use of this method in an investment appraisal. The projected changes may have been the result of extensive prior work, for example market research, discussions with sales and production teams, input from consultants and market analysts and so on. In real life there would be many, many more variables.



| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | | **Variables** | **Year 1** | **Year 2** | **Year 3** | **NPV** |
| 2 | Cost of capital | 10% | | | | |
| 3 | Investment | -30000 | | | | |
| 4 | Sales volume | 2500 | 2500.00 | 2575.00 | 2652.25 | |
| 5 | Sales price | 10 | 10.00 | 9.90 | 9.80 | |
| 6 | Change in volume | 3% | | | | |
| 7 | Change in sales price | -1% | | | | |
| 8 | Cost per unit | -3 | -3.00 | -3.15 | -3.31 | |
| 9 | Change in costs | 5% | | | | |
| 10 | | | | | | |
| 11 | Sales | | 25000.00 | 25492.50 | 25994.70 | |
| 12 | Costs | | -7500.00 | -8111.25 | -8772.32 | |
| 13 | **Total** | -30000 | 17500.00 | 17381.25 | 17222.39 | **£13,213.19** |





| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | | **Variables** | **Year 1** | **Year 2** | **Year 3** | **NPV** |
| 2 | Cost of capital | 20% | | | | |
| 3 | Investment | -40000 | | | | |
| 4 | Sales volume | 2000 | 2000.00 | 2000.00 | 2000.00 | |
| 5 | Sales price | 10 | 10.00 | 9.70 | 9.41 | |
| 6 | Change in volume | 0% | | | | |
| 7 | Change in sales price | -3% | | | | |
| 8 | Cost per unit | -4 | -4.00 | -4.40 | -4.84 | |
| 9 | Change in costs | 10% | | | | |
| 10 | | | | | | |
| 11 | Sales | | 20000.00 | 19400.00 | 18818.00 | |
| 12 | Costs | | -8000.00 | -8800.00 | -9680.00 | |
| 13 | **Total** | -40000 | 12000.00 | 10600.00 | 9138.00 | **-£17,350.69** |



## Activity 3.3

We have not shown workings for the figures above, but you may wish to test your understanding of the technique, and of investment appraisal, by checking the figures. For example the year two sales figure is derived from the year 1 figures uplifted by the percentages indicated.

3.30 Scenario analysis is thus a process of analysing possible future events by considering alternative possible outcomes. The analysis is designed to allow improved decision-making by allowing more complete consideration of outcomes and their implications.

3.31 For example, a financial institution might attempt to forecast several possible scenarios for the economy (e.g. rapid growth, moderate growth, slow growth) and it might also attempt to forecast financial market returns (for bonds, stocks and cash) in each of those scenarios. It might consider sub-sets of each of the possibilities. Then it will be in a position to consider how to distribute assets between asset types and calculate the scenario-weighted expected return.

**Exam focus point**

Because of the large number of calculations required it would be difficult for an exam question to set a numerical problem much more involved than the one shown above. You may simply be presented with results and asked to interpret them.

Don't forget methods such as the **maximin** decision rule, which you studied for Subject Area 2.

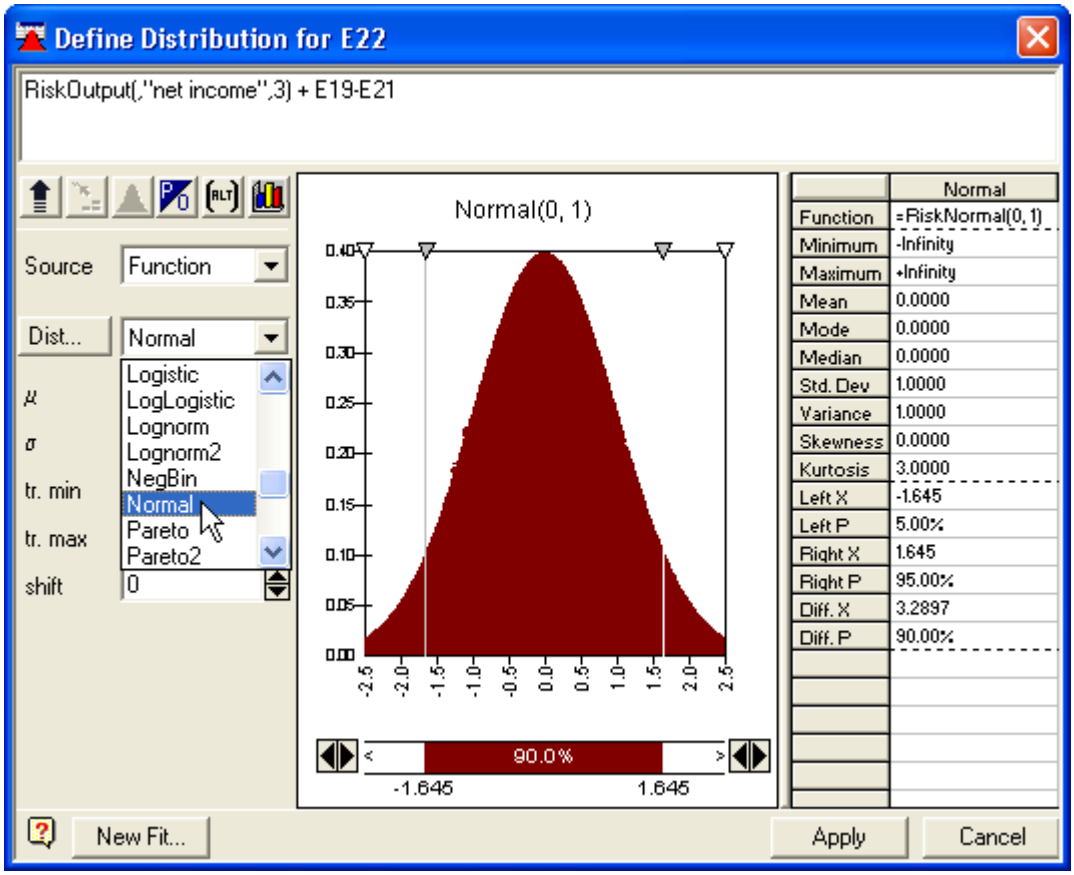
## Scenario analysis with simulation

3.32 Sensitivity and scenario analyses compensate to an extent for the analytical limitation of having to strait-jacket a host of possibilities into single numbers. However, both tests are static and rather arbitrary in their nature. **Simulation** adds the dimension of dynamic analysis to project evaluation by making it possible **build up random scenarios** which are consistent with the analyst's key assumptions about risk. A risk analysis computer application utilises a wealth of information, be it in the form of objective data or expert opinion, to quantitatively describe the uncertainty surrounding the key project variables and to calculate in a consistent manner its possible impact on the expected return of the project.

3.33 Simulation is a method whereby a computer **recalculates the figures over and over again** many thousands of time, each time using different **randomly selected sets of values**. Each attempt is called an iteration. This method is called **Monte Carlo** simulation, a term introduced during World War II as a code name for simulation of problems associated with development of the atomic bomb. In fact many modern simulation packages prefer a method called **Latin Hypercube** sampling (also known as **stratified** sampling) which produces accurate results far more quickly (with far fewer iterations) than the Monte Carlo method. The details are beyond the scope of your syllabus.

3.34 You could do this yourself if you had time, you might think, but you would then have many thousands of spreadsheets to analyse! In fact, in a simulation package the user identifies the uncertain variables and assigns to each one minimum and maximum values and one of a number of **probability distributions** (normal, binomial, Poisson, triangular, and so on: the details are beyond the scope of your syllabus), whichever best reflects the likely behaviour of the variable.

3.35 The illustration below shows how this is done in the **@Risk** package, an add-on for Microsoft Excel.




3.36 The computer then tries all **valid** combinations of the values of input variables to simulate all **possible** outcomes.

3.37 The final result is presented as **a single probability distribution** that gives the decision-maker a complete picture of **all the possible outcomes**. This is a tremendous elaboration on the 'worst-expected-best' case approach, and the final probability distribution does more than just fill in the gaps between these three values.

(a) It determines a 'correct' range. Because there is a more rigorous definition of the uncertainty associated with every input variable, the possible range of outcomes may be quite different from a 'worst case-best case' range — different, and more correct.

(b) It shows the relative likelihood of occurrence for each possible outcome.

3.38 As a result, the user no longer just compares desirable outcomes with undesirable outcomes. Instead it is recognised that some outcomes are more likely to occur than others, and should be given more weight in the evaluation.

## Value at Risk

3.39 Financial risk is particularly significant for organisations whose assets and liabilities are mainly financial items, such as loans and investments. Banks, for example, have enormous exposures to financial risk. Banks are therefore at the forefront of risk management and have to apply very sophisticated risk management techniques to control and limit the risks.

3.40 One of the most basic and commonly-used measures of financial risk is Value at Risk or VaR, a concept developed originally by J P Morgan, the US investment bank. Using a computer model, a bank can analyse all its financial assets and financial liabilities, and estimate the probability of this portfolio of financial items rising or falling in value. A Value at Risk model then produces a **single figure value**, which is a measure of the potential fall in the value of the bank's total net assets, at a given level of probability.

**KEY TERM**

**Value at Risk (VaR)** is a measure of the **worst loss** that a **portfolio of financial assets might suffer** over a given period of time, within a given level of probability. VaR models, or similar models, are used by banks and by some non-bank organisations.

3.41 The most common probability level chosen is 95%. A VaR estimate might therefore state that, with a 95% level of certainty, the maximum amount that a portfolio of financial assets might lose in value is £X, over a given period of time.

3.42 The organisation should try to keep this total value at risk under control, and prevent it from rising to a level that could undermine the organisation's financial stability.

### Stress testing

3.43 In recent years banking regulators and practitioners have started to supplement their VaR risk management with the new technique of stress testing. **Stress testing** assesses the **vulnerability of the enterprise** to 'exceptional but plausible' economic shocks such as a large increase in the price of oil, or a large increase in interest rates to protect a currency against co-ordinated speculation.

Stress testing is therefore a special case of scenario analysis. It may be that no probabilities are assigned to the particular unusual event that is being tested against (although it is possible to use probabilities), but regulators and managers are interested to learn how an organisation would cope if a particularly adverse set of circumstances were to arise. Would a bank's capital resources be sufficient to absorb the losses that would ensue, or would the bank have to be rescued by the authorities?

Recent years have seen several stress events actually occurring: Black Monday (1987), the Asian financial crisis (1997), the US terrorist attacks (2001), and no doubt there will be more in the future. The challenge for risk managers is to plan their organisation's operations so that it is sufficiently robust to survive events that are not expected to occur, but which may **possibly** occur, and which would have a massively adverse impact on it.

## 4 RISK RESPONSE AND CONTROL

4.1 Measurement (qualitative or quantitative) and assessment establish **priorities** that determine the amount of management time that should be spent developing and implementing the **response** to any particular risk: obviously, high impact, high probability risks should be considered first.

4.2 In the order in which they should be considered the possible responses to a risk are as follows.

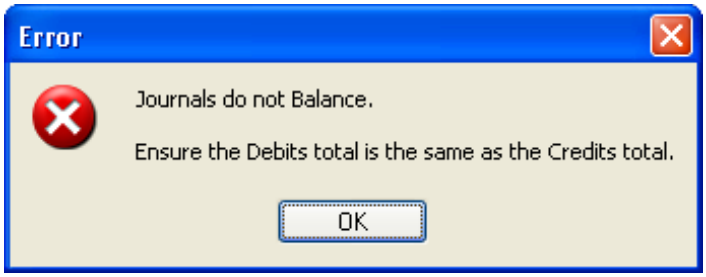
- **Avoidance**: not doing the risky activity at all. This may not be an option, but the first question should always be 'Do we need to do this risky activity at all?'

- **Reduction**: doing the activity, but using whatever means are available to ensure that the probability of the event occurring and the impact if it does are as small as possible. Much of **Chapter 4** is concerned with methods of risk reduction.
- **Sharing**: for example taking out **insurance** against the risk, but only **after** every effort has been made to reduce it, so that insurance premiums are kept as low as possible. Another sharing strategy might be enter an agreement with one or more other companies (joint ventures, outsourcing arrangements and partnerships with suppliers are all examples). **Hedging** (extensively covered in **Part B**) is a means of sharing market risk. Risk sharing is sometimes called risk **transfer**, but it is rare to be able to transfer all the risk.
- **Acceptance** (sometimes called **retention**): this should only be considered if the other options are not viable, for example if the costs of extra control activities and the costs of insuring against the risk are greater than the cost of the losses that will occur if the event happens. The concept of **materiality** should apply: immaterial risks can be accepted. Nevertheless, risks that have been accepted should still be **kept under review**: new developments may mean that a different response becomes more appropriate.

## Avoidance

4.3 A company may choose to avoid a risk if the consequences are **completely unacceptable**. For example if a certain food product is found to be dangerous to health then shops and supermarkets will not stock it.

4.4 Sometimes a risk may be avoided by **doing something in a different way**. The risk that an employee will process a transaction incorrectly can be avoided by using a processing system that does not allow this to happen. You will be familiar with this idea from many computer applications, though you may not previously have thought of them as risk management techniques.




4.5 At the other end of the spectrum it may be decided that the only way to deal with a risk is to shut down a business activity altogether.

(a) 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.

(b) A company might wish to sell an unprofitable subsidiary, or a subsidiary that is making only small profits. Subsidiaries that are not 'core businesses' and do not fit in with the group's strategic plans might be sold. Restructuring through divestment is often the result of a decision to focus on core businesses (the opposite of diversification).

4.6 Divestment decisions involve long-term considerations, and capital expenditures and revenues, so they will not be undertaken lightly.

(a) **Employees** affected by the closure must be made redundant or re-located, perhaps after retraining, or else offered early retirement. There will be lump sum payments involved which must be taken into account.

(b) It may not be possible to sell a **site** until existing installations have been removed, land cleared up, mines filled in and so on. This may be hugely expensive.

## Reduction

4.7 As the COSO framework says, reduction typically involves any of a myriad of everyday business decisions. **We will look at a broad range in the next chapter**, but essentially you should be thinking in terms of everything you know about good business management.

### Activity 3.4

What measures could you take to **reduce** the risk that suppliers do not deliver supplies of the required quality or do not deliver on time?

## Sharing

*Insurance*

4.8 Some risks are insurable, and in fact some **must be insured by law**, as mentioned in **Chapter 1**. An insurance company should be willing to offer insurance protection, provided that a **probability** can be estimated that the event being insured against might actually happen. Companies must decide whether to take out insurance for these events, and so 'transfer' most of the risk to an insurance company in return for paying the insurance premium.

4.9 In the 1950s, when the insurance business was developing, the types of insurance taken out by companies were mainly concerned with protecting **physical assets**, such as buildings, plant and machinery, other equipment, company transport vehicles and stock in hand.

4.10 Insurance has since extended to covering a company against the risk of losses from many other causes. We mentioned **compulsory**, or effectively compulsory, insurances in Chapter 1: motor insurance, employers' liability insurance, public liability insurance, professional indemnity insurance. Here are some **other examples** that businesses may or may not choose to take up.

(a) **Business interruption insurance** (consequential loss cover) protects a company against the loss of income and additional expenses arising from a disruption to its business operations, due to physical damage, accidents, bad weather, or other insurable contingencies.

(b) Insurance is available to protect a business against the risk of losses caused by non-payment of debts by customers. **Credit insurance** might be available for selected debts, or for a company's entire trade debts (ie its entire 'sales ledger').

4.11 The increasing tendency of individuals and organisations to take legal action against businesses has been reinforced by safety and environmental legislation. Insurance is available to protect a company against the **cost of legal action** for negligence, from

customers, employees and other parties. For example, companies take out insurance against the risk of injury to employees at work.

4.12 The types of insurance mentioned so far are all concerned with protecting the company against loss, either from reduced profits or a fall in value or wealth. Insurance is also available in the form of **benefits to employees**, such as group insurance schemes, group health insurance and group disability and accident schemes.

4.13 However, although insurance is available for a wide range of contingencies, there are **limits** to the type of risk that can be insured.

(a) Insurance will only be available if it is possible to **define clearly what event must occur**, and what loss must be sustained, before an insurance claim can be made.

(b) Insurance will only be available if the insurer has **adequate information** to assess the probability of loss, so that the insurance policy can be priced appropriately. An insurance company is unlikely to offer insurance to a buyer of insurance that has better information about the probability and severity of the loss than the insurance company has itself.

(c) An insurance company will not provide insurance if this encourages the buyer of the insurance to **take less care** about ensuring that the loss does not happen and investing in loss prevention measures. This problem, known as 'moral hazard' exists in most insurance arrangements, but an insurance company tries to limit the problem by writing terms and conditions into the insurance policy that place obligations on the insured person.

4.14 Some financial risks (such as **credit risk**) can be insured, whereas others cannot. Insurance policies are **not available** to insure against adverse **interest rate** or **exchange rate** movements. However, 'insurance' of a kind is available. It is possible to 'hedge' the risk using **derivative instruments** such as options, futures and swaps, as explained in several later chapters of this text.

*Outsourcing*

4.15 Outsourcing simply means contracting some of an organisation's work to another company. In some instances, especially where complex information systems and technology services are concerned, the requirements are often beyond the capabilities of many institutions and may not represent a core competency. Therefore, outsourcing may represent the most cost effective and feasible way to engage in a particular activity.

4.16 Outsourcing may also represent the best way to ensure that appropriate security and controls are in place to protect information systems and data when the organisation lacks the ability to establish, develop and support these controls in-house. Therefore, the decision to outsource a function can represent a risk management technique by ensuring that necessary safeguards are in place.

*Joint ventures and supplier partnerships*

4.17 Not many years ago most businesses took an adversarial approach to relationships with suppliers, but modern thinking sees more benefit in co-operation, as the following case indicates.

### Case example: sharing risk with suppliers

Unitrin, a Chicago-based insurance holding company, engaged 10fold Corp to build an enterprise-wide property and casualty manager application that automates tasks such as underwriting.

It's definitely a bet-the-business system. Says Bill Whaley, CIO of Unitrin, "If this one falls off the rails, we all fall off the rails."

The nature of this relationship, where both sides **share risk**, was new for Whaley. "I've been doing this for a fair number of years and in most relationships you [the IT buyer] assume most of the risk." 10fold ponied up their share of risk by contracting for an initial engagement to build an application for one of Unitrin's divisions on a fixed time/fixed cost basis, and Unitrin took a shot on a company with good technology but no prior business knowledge of the insurance industry. "What they had was the architecture and a collection of very bright people. What we brought to the table was the business knowledge," says Whaley. "We melded those three things together."

(The risk for 10fold was that they would not come in on budget, in which case they would bear the cost of extra time and expense. The risk for Unitrin was that 10fold had no prior insurance experience.)

Adapted from *Software Magazine*, February 1998

## Risk control

4.18 Risk control means activities to ensure that risk responses are carried out in a timely manner.

(a) In some cases the control is the same thing as the response. For example if the **risk** is that a transaction may be processed without being properly authorised the **response** would be to set up **controls** to avoid this happening such as dividing up the tasks of processing and authorising, appointing a supervisor to do the latter, having a **policy** that all transactions of a certain level should be authorised by a supervisor and **procedures** for ensuring that transactions of different levels were passed to the supervisor with the appropriate level of authority.

(b) Some controls may address a number of different risks; conversely some risks may be subject to a number of different controls.

## Internal control

4.19 A risk management system should incorporate a system of internal control. An internal control system should incorporate two elements, a control environment and control procedures.

(a) A **control environment** is the overall attitude, awareness and actions of directors and managers with regard to internal controls and their importance to the organisation. The control environment is characterised by the management style, corporate culture and risk awareness of employees.

(b) **Control procedures** are the policies and procedures established and implemented by an organisation to ensure the achievement of its objectives. They include procedures for preventing or detecting and correcting errors.

**KEY TERM**

An **internal control** is any action taken by management to enhance the likelihood that established objectives and goals will be achieved. Management plans, organises and directs the performance of sufficient actions to provide reasonable assurance that objectives and goals will be achieved. Thus, control is the result of proper planning, organising and directing by management. (*Institute of Internal Auditors*)

**Internal control** is 'a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives'. (**COSO** *Internal Control -- Integrated Framework)*

4.20 Both definitions stress the importance of **objectives** and the COSO definition explains that objectives are considered in three categories – effectiveness and efficiency of operations; reliability of financial reporting; and compliance with applicable laws and regulations.

4.21 A classic description of the types of actions that management may take was contained in the old Auditing Practices Committee's guideline *Internal controls.* The controls can be remembered by the acronym SPAMSOAP.

| Control | Explanation |
|---|---|
| **Segregation of duties** | The principle is that even if one person makes a mistake it is likely to be picked up by someone else involved in the process so, for example, if the person who takes an order accidentally records that the customer wants a million items (not the ten they really ordered) this is likely to be spotted and queried by another person whose job it is to review unusually large orders (or failing that by the person who has to pack them!) |
| **Physical** | Measures to control the custody of assets. For example the people taking the order do not have a stash of the items under their desks: they can't agree with the customer to send 5 but process an order for 10, pocketing the rest. |
| **Authorisation and approval** | Transactions should require authorisation or approval by an appropriate responsible person, and limits for the authorisations should be specified. Order takers may be able to process orders up to say £100, but above that orders would be passed to a more senior person before processing can continue. Order takers may not be able to sell goods on credit without the authorisation of the credit control department. |
| **Management** | Management controls are the controls exercised by management outside the day-to-day routine of the system. One of the main tasks of senior management is to compare actual performance against budgets and forecasts to see how far targets are being met and objectives achieved. |
| **Supervision** | The manager of the order takers might review daily reports of all orders, with any unusual ones highlighted. |
| **Organisation** | Organisation controls identify reporting lines, levels of authority and responsibility. This ensures everyone is aware of their responsibilities, especially in ensuring adherence to management policies. |

| Control | Explanation |
|---|---|
| **Arithmetical and accounting** | These types of control ensure that, for example, an order for ten items costing £10 each is recorded as a transaction for £100, not £1,000. Typically these types of control are automated within computerised processing systems. |
| **Personnel** | Personnel controls are procedures to ensure that personnel have capabilities commensurate with their responsibilities. This is a matter of recruiting people with the appropriate skills and personal qualities and providing training. An order taker should be good at dealing with the public over the telephone and know, or be taught how to operate the computer system. |

4.22 You'll note that many of the controls **overlap**: for example authorisation and approval controls depend on segregation of duties and organisation controls.

4.23 Internal controls are often associated with accountants and controls over accounting records and procedures (cheque authorisation, stock-taking and so on). However, they are much more extensive, and should apply to all areas of operations. The COSO *Internal Control* framework says that internal control consists of: the control environment, risk assessment, control activities, information and communication, and monitoring. The scope of internal control therefore extends to policies, plans, procedures, processes, systems, activities, functions, projects, initiatives, and endeavours of all types at all levels of a company.

### Further control measures

4.24 The COSO framework mentions further controls that are dealt with in the appropriate parts of this text.

(a) **Information systems** controls are covered in some depth in Chapter 4.

(b) **Top level review**: besides the management controls mentioned above the Combined Code imposes specific responsibilities on directors to ensure that internal controls are in place and functioning effectively. This is known as the **Turnbull** guidance and it is covered in detail in Chapter 18. You may like to skim read the appropriate section of that chapter now.

## 5 RISK MONITORING AND REPORTING

### Risk monitoring

5.1 Risk monitoring should be a continuous, ongoing process, such that if a risky event occurs (or if an opportunity was missed) then the action taken should include an immediate **review** of the management of that risk, followed by changes as necessary.

(a) Has **corrective action** now been taken? Has it been effective?

(b) Was the risk **identified** in the first place, and if not why not?

(c) If the risk was identified and planned for but the event still occurred is it because **early warning indicators** were not monitored?

(d) If the **response and/or controls** were **ineffective** what changes or new procedures are necessary?

5.2 In this sense 'monitoring' is a form of **control.** (The COSO *Framework* implies that there is a difference between 'ongoing monitoring' and control, but it is not at all convincing in this respect, in our opinion.)

### Activity 3.5

If none of the risky events that have been identified ever actually occur in an organisation does that mean that the organisation's risk management is totally effective?

5.3 As the question above implies, periodic **separate evaluations** of risk management should be carried out too: **review** would probably be a better word than monitoring.

5.4 The **frequency** of reviews will vary from organisation to organisation, depending on the **actual incidence of events** and the **extent of change** in the organisation's internal and external environment.

(a) Higher-priority risk areas are likely to be evaluated more often.

(b) Some changes may be so significant that they prompt an evaluation of the entirety of enterprise risk management. For example: a change of strategy, a management change, acquisitions or disposals, changes in economic or political conditions, or changes in operations or methods of processing information.

5.5 The review process should determine whether:

- the measures adopted resulted in what was intended;
- the procedures adopted and information gathered for undertaking the assessment were appropriate;
- improved knowledge would have helped to reach better decisions and identify what lessons could be learned for future assessments and management of risks.

5.6 Evaluations may be carried out by **internal auditors** as part of their regular duties or as a one-off request or they may take the form of **self-assessments,** where the person responsible for each aspect of a business determines the effectiveness of enterprise risk management for activities within their sphere. Evaluations may reveal potential or real shortcomings, or opportunities to strengthen risk management.

5.7 One approach is to consider first how enterprise risk management is **supposed** to function and then look at how the system **actually** works. Procedures may have been modified over time or may no longer be performed. New procedures may have been devised but not have been documented. This is most likely to come to light by **observing** what actually goes on, by holding **discussions** with the staff who do the job, and perhaps via **flowcharts, checklists** and **questionnaires**.

5.8 **Information** for the review may arise from the existing risk management process itself, for example where **ongoing monitoring activities** of an enterprise show that **exceptions** occur more frequently than might be expected, suggesting that modifications or new procedures are needed. Other sources include customers, especially **customer complaints**, others who do business with the organisation, and perhaps **other third parties** – a bad review of a product in a consumer magazine, for example.

5.9 Some aspects of risk management may not be informal and undocumented, especially in smaller organisations, yet may still be highly effective. However, as the COSO *Framework*

points out, if the organisation intends or is required to make a statement to external parties about the effectiveness of risk management it is wise to develop and retain **documentation** to support the statement. This will be useful as a starting point for subsequent evaluations and may be needed if the statement is subsequently challenged.

## Risk reporting

5.10 All identified risk management problems that could affect the organisation's ability to achieve its objectives should be **reported** to those in a position to take necessary action.

(a) The **chief executive** would want to be made aware of serious breaches of policies and procedures, and want information on matters that could have significant financial impacts or strategic implications or that could affect the organisation's reputation.

(b) **Senior managers** should be informed of risk management problems that affect their units. **Managers** should be informed of problems in increasing levels of detail as the process moves down the organisational structure.

(c) Parties to whom problems are to be reported may provide **specific directives** about what should be reported and how often. A board of directors or audit committee, for example, may ask to be made aware only of problems that meet a **specified threshold** of seriousness or importance.

5.11 Typically incidents might be noticed by operational staff and reported to their immediate manager who would then consider the implications and potential faults in procedures and possible improvements and submit reports to the next higher level of management for approval. If incidents **cut across organisational boundaries** the reporting should do so too to make sure that appropriate action is taken in all relevant parts of the organisation.

5.12 As the COSO *Framework* points out, **alternative channels** also should exist for reporting sensitive information such as illegal or improper acts. If the operatives immediate manager is actually the cause of the problem then reporting it to the manager in question may not be effective, and so deficiencies should usually be reported not only to the individual responsible for the function or activity involved, but also to at least one level of management above that person. The standard procedure may be that 'all risky incidents should be reported by email to manager X and all emails should be CC'd by the original sender to manager Y'.

## External reporting

*The Combined Code*

5.13 The board of directors of **UK listed companies** are required to include a report on risk management in the company's annual report and accounts. The **Combined Code** on Corporate Governance (see Chapter 17) states as a principle that the board should 'maintain a sound system of internal control to protect shareholders' investment and the company's assets'. The Code also requires the directors, at least once a year, to review the effectiveness of the company's internal control system, and to **report** to shareholders that they have done so, giving a summary of its review process.

5.14 The Combined Code does not require the directors in the company's report and accounts to discuss the main risks facing the company. It does, however, require the directors to state (if it is the case) that:

(a) There is an ongoing system for identifying, evaluating and managing significant risks

(b) This system is reviewed regularly by the board and complies with the guidelines of the Turnbull Committee

5.15 The **Turnbull Report** recommended that the **board of directors** should regularly receive and review reports from line managers, and from specialists such as the internal auditor and health and safety experts.

(a) Management reports to the board should provide an **assessment of the system** for controlling significant risks, and any weaknesses in the system should be discussed in the context of their actual or potential effect, and the corrective action that should be taken.

(b) Regular information about **key risk indicators**, and significant information in routine control reports should be provided regularly, either to the board or to a committee of the board (eg the internal audit committee of the board).

(c) A risk assessment should also be a part of every evaluation of a proposed **major capital expenditure** project.

*Statutory reporting of risk and its management*

5.16 Until recently the statutory requirements for reporting risk and its management have been virtually non-existent, being restricted to the requirements for:

(a) The board of directors to present annual accounts to their shareholders and

(b) The requirement of the external auditors to report on whether the accounts of a reporting company give a true and fair view.

5.17 However, under the *Companies Act 1985 (Operating and Financial Review and Directors' Report etc) Regulations 2005* quoted companies are required by law to include an **Operating and Financial Review** in their annual report and accounts. This OFR must include a description of the principal risks and uncertainties facing the company.

5.18 In support of this legislation the Accounting Standards Board has issued Reporting Standard (RS) 1 *Operating and Financial Review.* This also requires listed companies to include in the OFR ' a description of the principal risks and uncertainties facing the entity, together with a commentary on the directors' approach to them'. As well as financial and operational risk in general terms RS 1 includes requirements to report specifically on **environmental** risks, **employee** matters and **social and community** risks as well.

5.19 The new regulations and RS 1 apply for financial years **beginning on or after 1 April 2005** (ie ending March 2006) so at the time of writing it is too early to judge whether these disclosures will be of any help to shareholders in understanding their company, since no companies have yet reported under the new requirements.

*Banks*

5.20 Stricter controls over the reporting of risk and risk management have long been applied to international banks. Banks are required to maintain sufficient capital to provide cover against the risk of losses on their lending and trading operations. These regulations are enforced in the European Union, currently by the Second Banking Co-ordination Directive and the Capital Adequacy Directive, which implement the more general international banking agreement known as the 1988 **Basel Accord**. This was updated in 1995 and a new version, the **Basel II Accord** was issued in 2004 and will apply from December 2006.

## Chapter roundup

- The principal risk management processes are risk **awareness** and **identification**, risk **assessment and measurement,** risk **response** and **control and** risk **monitoring** and **reporting.**
- Risk **awareness** is partly a state of mind, but the better you understand a matter the more aware you will be of the risks.
- Risk identification is a **continuous process.** To identify all strategic and operational risks, a combination of a **top-down** and a **bottom-up approach** should be used so as to obtain relevant information about risks from individuals throughout the organisation.
- Risk identification may be done by means of an event checklist (or risk register), by brainstorming, via interviews and questionnaires, by determining leading event indicators and escalation triggers, through benchmarking, or as a result of auditing and official inspections. The organisation should also look at **interdependencies** between events.
- **Risk assessment** involves considering the nature of the risk, and what implications it might have for the organisation, and making an initial judgement about the seriousness of the risk. Each risk can be assessed from the point of view of its potential **impact** and its **probability of occurrence**.
- For some risks a 'high-medium-low' assessment may be all that is possible, but for events that recur regularly **mathematical estimates** of probability can be derived from analysing historical information and trends.
- The **impact** of risk might be quantified using **expected values:** expected value of loss = Probability of loss $\times$ Size of potential loss.
- Risk might be assessed in terms of **volatility**, the extent to which an outcome **varies** over time. A statistical measure of volatility is the **standard deviation** of the outcomes of an event which indicates how widespread the possible deviations from the expected value of the outcome the actual outcomes are likely to be.
- It is generally assumed that there is a positive linear relationship between expected return and risk (standard deviation): in other words the higher rate of return investors expect the greater the risk they must be prepared to bear.
- The purpose of **portfolio analysis** is to attempt to find two investments which when combined reduce the overall risk or standard deviation below that of the sum of the two individual standard deviations. This is known as **diversification of risk**.
- The relationship of the standard deviations of the two investments is measured by the **covariance** of the returns of the two investments, which examines the degree to which the returns on the investments move together. In practice, however, it is hard to find investments with negative correlation.
- **Sensitivity analysis**, in its simplest form, involves changing the value of a variable in order to test its impact on the final result. It is therefore used to identify the project's most important, highly sensitive, variables.
- **Scenario analysis** remedies one of the shortcomings of sensitivity analysis by allowing the simultaneous change of values for a number of key project variables thereby constructing an alternative scenario for the project. In its simplest form pessimistic, most likely and optimistic scenarios are presented.
- Because sensitivity and scenario analyses are static and rather arbitrary in their nature, **simulation** is used to add the dimension of dynamic analysis to project evaluation by making it possible **build up random scenarios** which are consistent with the analyst's key assumptions about risk.
- **Value at Risk (VaR)** is a measure of the **worst loss** that a **portfolio of financial assets might suffer** over a given period of time, within a given level of probability. VaR models, or similar models, are used by banks and by some non-bank organisations.
- **Stress testing** assesses the vulnerability of the enterprise to 'exceptional but plausible' economic shocks such as a large increase in the price of oil, or a large increase in interest rates to protect a currency against co-ordinated speculation.

## Chapter roundup (continued)

- In the order in which they should be considered the possible **responses** to a risk are **Avoidance**, **Reduction**, **Sharing** and **Acceptance**.
- Risks can be avoided by not doing the risky activity at all or by doing it in a different way.
- Risk **reduction** typically involves any of a myriad of everyday business decisions: checking, measuring, monitoring and so on.
- The best-known method of **sharing** risk is **insurance,** but other methods include outsourcing, joint ventures and supplier partnerships.
- Risk **control** means activities to ensure that risk responses are carried out in a timely manner. An **internal control** is any action taken by management to enhance the likelihood that established objectives and goals will be achieved. One categorisation of controls is remembered by the **SPAMSOAP** acronym: Segregation of duties, Physical, Authorisation and approval, Management, Supervision, Organisation, Arithmetical and accounting, and Personnel.
- Risk **monitoring** should be a continuous, ongoing process (a form of control) and periodic **separate evaluations** of risk management should be carried out too. The **frequency** of reviews will vary depending on the **actual incidence of events** and the **extent of change** in the organisation's internal and external environment.
- All identified risk management problems that could affect the organisation's ability to achieve its objectives should be **reported** to those in a position to take necessary action. **Alternative channels** should also exist for reporting sensitive information such as illegal or improper acts.
- **Listed** companies are required to report on aspects of risk management under the **Combined Code** and as part of the **Operating and Financial Review**, which is now part of the statutory annual report.

## Quick quiz

1 What is the drawback of relying on an existing event checklist or risk register to identify risks?

2 The risk of computer systems failure belongs in the high impact/low probability section of a risk map. True or False?

3 What are the limitations of expected values? What additional information might be useful?

4 The ideal correlation coefficient of a portfolio is 1. True or False?

5 What is the final result of a scenario analysis using simulation?

6 When should acceptance be considered as the response to a risk?

7 Why are there limits to the types of risks that can be insured?

8 What is the difference between a Management control, a Supervision control and an Organisational control?

9 If a risk event occurs what matters should be considered when it is reviewed?

10 What risk-related reporting must be included in a listed company's statutory accounts under the *Companies Act 1985 (Operating and Financial Review and Directors' Report etc) Regulations 2005*?

## Answers to quick quiz

1 This approach may prevent the identification of risks that go beyond previous experience.

2 This is totally false. It happened to be placed in that section in the example given earlier, but that is just one case for one particular company. In another company computers may be so unreliable that they are hardly used, so the risk of failure is high probability but low impact.

3 Expected values may be very sensitive to the accuracy of estimates of probability and outcomes. They represent an average long-outcome for something that happens repeatedly, they may not be a good measure of a one-off event. Some measure of volatility is useful, for example the standard deviation measures how widespread the possible deviations from the expected value of the outcome the actual outcomes are likely to be

4 False. This would mean that the returns move in the same direction to the same degree, in other words if one makes a large loss the other one will too. The ideal is -1, so that if one makes a large loss the other makes a large gain, although it is hard to find investments with negative correlation in practice (different activities within the same industry are likely to be subject to similar risks).

5 The final result is a single probability distribution that gives the decision-maker a complete picture of all the possible outcomes. It determines a 'correct' range and it shows the relative likelihood of occurrence for each possible outcome.

6 Acceptance should only be considered if the other options (avoidance, reduction, or sharing) are not viable, for example if the costs of extra control activities and the costs of insuring against the risk are greater than the cost of the losses that will occur if the event happens. The concept of materiality should apply: immaterial risks can be accepted. Nevertheless, risks that have been accepted should still be kept under review: new developments may mean that a different response becomes more appropriate.

7 Insurance will only be available if it is possible to **define clearly what event must occur**, and what loss must be sustained, before an insurance claim can be made; Insurance will only be available if the insurer has **adequate information** to assess the probability of loss, so that the insurance policy can be priced appropriately; An insurance company will not provide insurance if this encourages the buyer of the insurance to **take less care** about ensuring that the loss does not happen and investing in loss prevention measures.

8 Management controls are the controls exercised by management outside the day-to-day routine of the system. Supervision controls are day-to-day (or hour-to-hour) controls. Organisation controls identify reporting lines, levels of authority and responsibility. It is true that these ideas overlap to some extent.

9 Has corrective action now been taken? Has it been effective? Was the risk identified in the first place, and if not why not? If the risk was identified and planned for but the event still occurred is it because early warning indicators were not monitored? If the response and/or controls were ineffective what changes or new procedures are necessary?

10 The accounts must include an Operating and Financial Review which contains a description of the principal risks and uncertainties facing the company.

## Answers to activities

### Answer 3.1

| Business Unit Objective | Leading Indicator | Trigger for Business Unit |
|---|---|---|
| Comply with standards governing the movements of hazardous material | Age of barrels used to transport hazardous material | Barrels in use for more than 85% of their estimated useful life |
| Maintain stable high-quality workforce | Staff morale of high performers | High performers responding as “very” or “somewhat” dissatisfied in annual employee survey |

## Answer 3.2

| Option C | | | Option D | | |
|---|---|---|---|---|---|
| Profit | Probability | EV | Profit | Probability | EV |
| £ | | £ | £ | | £ |
| 15,000 | 0.30 | 4,500 | 14,000 | 0.05 | 700 |
| 20,000 | 0.55 | 11,000 | 17,000 | 0.30 | 5,100 |
| 30,000 | 0.15 | 4,500 | 21,000 | 0.35 | 7,350 |
| | | | 24,000 | 0.30 | 7,200 |
| EV of cost | | 20,000 | | | 20,350 |

On the basis of expected values, Option D should be chosen, because it has the highest expected value of profit. There is not much in it though: if the estimates of either profit or probability are just slightly wrong the opposite decision might have been the best one.

## Answer 3.3

There is no formal answer to this activity.

## Answer 3.4

Measures might include: getting references from the suppliers' other customers; setting standards for quality and delivery time and monitoring suppliers' delivery performance against those standards (eventually eliminating those who are consistently unreliable); developing good relationships with suppliers; ensuring that suppliers have all the information they need; insisting that suppliers are ISO 9001 certified; regularly scanning the market for new suppliers. You may have had other ideas. The point is that 'risk reduction' techniques may not be given that name: they are simply a matter of good management.

If you mentioned methods such as imposing penalties for poor performance or incentives for good performance that's fine, but such approaches are really risk **sharing**, and we'll come to that in a moment.

## Answer 3.5

It may mean that, but unless risk management is monitored you would never know.

It may just be luck, or it may be that the risks that are supposedly being 'controlled' don't exist at all, and the controls are a waste of time and money. It may mean that events that should be identified as risks and managed more carefully are not recognised as such and are just being allowed to happen. It may mean that experienced staff are managing risks that have not been identified by the system on their own initiative – but what will happen when those people leave and/or new people join?

# Chapter 4 Managing operational risk

## Chapter topic list

1 The nature of operational risk
2 Managing operational risk
3 Process risk
4 People risk
5 Systems risk
6 Event risk
7 Business risk

## Learning objectives

On completion of this chapter you will be able to:

- identify the main processes of risk management
- identify the main forms of operating risk and describe the techniques that may be used to manage exposure to these types of risk

The detailed syllabus areas covered in this chapter are:

*Managing operational risk*

- the nature of operational risk
- the main forms of operational risk (process risk, people risk, systems risk, event risk, business risk)
- risk management processes (risk policies, risk identification and assessment, risk mitigation and control)

# 1 THE NATURE OF OPERATIONAL RISK

1.1 In Chapter 1 we said that **operational risk** is possibly best regarded as all risks faced by a business that are not financial risks (credit risks or market risks: see the next chapter), but of course this is an enormously **broad** definition.

1.2 An often quoted definition of operational risk is the one given by the Basel Committee on Banking Supervision in a document called *Operational Risk* (2001). This defines operational risk in terms of what **causes** it.

> 'the risk of direct or indirect loss resulting from inadequate or failed internal **processes**, **people** and **systems** or from external **events**'

A footnote adds that this includes **legal** risk.

1.3 Logically, operational risk arises from the fact that businesses carry out **operations** such as making products. Indeed some writers identify risks such as '**product risk**' which might be defined as the risks associated with the development, manufacture, transportation, use and disposal of a company's products.

1.4 Product risks might indeed arise because of mistakes by **people**, badly designed **processes** and **systems**, or more probably a combination of these things, and/or because of external **events** such as sabotage, for example if a food product is deliberately contaminated by, say, an animal rights group. The consequences might include letting down a customer (delivering the wrong product, or delivering too late), or causing the customer some physical or financial harm.

1.5 J Davidson-Frame (*Managing Risk in Organisations*, 2003), takes a similar, though perhaps narrower, approach and says that operational risk arises from sources such as the following.

(a) Lack of well-established procedures
(b) Poorly trained workforce
(c) Incompetence
(d) Inattention (fatigue, distraction, tedium)
(e) Poorly maintained or obsolete equipment and software

1.6 Your syllabus and study guide require you to know about 'the main forms of operational risk (process risk, people risk, systems risk, event risk and business risk.)' These are also the categories identified by Lam (*Enterprise Risk Management*, 2003), so we appear to have some agreement.

(a) **Process risk** is the risk that an organisation's processes may be ineffective (fail to achieve their objectives) or inefficient (achieve their objectives but at excessive cost).

(b) **People risk** is the risk arising from staff constraints (for example insufficient staff, or inability to pay good enough wages to attract the right quality of staff), incompetence, dishonesty, or a corporate culture that does not cultivate risk awareness, or encourages profits without regard to the methods used to make them.

(c) **Systems risk** is usually used in the sense of the risks arising from information and communication systems such as systems capacity and availability, data integrity, and unauthorised access and use. IT is so central to almost all businesses that it certainly merits a category to itself. (You might argue that IT is simply an aspect of process risk or, if you are thinking in terms of the whole organisation as a 'system', you might feel that process risk is merely an aspect of systems risk, but we take the popular line in this book.)

(d) **Event risk** is the risk of loss due to single events that are unlikely but may have serious consequences. Natural or man-made disasters are the most obvious examples. Some writers would include internal or external fraud in this category.

(e) **Business risk** is defined differently by practically every writer, but we will stick to Lam's explanation that it is the risk of loss due to changes in the competitive environment or to trends that damage the operating economics of a business. Lam says that business risk includes strategy, client management, product development, and pricing and sales. It may include **reputational** risk (the risk that a brand name may be damaged), or this may be treated as a separate category.

(f) **Legal risk** is the risk of loss from a contract that cannot be legally enforced. It arises through uncertainty in laws, regulations, and legal actions against the company. Sources of legal risk include enforceability issues as well as exposure to unanticipated changes in laws and regulations.

## 2 MANAGING OPERATIONAL RISK

2.1 If **strategic objectives** determine that part of a business must be an **ongoing part** of the business then operational risks **cannot be avoided** entirely: the 'operations' in question are essential, otherwise that part of the organisation would not do anything at all.

2.2 The response, therefore, may be to **share** the risk to some extent (for example by insurance, or by means of contracts of various kinds with various parties), but above all the response will be to **reduce** it.

2.3 Operational risk reduction can be achieved by a multitude of means: in fact every **general management technique** you may have heard about in the past, and any new ones you may encounter in the future, can be regarded as attempts to **reduce the risk of failure**, although they may not be phrased in such terms.

2.4 We will look at specific methods of managing each type of operational risk in later sections, but we will begin with a general approach that might be applied to any of them, using a **simple practical example**. This should help to consolidate what you learned in the previous chapter and it also fleshes out some features of a risk management system that were only mentioned in the previous chapter such as **Risk Registers** and **Action Plans**.

## A SIMPLE PRACTICAL EXAMPLE

2.5 An organisation sells a particular range of products for which around 90% of sales are made in a two month period. Orders are taken by telephone and paid for by debit or credit card. The customer services department is considering how it will cope with the sudden upsurge in demand.

### Risk identification

2.6 The first step might be to hold a **brainstorming** session attended by appropriate people. These would include the manager of customer services and perhaps one of the people who will answer the phones. Representatives from the department that deals with IT and telecoms, from the order fulfilment or production department, and from the accounts department might complete the team, and the session may be facilitated by a risk specialist.

2.7 In a brainstorming session, you will remember, members of the group are asked to suggest ideas on the topic under discussion, with quantity, not quality being the objective, so that evaluation does not inhibit creative thinking.

2.8 The session might begin by writing up the objective (say 'To fulfil all telephone orders for product X during the period Y in a timely manner') and perhaps sub-objectives ('Phones should be answered within three rings', 'Orders should be fulfilled within 24 hours'), although there is a danger of being too specific.

2.9 In our example the session would no doubt have produced many ideas of which the following might be a small sample.

1 Risk that line will be bad
2 Risk that customer is not genuine
3 Risk that customer won't pay
4 Risk that order will be recorded incorrectly
5 Risk that the order will not be passed on to whoever is supposed to fulfil it
6 Risk of sales department being hit by a comet
7 Risk of having too few staff to answer all the incoming calls at certain times
8 Risk of having more staff than needed to answer all the incoming calls at certain times
9 Risk of running out of stock
10 …

And so on.

2.10 After the session the manager of customer services and/or the risk specialist will organise all the ideas into **categories** of some kind. In the examples above some risks are due to systems problems, some to staffing issues, and so on. Some may seem to belong to other departments: for instance the risk if running out of stock should surely be managed primarily by production staff.

2.11 One type of analysis that can help to clarify responsibilities categorises risk according to the **source** of the risk (whose fault it is) and the **bearer** of the risk (who suffers the consequences).

| | | BEARER | | | | |
|---|---|---|---|---|---|---|
| | | *Customer* | *Cust. services* | *Systems* | *Production* | *Environment* |
| SOURCE | *Customer* | | 2, 3 | | | |
| | *Cust. services* | 7 | 4, 8 | | 5 | |
| | *Systems* | | 1, 4? | | 5? | |
| | *Production* | | 9 | | | |
| | *Environment* | | 6 | | | |

2.12 At this stage it may not be fully clear where risks come from: for example the risks of incorrect recording (4) and not passing on orders (5) may appear to be due to errors in customer services, but they may actually arise because of badly designed systems. Part of the value of exercises like this is that it raises such issues.

### Activity 4.1

Check that you agree with the source/bearer analysis above. The numbers correspond to the list of ideas from the brainstorming session.

2.13 As for the risk of the sales department being **hit by a comet**, you might think that it is not worth spending time on this: it would be a very high impact event (quite literally!), but is presumably one of very low or nil probability – at least we presume so at the time of writing this book, otherwise we would have been warned!

2.14 However, apparently silly ideas may have a value if you **think in terms of the consequences** of the event rather than the event itself. In this case you may be prompted to consider whether adequate measures had been taken to minimise the effect of equally devastating, and unfortunately much more likely events such as **explosions**. If you look around your workspace and can't even see a fire extinguisher, if you have never had an evacuation drill, if there are people wandering around who you have never seen before, the matter ought to be raised with safety and security managers. This 'silly' item also suggests that arrangements should be made for **backup order-processing facilities** in another building.

## Risk register

2.15 The next step would be to develop a rudimentary **risk register**. In essence this is a **list** of all the risks that have been identified together with **standard information** for each one such as category, priority, ownership, and response.

2.16 At this early stage many of the detailed entries will be guesses or blanks, and the information available will be very limited, so a **spreadsheet** is probably be the best tool for the purpose. Word-processor tables are also possible, but a spreadsheet is more useful for the inevitable **resorting of data** that will occur, as **patterns** emerge, and the limitation of space within spreadsheet cells encourages **succinctness**.

2.17 Much of the detail will be completed by the **risk nominee,** the person best able to manage a particular risk and who best understands its importance and implications. The risk nominee is likely to be the person who identifies the risk management actions and who selects the risk action owners.

### Activity 4.2

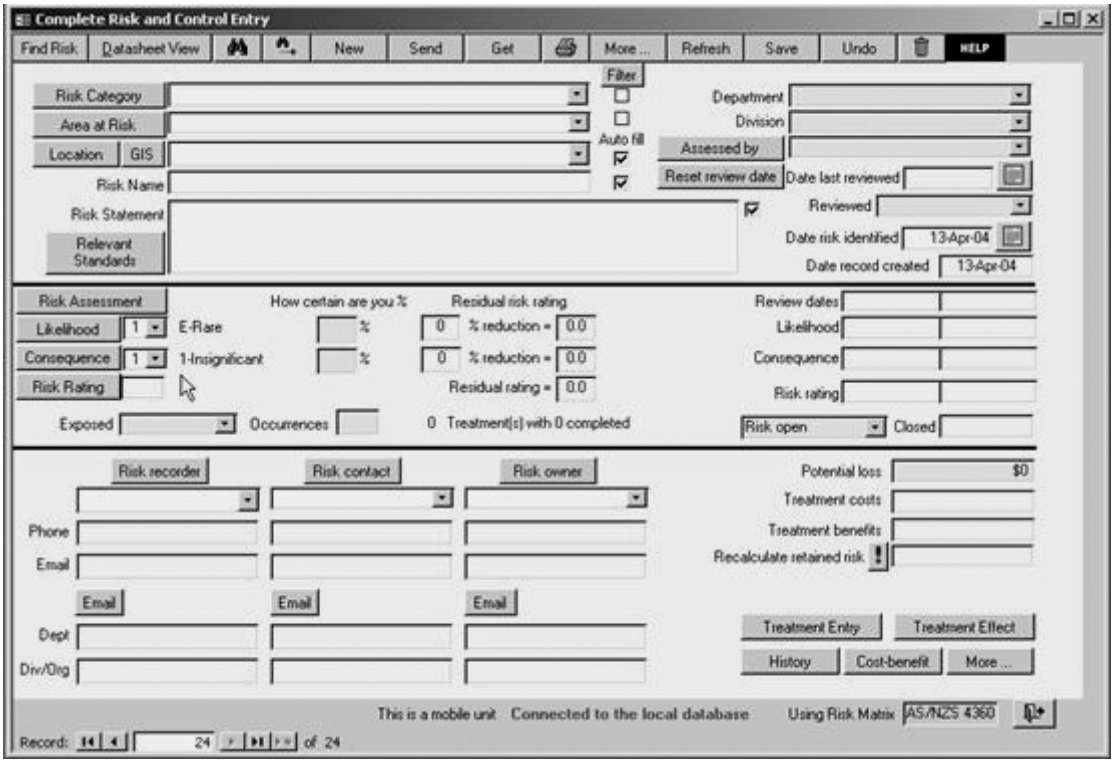
Copy down the 'Field' titles shown in the illustration below, on your own paper, and then, so far as you can, fill in the Entry column for at least three of the risks identified in the brainstorming session that we have described. Guesses are quite acceptable at this stage: they would be refined later in the process.

Do you think there are any fields that could be simplified (to avoid errors an inconsistencies), by forcing risk managers to choose from menus and drop-down lists between pre-defined options? Do you think there are any that could not, or should not, be simplified in this way?

| | A | B | C | D |
|---|---|---|---|---|
| 1 | **Table** | **Field** | **Entry** | ***What to enter*** |
| 2 | Description | Code | CS-XMAS-001 | *Assigned by the system* |
| 3 | | Title | | *A very brief name for the risk* |
| 4 | | Summary | | *A more detailed explanation (say 500 characters)* |
| 5 | | Likelihood | | *High/Medium/Low* |
| 6 | | Impact | | *High/Medium/Low* |
| 7 | | Cost increase (%) | | *Eg a 50% increase in budget* |
| 8 | | Time (increase) | | *How much will the project be delayed if this risk occurs (minutes / hours / days / weeks / months / percentage)* |
| 9 | Category | Type | | *Eg a People risk* |
| 10 | | Phase | | *What point in the project the risk will hit, eg ongoing/beginning/middle/end* |
| 11 | Management | Nominee | | *Person best able to manage or monitor the risk* |
| 12 | | Action owner(s) | | *Person(s) best able to deal with the risk* |
| 13 | Response | Type | | *1-Avoid; 2-Reduce; 3-Share; 4-Accept* |
| 14 | | Description | | *More detail about the response (say 500 characters)* |
| 15 | | | | |

CS_XMAS_001 / CS_XMAS_002 / CS_XMAS_003

2.18 The **risk register will be refined** as the risk management process proceeds, and more detailed or specific information will be added when it becomes available. The above format is probably as much as you could manage in an **exam question,** but the final form is likely to be a **relational database,** and one that combines information from right across the organisation, and includes **financial** risks as well as operational ones, but this last step is best left to database design specialists. Here's an example of an Access-based off-the-shelf risk register package from **Incom** (*www.incom.com.au*).



## Risk assessment

2.19 We'll assume in this case that risks will assessed using a **probability-impact matrix**. Scores can be assigned in a variety of ways. Here is one of the simplest.

| | | | | |
|---|---|---|---|---|
| **Impact** | High | 5 | 8 | 9 |
| | Medium | 3 | 6 | 7 |
| | Low | 1 | 2 | 4 |
| | | Low | Medium | High |
| | | **Probability** | | |

2.20 Using this system a risk with low probability and low impact (the least serious) is ranked 1 and the **various combinations are graded successively** up to the most serious, 9 (high probability, high impact). If there is no probability that a risk will occur and/or if the risk would have no impact it scores 0.

2.21 This system may result in many risks scoring 4 to 6, which is perhaps not helpful enough for the purpose of setting risk management priorities. A further refinement is for each risk that has been identified to be scored (using the matrix above) in appropriate categories, for example in terms of **cost** (or lost sales), **time** (delays of various kinds) and **quality** of the process and outputs. More or different categories may be necessary to fully analyse the problem, but this will do for illustrative purposes.

2.22 For example if there are **too few staff** to answer incoming calls the risk nominee might decide that it is very likely that some sales will be lost, but because the product is so much in demand most customers will try again, so the cost impact is low. There is no time implication. The quality implication is high: it is very probable that customers will be seriously annoyed if they cannot get through, and this may affect their willingness to do business with the company in the long time.

| **Too few staff** | *Impact* | *Probability* | *Score* |
|---|---|---|---|
| Cost | Low | High | 4 |
| Time | Nil | Nil | 0 |
| Quality | High | High | 9 |
| Total | | | 13 |

2.23 Lets do this again for the risk that there are **too many staff**. The cost implication is that people will be sitting around doing nothing but will still have to be paid. The risk nominee might score this risk as follows.

| **Too many staff** | *Impact* | *Probability* | *Score* |
|---|---|---|---|
| Cost | High | Medium | 8 |
| Schedule | Nil | Nil | 0 |
| Quality | Nil | Nil | 0 |
| Total | | | 8 |

2.24 The risk of having too few staff scores more highly and is therefore more serious than the risk of having too many. The risk of having too few staff deserves more management attention. This is what you might expect intuitively, but the more detailed analysis helps to show why, and may help to suggest responses (eg have enough staff to cope with maximum expected calls, but find something more productive than just sitting around for them to do when they are idle; alternatively make arrangements for staff from other departments to help out at busy times).

## Risk response

2.25 Once each risk has been assessed priorities can be decided. It might be decided that:

(a) risks that score **nine or more** are **critical** and require immediate action (eg recruit more staff)

(b) risks that score **over six** should have **action plans** in place.

### *Action plans*

2.26 An action plan sets out what action or actions are necessary to reduce risk. Some actions may be ongoing controls, others will only be triggered in certain circumstances. There is no standard format or layout, but typical contents would be as follows.

| **ACTION PLAN** | | |
|---|---|---|
| **Risk** | Code, name of risk | |
| **Risk nominee** | Name of person with ultimate responsibility | |
| **Description** | As necessary to understand the risk (or a link to a detailed description perhaps in the risk register) | |
| **Actions** | An at a glance list of all actions<br>1.<br>2. | |
| | **Action 1** | |
| | *Details* | As necessary to understand the action |
| | *Cost/saving* | A forecast of the reduction of risk against the cost of the action |
| | *Action owner* | Name of the person who should carry out the action |
| | *Triggers* | If not an ongoing control what triggers this action and how is it monitored? |
| | *Timescale for action* | When should the action be completed? |
| | *Resource implications* | What extra resources are required to take the action? |
| | *Reporting* | What should be recorded and who should receive reports about this action? |
| | **Action 2** | |
| | Etc | |

2.27 Here is a list of possible responses to all the risks we identified. You may be able to think of other responses: remember the options are to avoid, reduce, share or accept.

| **Risk** | **Possible responses/actions** |
|---|---|
| Risk that line will be bad | Invest in better quality phone systems; ensure that agreements with equipment and line suppliers provide for reparation in the event of failure; enter into maintenance agreement with supplier; train staff to operate equipment correctly; appoint a person to deal with suppliers and make sure staff know who to report problems to. |
| Risk that customer is not genuine | Check previous customer history if any; collect address details; validate card details before processing order further; only send products to card address. |
| Risk that customer won't pay | Insist that customers pay in advance; validate card details before processing order further. |
| Risk that order will be recorded incorrectly | Set up system controls to minimise data entry errors; review exceptions and act on any identified. |
| Risk that the order will not be passed on to whoever is supposed to fulfil it. | Automate the passing on of orders so that this cannot happen. |
| Risk of catastrophic event | Ensure that adequate safety and security measures are in place, including insurance; arrange for backup order-processing facilities. |
| Risk of having too few staff to answer all the incoming calls at certain times | Automate phone system so that customers know that they are in a queue and how long they may have to wait; employ more staff; make arrangements for staff from other departments to help out when required; have temporary staff on call. |
| Risk of having more staff than needed to answer all the incoming calls at certain times | Forecast demand at different times of day based on historical data, and update with actual figures when known; redeploy idle staff to other activities. |
| Risk of running out of stock | Advise production department of demand patterns; receive regular reports of stock levels; prevent system from processing orders if stock is not available. |

2.28 Some of these responses depend on systems being in place already, for example arrangements to validate card details and get an authorisation code in real time. Of course if this has not yet been set up then it is a key priority to make such arrangements.

### Activity 4.3

It is quite likely that you will be asked to prepare an action plan in the **exam**, so you may like to practise a few to get used to the format and contents. Use the chart above and devise action plans for one or two of the risks. You will need to make up some of the details such as names and dates: assume it is now late September and you are planning ahead for the Christmas rush in November and December.

## Risk monitoring and reporting

2.29 As the busy period approaches the customer service manager will need to keep a close watch on progress with actions that can be **done in advance**: the setting up of arrangements with

third parties, the development and testing of new systems, recruitment and training of staff, and so on. Targets may be missed and extra resources may be needed.

2.30 Once the busy period starts it is vital to monitor the operation of the system so that problems can be nipped in the bud. Information collected on the operation of the system this year will be highly useful when planning for next year.

2.31 Having given a mini-overview of operational risk management we will now deal with ways of managing each of the different types of operational risk identified at the start of this chapter.

2.32 In the following pages you will be given a **quick tour of much modern thinking about business management** in general. You may well have come across some of the topics in more detail before, as part of other studies: if so then please feel free to draw on what you know already, but try to think about it in risk management terms.

## 3 PROCESS RISK

3.1 **Process risk** is the risk that an organisation's processes may be **ineffective** (fail to achieve their objectives) or **inefficient** (achieve their objectives but at excessive cost).

3.2 A 'process' has been defined as 'a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer.' (Hammer and Champy)

3.3 For example, order fulfilment is a process that takes an order as its input and results in the delivery of the ordered goods.

**Managing process risk**

3.4 Process risk is managed by means of **controls** over how things are done. For example if someone takes an order for a product they should carry out a number of checks: Does the organisation still sell the product? Are there any in stock, or if not will they be back in stock soon enough to meet the customer's needs? Can the customer be relied upon to pay? Has the order been passed on to the next person in the processing chain, for example someone in the warehouse? The next person will also have a series of checks to carry out.

3.5 In a modern business much of this checking is now done **automatically by computer**: the details will be entered into a form on screen and the computer system will check stock availability against the stock system, check the customer's payment history, or often attempt to process the payment immediately, using a credit or debit card verification system, and if all is well it will pass on a message to the next person (or the next computer) in the chain. If all is not well it will not be possible to process the order in the first place.

3.6 These are all instances of **internal controls,** as discussed in the previous chapter, and a good system of internal controls should ensure that processes are **effective** (achieve their objectives). Processes may still be **inefficient,** however: the control system itself may impose extra costs, for example the need to employ extra people to ensure adequate segregation of duties, the extra time taken on supervision and management.

3.7 Part of process risk, in addition, is that a competitor will find a new way of doing the same process that is just as effective (or more so) and also **more efficient**, for instance faster and cheaper.

## Business process re-engineering (BPR)

3.8 Much of the attention of management writers in the 1990s was devoted to techniques to try to make processes more efficient without compromising effectiveness. One example is the **quality movement**, which we will discuss in more detail in a moment. Another is **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.'

3.9 BPR arose at a time when many organisations were computerising on a large scale for the first time, moving away from a paper-intensive processing environment. The initiative has continued (though it may be given a different name, today, such as **Enterprise Resource Management**) as organisations have exploited the benefits of **networks** and especially the Internet.

3.10 BPR starts by asking basic questions such as '**why do we do what we do**', without making any assumptions or looking back to what has always been done in the past. For example, as we have seen, order fulfilment is a process that takes an order as its input and results in the delivery of the ordered goods. Part of this process might be the manufacture of the goods, but under BPR the aim of manufacturing is **not merely to make** the goods. Manufacturing should aim to **deliver the goods that were ordered**, and any aspect of the manufacturing process that hinders this aim should be re-engineered. The first question to ask might be 'Do they need to be manufactured at all?' Perhaps they could be bought in at lower cost from someone else?

3.11 A re-engineered process has certain characteristics.

(a) Often several jobs are combined into one.
(b) Workers make decisions.
(c) The steps in the process are performed in a natural order.
(d) The same process has different versions depending on the market, or the inputs etc.
(e) Work is performed where it makes most sense.
(f) Checks and controls are reduced.
(g) Reconciliation is minimised.
(h) A case manager provides a single point of contact.
(i) The advantages of centralised and decentralised operations are combined.

Most of these points are illustrated in the example that follows, particularly the way checks and so on can be reduced without incurring extra risk.

### Case example: Business Process Re-engineering

A company employed 25 staff to perform the standard accounting task of matching goods received notes with orders and then with invoices. About 80% of their time was spent trying to find out why 20% of the set of three documents did not agree.

One way of improving the situation would have been to computerise the existing process to facilitate matching.

This would have helped, but BPR went further: why have invoices in the system at all? 'What if all the orders were entered onto a database on the computer? When goods arrived at the goods inwards department they either agreed to goods that had been ordered or they didn't – as simple as that. Goods that agreed to an order were accepted and paid for. Goods that were not agreed were *sent back* to the supplier. There are now no files of unmatched items and time is not wasted trying to sort out these files.

The gains for the company were fewer staff wasting time, quicker payment for suppliers, lower stocks, and lower investment in working capital.

*Principles of BPR*

3.12 Here are some of the main principles of BPR.

(a) Processes should be designed to achieve a desired **outcome** rather than focusing on existing **tasks.**

(b) Personnel who use the **output** from a process should **perform** the process. For example, a company could set up a database of approved suppliers; this would allow personnel who actually require supplies to order them themselves, perhaps using on-line technology, thereby eliminating the need for a separate purchasing function.

(c) Information processing should be **included** in the work which **produces** the information. This eliminates the differentiation between information gathering and information processing.

(d) Parallel activities should be **linked** rather than **integrated.** This would involve, for example, co-ordination between teams working on different aspects of a single process.

(e) 'Doers' should be allowed to be **self-managing.** The traditional distinction between workers and managers can be abolished: decision aids such as expert systems can be provided where they are required.

(f) Information should be captured **once** at **source.** Electronic distribution of information makes this possible.

## Total Quality Management (TQM)

3.13 The quality movement, which also came to the fore in the 1990s, may also be seen as a method of managing process risk.

3.14 You studied aspects of this topic in Subject 2, where you learned about the meaning of quality and **Total Quality Management**. Here are some of the key points.

(a) One of the basic principles of TQM is that the cost of **preventing** mistakes is less than the cost of **correcting** them once they occur. The aim should therefore be **to get things right first time**.

(b) A second basic principle of TQM is dissatisfaction with the *status quo*: the belief that it is **always possible to improve** and so the aim should be to 'get it **more** right next time'.

(c) **All parts of the organisation** are involved in quality issues, and need to work together. Every person and every activity in the organisation affects the work done by others.

(d) TQM recognises the all-pervasive nature of the **customer-supplier relationship**, including internal customers: passing sub-standard work to another division is not satisfactory or acceptable.

(e) Prevention costs and appraisal costs are subject to management influence or control. It is **better to spend money on prevention**, before failures occur, than on inspection to detect failures after they have happened. Extra effort on prevention will reduce internal failure costs and this in turn will have a knock-on effect, reducing external failure costs as well.

## Quality management systems

3.15 TQM is a somewhat **evangelical** approach, relying on persuasion and communication, and that may be fine if it fits the organisation's **culture**, or the culture can be changed. Other methods are **more structured**. One that combines attention to effectiveness and efficiency is

the well-known quality standard BS EN ISO 9001:2000 *Quality Management Systems*. This is written entirely from the point of view that view that if an organisation is to operate effectively it needs to identify and manage a large number of **processes** and that the output from one process often forms the input into another. This 'process approach' is seen as the best way of achieving control over the linkage between individual processes and ensuring that they combine and interact effectively and efficiently.

3.16 As far as general organisational matters are concerned ISO 9001 is very similar to the various risk management frameworks in that it stresses that the quality initiative needs to **come from the very top** of the organisation and be **communicated** to everyone within the organisation. A positive attitude towards quality management needs to be so deeply ingrained that it is an expectation: something so fundamental that staff would never even consider approaching their work in any other way.

3.17 The most relevant part of the standard in the current context is section 7 which deals with '**Product realisation**'. 'Product' in the ISO 9000 context means services, software, hardware or processed materials. A product starts out as an **idea** which is then **made real** by following a set of rigorously documented product 'realisation' processes such as those described in the following paragraphs.

### Activity 4.4

Do you think it is absurdly 'over-the top' to document processes in the ways suggested by ISO 9001? Suppose you have newly been appointed chief stationery purchasing manager for a company that has offices in Bristol, Tokyo and Ottawa. You are asked to place a bulk order for printer paper for the company as a whole, obtaining as large a discount as possible.

Will you just order a few million sheets of A4?

*Design and development processes*

3.18 There should be a **timetable** defining the stages of design and development (preferably with specific deadlines). Specific individuals should be given the responsibility to achieve specific things (outputs), and they should be given whatever authority they need to command the resources (inputs) they will need.

3.19 A large or complex product may need the involvement of many different parts of the organisation, and external organisations will probably be needed to supply materials or expertise that is not available in-house. Design and development planning should identify all the interested parties, consider how they will interact, and make arrangements to ensure that everyone will have the information they need to do their part of the job.

3.20 If the organisation has designed and developed similar products before everything may go exactly to plan. But plans need not be set in stone: they should be flexible enough to allow for changes. There may be unanticipated problems, particularly if the idea is a totally new one; or the design and development process itself may give rise to further good ideas that were not part of the original plan but are worth incorporating.

3.21 There are limits, of course. A product may never be 'realised' if the launch date is constantly put off to accommodate each and every new idea. For this reason it is sensible to appoint a specific person or group of people who will review and approve each stage of the design, and sign it off so it passes on to the next stage. Likewise changes should be subject to approval: some suggested changes may not get approval if they would delay the product too much.

3.22 '**Verification**' in ISO 9001 means checking to see whether the outputs from the design process meet the organisation's design goals. For example, have corners been cut to keep the project on schedule? Verification should be done on an ongoing basis, perhaps at each 'approval' stage and consider issues such as whether the product still complies with safety standards, whether, after all the innovations and changes, it is still compatible with other products that the organisation has on the market, and so on.

3.23 '**Validation**' means checking to see whether the product does what the customer or user wants it to do under real-world conditions. By far the best way to check is to ask potential buyers to test the product and make sure that they give plenty of feedback.

*Purchasing processes*

3.24 Organisations should establish criteria for selecting, evaluating and re-evaluating **suppliers** and purchased products and services. One way of doing this, of course, is to insist that suppliers themselves are certified under ISO 9001. This may not always be appropriate, though. The level of controls over suppliers should be based on the type of purchased item, its impact on the final product, and the supplier's past performance. Many organisations, particularly very large ones, have their own 'preferred supplier' schemes, requiring potential suppliers to meet rigorous industry-specific standards.

3.25 **Documentation** should clearly describe the products or services being purchased and include details of whatever specifications are appropriate: size, colour, format, length and so on. If this information is spelled out in detail it is easier for purchasing staff to buy the right items and easier for suppliers to supply them.

*Processes for production or service provision*

3.26 The organisation should carry out production and service processes under 'controlled' conditions. Here are some examples of **controls** mentioned in ISO 9001.

- Information that describes the product should be available
- Work instructions should set out how the product is made
- Any equipment used should be suitable for the job
- Monitoring and measuring devices should be available and properly used
- Authorisation to release the product for dispatch
- Controls over product delivery and post-delivery activities

3.27 If any **monitoring and measuring** needs to be done the organisation should select devices that meet the correct monitoring and measuring needs and protect them from unauthorised adjustment, damage or deterioration. The meaning of this is fairly clear for physical devices that, say, are supposed to cut materials to a certain size. For paper-based processes it might mean devising a **checklist**, in which case it is important not to use last year's checklist, which may not cover all the latest requirements, and not to adjust the checks and controls to fit the product that has been produced.

*Customer-related processes*

3.28 Processes related to **customers** should ensure that customers get what they actually want (not just what the organisation can deliver), that legal requirements or industry standards are met and that organisational requirements such as covering its costs are considered. Requirements will, of course, change from time to time and appropriate records should be kept of new instructions, negotiations, and contract changes.

3.29 **Customer communication** is emphasised in ISO 9001. For a typical modern organisation this means (at the very least) that there should be customer service staff answering telephones, sending out product information on request and dealing with written correspondence. In addition a website is now almost obligatory: this can show product information in detail, provide e-mail links for enquiries and allow customers to view the current status of their orders.

### Activity 4.5

A call centre has a policy of giving all callers a reference number at the end of a call, in case of further enquiries. An individual taking a call one day **knows from experience** that he has handled it as thoroughly as possible, and no further enquiries will arise. Therefore he does not bother to allocate a number to that caller.

Assuming no further enquiries arise in this case, does it matter that no reference number was allocated? Explain your answer.

3.30 Section 8 of ISO 9001 deals with measurement, analysis and improvement **after** the product has been produced and delivered. The requirements are intended to ensure that the organisation makes the effort to find out whether it is conforming to its quality objectives and takes appropriate action if not. For example, organisations should identify ways to monitor and measure **customer satisfaction** – and then actually do so and use the customer satisfaction information.

*Processes to control 'nonconforming' products*

3.31 A nonconforming product is any product that an organisation produces that does **not conform to the customer's expectations** for some reason: it is the wrong size or shape; it is delivered late; it breaks after the first use, and so on. This requirement says that the organisation should decide how nonconforming products should be identified and how they should be handled.

(a) Take measures to prevent the delivery of nonconforming products. Ideally this means developing a quality management system that is so good that nonconforming products can never be delivered. Failing that, it means taking positive action to **test** products before sending them out.

(b) Eliminate or correct product nonconformities. **Records** should be kept describing product nonconformities and the actions taken to deal with them.

(c) **Control subsequent events**. In other words there should be an effective system for dealing with refunds or replacements or repairs, with minimum fuss for the disappointed customer.

*Analysis of data*

3.32 Note that it is not enough just to collect information. For instance a computerised inventory system might automatically collect information such as the date on which each order for supplies is placed and the date on which each order is fulfilled. This is a good start and it will help if there are any disputes, but ideally the information should be further analysed and put to better uses: in this case perhaps it could be analysed in the form of league tables of suppliers, ranking them in order of speed of delivery and acted upon, for instance by removing the slowest suppliers from the preferred suppliers list.

*Improvement*

3.33 If an effective quality management system is in place there will always be room for improvement. Organisations should use the information they glean from audits, management reviews, inspections, corrective and preventive actions taken and so on to generate improvements.

**Case example: Six Sigma**

Six Sigma is a highly structured programme for improving business processes and represents the latest incarnation of the quality movement. It is grounded in efforts to improve manufacturing quality by Motorola during the 1980s, and it brings the methods and analytical tools of engineers to bear on the questions: 'What matters to customers?' and 'Where will changes to work processes most improve these points?'

Sigma is the mathematical symbol for standard deviation. As an example, about 93% of all results from a normal population (where results are equally distributed above and below the mean) fall within 3 standard deviations. The use of six sigma in a manufacturing situation means that the company uses quality management tools to improve a process so that the tolerances for the process is at or better than six standard deviations of the process spread. This would result in no more than 3.4 failures in 1 million units of production.

## 4 PEOPLE RISK

4.1 **People risk** is the risk arising from staff constraints (for example insufficient staff, or inability to pay good enough wages to attract and retain the right quality of staff), incompetence, dishonesty, or a corporate culture that does not cultivate risk awareness, or encourages profits without regard to the methods used to make them.

4.2 Of course we have covered the topic of **corporate culture** already: you may wish to glance back at the appropriate sections of Chapter 2 before reading on.

### Managing people risk

4.3 In essence people risk is managed by recruiting the right people (and retaining them), and by ensuring that they do the right things. Of course, this simple statement raises a huge number of issues, and we can only scratch the surface here.

### Recruitment

4.4 The overall staffing requirements of the organisation are determined by the business strategy. The organisation needs to determine the skills and competences in requires and then identify how the skills and personnel requirements can be met. (Recruitment is not the only solution to lack of staff. Alternatives might include outsourcing to other organisations, perhaps in low-cost countries, temporary staff to cover short-term imbalances, and investment in technology.)

4.5 The **recruitment process** typically involves the production of a **job analysis** (a review of the current content of the job) which can be converted into a **job specification**, which describes in detail the tasks of the job. The type of person and the skills required are then outlined in a **person specification**. This can be a fairly simple exercise ('We need a person who holds the Diploma in Financial Management qualification and has at least two years

post-qualification experience'). Alternatively organisations may look for potential, rather than actual achievement, with a view to developing staff in-house.

4.6 The typical **selection process** is to request applications and CVs and pick out those that best fit the job and person specifications. For most jobs an interview of some sort is usual. From a risk perspective this is a way of checking that what candidates say about themselves is true: if they say they have good communication skills this should be apparent in the interview; if they say they have relevant previous experience the interview is a chance to find out in more detail what they did in their previous jobs and whether it is really relevant.

4.7 In some job selection procedures, an interview is supplemented by some form of **selection test**, for example intelligence tests, personality tests and proficiency tests (for example typing speed, ability to operate a machine).

4.8 **References** from previous employers should always be sought, so long as it is remembered that previous employers tend to be very cagey: someone may have been completely incompetent in their previous job, or have been sacked for stealing, but the reference may just say that they 'didn't fit in'.

4.9 It is usual to ask to see a variety of **written evidence** such as the person's birth certificate (to show that they are who they say they are) and certificates of qualifications (a clean driving licence, if relevant, educational certificates and so on). Such documents can be falsified and in certain cases it is important to carry out additional checks.

(a) If interviewing or testing or references indicate that the person may not have the qualifications they claim to have then checks might be made with the relevant **certifying authority** (say, the ACCA in your case; CORGI for someone applying for a job as a gas installer, and so on).

(b) In healthcare and in jobs that entail working with children or vulnerable adults checks with the **Criminal Records Bureau** should be part of standard procedures.

4.10 Recruitment exercises carry the additional risk for an employer that disappointed job applicants will attribute their lack of success to **discrimination**. Care should be taken to ensure that the entire process complies with **Equal Opportunities** legislation. This will affect the wording of job advertisements, the questions asked on application forms, the conduct of interviews, and the nature of selection tests.

## Employment contracts

4.11 An employment contract is a legal requirement and it is also a tool used to achieve control within an organisation., that is to minimise risk.

4.12 Under a standard contract the employee has a **fundamental duty of faithful service** to the employer. All other duties are features of this general duty. The **implied** duties of the employee include the following.

(a) **Reasonable competence** to do the job.

(b) **Obedience** to the employer's instructions unless they require him or her to do an unlawful act or to expose themselves to personal danger (not inherent in the work).

(c) **Duty to account for all money and property** received during the course of his employment.

(d) **Reasonable care and skill** in the performance of work. What is reasonable depends on the degree of skill and experience which the employee professes to have.

(e) **Personal service** - the contract of employment is a personal one and so the employee may not delegate their duties without the employer's express or implied consent.

## Ensuring that people do the right things

4.13 On the other hand if either party needs to resort to the employment contract then the relationship has probably broken down already. There are better ways of getting people to do the right things. In outline the organisation can lay down **procedures**, it can **train** people as necessary, it can **motivate** them and of course offer **rewards**. Control can be exercised by means of systems of **performance measurement** and **appraisal**.

## Procedural control v empowerment

*Bureaucracy*

4.14 People risks may be managed through **bureaucratic** means. This is the use of 'rules, policies, hierarchies of authority, documentation, and so forth' to standardise behaviour and assess performance.

(a) **Policies** are general statements that provide guidelines for management decision making. Policy guidelines should allow managers to exercise their **own discretion** and **freedom of choice**, but within certain acceptable limits.

(b) **Procedures** are sequences of required actions for performing certain tasks. Procedures exist at all levels of management but become more numerous, onerous and extensive lower down in an organisation's hierarchy. They are intended to enhance efficiency and ensure standardisation.

(c) A **rule** prescribes a specific, definite action that **must be taken** in a given situation. For example 'Employees with **access to a telephone must not use** the telephone for **personal calls**'. Rules allow **no deviations or exceptions.**

4.15 A bureaucratic approach to people management may be essential in very risky circumstances, for example where safety is involved, and many more mundane jobs will include some absolute rules. For example, no organisation is likely to regard the procedure of verifying credit card details before allowing a purchase as something to be done only at the employee's discretion: verification is likely to be programmed in to the system, so that transactions cannot be further processed at all until this check has been done with satisfactory results.

*Empowerment*

4.16 Modern trends, on the other hand, encourage the idea of employee **empowerment**. The principle is that the people who are closest to a job – the ones who actually do it – are usually the ones best placed to decide how it should be done, and so they should have the freedom and authority to do it as they think best. They will enjoy their jobs more and the organisation will get the results it needs.

4.17 From a **risk management** point of view this would seem to be quite out of keeping with everything we have said in this book so far: it seems to put the organisation at the mercy of the risk appetite of individual employees.

**Activity 4.6**

Think of three risks that could arise from a policy of empowering staff.

4.18 The matter of empowerment is specifically addressed in the COSO *ERM Framework*.

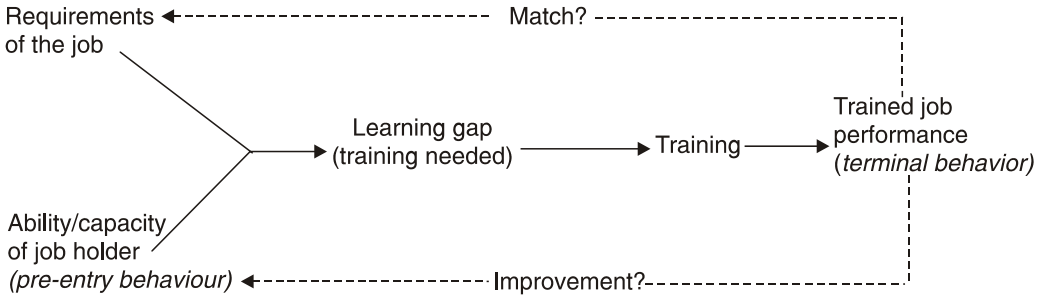
> … increased delegation may carry an implicit requirement for a higher level of employee **competence**, as well as greater **accountability**. It also requires effective procedures for management to **monitor** results so that decisions can be overruled or accepted as necessary. Along with better, market-driven decisions, delegation may increase the number of undesirable or unanticipated decisions. For example, if a district sales manager decides that authorisation to sell at 35% off list price justifies a temporary 45% discount to gain market share, management may need to know so that it can **overrule or accept** such decisions going forward.
>
> The internal environment is greatly influenced by the extent to which individuals recognise that they will be held **accountable**. This holds true all the way to the chief executive, who, with board oversight, has ultimate responsibility for all activities within an entity.

4.19 To summarise, if empowerment is seen as the best way to achieve objectives such as increased creativity, improved quality, faster cycle times and so on then it is even more incumbent upon the organisation to take all necessary steps to ensure that its employees are competent, that they know and accept that they will be held accountable for what they do, that they are keenly aware of risk, and take ownership of risks that apply to what they do. Moreover, empowering employees does not remove the need for managers to monitor what employees do and take corrective action where necessary.

## Training

4.20 Training is provided to ensure the organisation has the **skills it** needs. It may also be used as a form of **cultural indoctrination** and team building, to teach the company jargon and so on.

4.21 **Training needs** may be defined as the **gap** between what people should be achieving and what they actually are achieving. In other words, **required level** of competence **minus present level** of competence = **training need**.




4.22 Some training requirements will be obvious and 'automatic'.

(a) If a **piece of legislation** is enacted which affects the organisation's operations, training in its provisions will automatically be indicated. Thus, for example, personnel staff will need to be trained as and when various EU Directives are enacted in UK law.

(b) The **introduction of new technology** similarly implies a training need: for relevant employees to learn how to use it.

(c) An organisation seeking **accreditation for its training scheme**, or seeking a British Standard or International Standard (say, for quality systems, ISO 9001), will have certain training requirements imposed on it by the approving body.

4.23 Other training requirements may emerge in response to **critical incidents**: problems or events which affect a key area of the organisation's activity and effectiveness. Some **qualitative indicators** might be taken as symptoms of a need for training: absenteeism, high labour turnover, grievance and disciplinary actions, crises, conflict, poor motivation and performance. Such factors will need to be investigated to see what the root causes are, and whether training will solve the problem.

4.24 There are various ways of validating a training scheme – in effect a control device comparing trainees' requirements with the actual output.

(a) **Trainee reactions to the experience:** using feedback forms and attitude surveys to ask the trainees whether they thought the training programme was relevant to their work, and whether they found it useful.

(b) **Trainee learning:** measuring what the trainees have learned on the course, by means of a test or assessment of competence at the end.

(c) **Changes in job behaviour following training:** studying the subsequent behaviour of the trainees in their jobs, to measure how the training scheme has altered the way they do their work. This is possible, for example, where the purpose of the course was to learn a particular skill.

(d) **Impact of training on organisational goals:** seeing whether the training scheme has contributed to the overall objectives of the organisation. This is a form of monitoring reserved for senior management.

## Motivation and reward

4.25 Ultimately the only way that an organisation can prevent employees from taking risks that it does not wish them to take is to sack them, and that defeats the object of employing them in the first place. It may be that the implied threat of the sack is sufficient to persuade people to do what is wanted, but most organisations would prefer them to be **motivated** to do so. This is less risky because there is less chance that there will come a day when the employee does not care about being sacked, for example if they have resigned already and are just working out their notice.

4.26 Motivation is sometimes confused with the idea that staff should be 'happy in their work', but it is quite possible to do a job extremely well, fully meeting or even exceeding organisational requirements, without enjoying it in the slightest. It is more accurate to say that **the strength of individuals' motivation** to do something will depend on the extent to which they expect the results of their efforts, if successfully achieved, to contribute towards their **personal needs or goals**.

4.27 Except in voluntary organisations or roles all employees **need to be paid**. To varying extents their **needs** may also include the experience of doing the job (so that they can get another job that expects them to have that experience), the challenge of the work itself, or the need to interact with other people. Their **goals** may be purely financial goals or they may be aiming for promotion.

4.28 Active steps that an organisation can take to motivate its staff to comply with its risk requirements will therefore address these needs and goals.

(a) Behaviour that contributes to effective risk management should be **rewarded** (with money or promotion etc). Examples might include simply keeping losses to within a pre-set level, or identifying and reporting a risk that had been overlooked, or inventing a new, less risky way of doing something.

(b) On the other hand care is needed when designing **incentive schemes** that they **do not encourage risky behaviour**. Typically this might occur if employees are required to meet certain targets in order to earn a bonus and there is inadequate control or scrutiny of how those targets are met.

## Performance management and appraisal

4.29 Armstrong (*A Handbook of Human Resource Management Practice*, 2003) describes performance management in a way that makes the relevance to risk quite clear.

> **'Performance management** is a means of getting better results from the organisation, teams and individuals by understanding and managing performance within an agreed framework of planned goals, standards and competence requirements. It is a process for establishing shared understanding about what *is* to be achieved, and an approach to managing and developing people in a way which increases the probability that it *will* be achieved in the short and long term.'

4.30 Performance management will begin with the preparation of **performance agreements** which set out the individual's or team's **objectives**, how performance will be measured (ie the performance measures to be used), the knowledge, skills and behaviour needed to achieve the objectives and the organisation's core values (quality, customer service, risk reduction and so on).

- Measures used should be **objective and capable** of being assessed
- Appropriate data should be **readily available**
- If possible, **existing measures** should be **used or adapted**
- Measures should **relate to results** and **not to effort**
- Those results should be **within the individual's control**

4.31 Discussions between managers and individuals should ensure that individuals **fully understand** what is expected of them and that if they fulfil those expectations they will be regarded as having performed well.

4.32 Management of performance throughout the year involves the **continuous process** of providing feedback on performance, conducting informal progress reviews and dealing with performance problems as necessary.

4.33 **Performance reviews** involve both taking a view of an individual's progress to date *and* reaching an agreement about what should be done in the future. The performance review provides the means by which:

(i) Results can be **measured** against targets
(ii) The employee can be given **feedback** on how well he is doing
(iii) **Praise** and **constructive criticism** can be given as necessary
(iv) **Views can be exchanged**
(v) An **agreement can be reached**

4.34 At regular intervals, typically every six months or every year, employees should be subject to appraisal, usually involving an appraisal report and an appraisal interview. Personnel

appraisal aims to ensure individuals are performing to the best of their ability, are developing their potential and that the organisation is best utilising their abilities. It may include:

(a) **Reward review**. Measuring the extent to which an employee is deserving of a bonus or pay increase as compared with his or her peers.

(b) **Performance review**, for planning and following-up training and development programmes, ie identifying training needs, validating training methods and so on.

(c) **Potential review**, as an aid to planning career development and succession, by attempting to predict the level and type of work the individual will be capable of in the future.

4.35 As well as reviewing **past performance** an appraisal is also the opportunity to establish the objectives and targets, training needs and so on for the **next period**.

### Activity 4.7

Consider the following case study in terms of the risk management issues that it raises for management (Transport for London).

> Millions of people struggled into work in London on Wednesday as a rail union strike badly disrupted the underground. Maurice Fitzpatrick, head of economics at business group Numerica, said the strike would cost the London economy £100m in lost fares and lost productivity.
>
> The 24-hour walkout over pay and conditions went ahead after last-minute talks between the Rail, Maritime and Transport (RMT) union and management failed to break the deadlock. London Underground's chief operating officer Mike Brown said the deal offered would give workers a pay rise of 3.5% over the next year and guaranteed to reduce the working week by two-and-a-half hours by 2006. But the union has said the deal has unacceptable "strings" attached and claims 800 jobs could be lost.
>
> Transport for London (which manages London's buses, the Underground, the Docklands Light Railway, London Trams and London River Services), said 30% of trains were running and every available bus - an extra 1,000 - had been "scrambled". Buses, trams and the Docklands Light Railway are running as usual and river services are free (paid for by London Underground) during rush hour. It is thought seven million people will have used buses on Wednesday, one million more than usual and the highest total for 50 years.
>
> Bob Crow, the union's general secretary, again called on Mr Livingstone, the London Mayor, to become personally involved in the dispute. "We need someone with the authority and the inclination to hammer out a deal," he said. "Instead, we continue to bang our heads against a brick wall with a management that Mr Livingstone once dismissed as dullards and knuckleheads." Mr Crow added that he could not rule out further strikes and union leaders are expected to meet in the next few days to decide their next move.

*(Adapted from www.bbc.co.uk)*

## 5 SYSTEMS RISKS

### Systems

5.1 For all practical purposes in modern business 'systems', in the context of operational risk, means **computerised** systems. This may include systems that are used to control machines such as **robots** in a factory, **GPS** systems that are used to provide delivery drivers with their routes, **barcode scanners** and the underlying software in supermarkets, and many others: don't just think in terms of Microsoft Office.

## Examples of systems risks

*Risks of physical damage*

5.2 The main physical risks to systems are fire, flooding and electrical problems such as power cuts. A power surge – which may occur as a result of lightning – can cause permanent damage to a computer, whereas a power cut usually only results in the loss of a small amount of data and renders the computer unusable until the power is restored.

5.3 Organisations may also be exposed to physical threats through the actions of humans. **Political terrorism** is the main risk, but there are also threats from individuals with **grudges.**

5.4 People are a physical threat to computer installations, whether by spilling a cup of coffee over their computer, or tripping over and doing some damage to themselves and to an item of equipment.

*Risks to data integrity and systems integrity*

5.5 **Data integrity** is preserved when data is the same as in source documents and has not been accidentally or intentionally altered, destroyed or disclosed. **Systems integrity** refers to system operation conforming to the design specification, despite attempts (deliberate or accidental) to make it behave incorrectly.

5.6 The **risks** include:

- **Human error** such as entering incorrect transactions, failing to correct errors, or failing to follow prescribed security procedures
- **Technical error** such as malfunctioning software or hardware, especially if the organisation uses **highly specialised** or bespoke software or hardware, as well as standard 'office' type packages and PCs. Software and hardware used in production systems may well fall into this category.
- Commercial espionage or malicious damage for example as a result of **hacking**. Hacking involves attempting to gain unauthorised access to a computer system, usually through telecommunications links. Hackers may just steal information or they may corrupt it.

*Risks of fraud*

5.7 Computer fraud usually involves the theft of funds by **dishonest use** of a computer system.

(a) **Input fraud,** where **d**ata input is falsified (good examples are putting a **non-existent employee** on the salary file or a non-existent supplier to the purchases file).

(b) **Processing fraud,** where someone who has broken into the system **alters a program**. (for example, so that 10 pence is deduced from every employee's pay cheque and sent to a bank account to which the perpetrator has access).

(c) **Output fraud:** output documents may be **stolen or tampered with** and control totals may be altered. Cheques are the most likely document to be stolen, but other documents may be stolen to hide a fraud.

*Network risks*

5.8 Networks bring numerous security dangers.

(a) Corruptions such as **viruses** on a single computer can spread through the network to all of the organisation's computers. A **virus** is a piece of software which infects programs and data and possibly damages them. E-mail has become the most common means of spreading viruses. The virus is typically held in an attachment to the e-mail message. Recent viruses have been programmed to send themselves to all addresses in the user's electronic address book.

(b) Disaffected employees have much greater potential to do **deliberate damage** to valuable corporate data or systems because the network could give them access to parts of the system that they are not really authorised to use.

(c) If the organisation is linked to an external network, persons outside the company (**hackers**) may be able to get into the organisation's internal network, either to steal data or to damage the system.

(d) Information transmitted from one part of an organisation to another may be **intercepted**.

(e) The **communications link itself may break down or distort data**.

*Denial of service attack*

5.9 A fairly new threat, relating to websites and Internet-dependent systems such as e-commerce sites is the 'Denial of Service (DoS)' attack. A denial of service attack is characterised by an attempt by attackers to prevent legitimate users of a service from using that service. For example hackers may 'flood' or bombard a site or network, thereby preventing legitimate network traffic (major sites, such as Amazon.com and Yahoo! have been targeted in this way)

## Managing systems risks

5.10 Measures to manage risks can be subdivided into a number of aspects.

(a) **Prevention**. It is in practice impossible to prevent all threats cost-effectively.

(b) **Detection**. Detection techniques are often combined with prevention techniques: a log can be maintained of unauthorised attempts to gain access to a computer system.

(c) **Deterrence**. As an example, computer misuse by personnel can be made grounds for disciplinary action.

(d) **Recovery procedures**. If the threat occurs, its consequences can be contained (for example via backups).

(e) **Correction procedures**. These ensure the vulnerability is dealt with (for example, by instituting stricter controls).

(f) **Threat avoidance**. This might mean changing the design of the system.

## Developing a security policy

5.11 Information security is an important responsibility for all levels of management. A security policy is needed, not simply a collection of measures adopted ad hoc. Developing security policy would involve normal risk management procedures including **identification**, **quantification** and **prioritisation** of risks, **costing, selection** and **implementation** of **counter measures** and drawing up of contingency plans

## Controlling people

5.12 Certain employees will always be placed in a position of trust, for example senior systems analysts, the database administrator and the computer security officer. With the growth of networks, almost all employees may be in a position to do damage to a computer system.

5.13 Although most employees are honest and well-intentioned, if they wish to do so, it may be relatively easy for individuals to compromise the security of an organisation.

5.14 The types of measure that can be used to control people are as follows.

- Careful recruitment including taking up of references
- Job rotation
- Supervision and observation by a superior
- Review of computer usage (for example via systems logs)
- Enforced vacations

5.15 **Termination procedures**, restricting access to sensitive data, are required for employees about to leave an organisation, especially if they are asked to leave.

## Controlling access

5.16 Access controls are designed to prevent intruders getting near to computer equipment and/or storage media.

(a) **Personnel**, including receptionists and, outside working hours, security guards, can help control human access.

(b) **Door locks** can be used where frequency of use is low. (This is not practicable if the door is in frequent use.)

(c) Locks can be combined with:

(i) A **keypad system**, requiring a code to be entered.
(ii) A **card entry system**, requiring a card to be 'swiped'.
(iii) More sophisticated systems involving fingerprint scans or eye scans. These are **expensive**, so tend to be used only in highly sensitive industries such as defence.

(d) **Intruder alarms are vital**.

(e) Even if intruders get past the physical controls a system of **effective passwords** should prevent their being able to access the systems. Passwords can be applied to data files, program files and to parts of a program. One password may be **required to read** a **file**, but another to **write new data** to it. The user can be **restricted** to the **use of certain files** and programs (eg in a banking system, junior grades of staff are only allowed to access certain routine programs).

5.17 The best form of access control would be one which **recognised** individuals immediately, without the need for personnel or cards. However, machines which can identify a person's fingerprints or scan the pattern of a retina are expensive and still relatively unusual.

5.18 It may not be cost effective or practical to use the same access controls in all areas. The **security requirements of different departments** should be estimated, and appropriate measures taken. Some areas will be very restricted, whereas others will be relatively open. **Requirements for system security** must be balanced by the operational requirements for access: a rigidly enforced isolation of the system may significantly reduce the value of the system.

## Controlling integrity

5.19 **Data integrity** is preserved when data is the same as in source documents and has not been accidentally or intentionally altered, destroyed or disclosed. **Systems integrity** refers to system operation conforming to the design specification despite attempts (deliberate or accidental) to make it behave incorrectly.

5.20 **Input controls** should ensure the **accuracy, completeness and validity** of input.

(a) **Data verification** involves ensuring data entered matches the source (for example by reading back information to a customer over the telephone, or by comparing an original document with the data input).

(b) **Data validation** involves ensuring that data entered is not incomplete or unreasonable. Various checks can be used, depending on the data type.

(i) **Check digits**. A digit calculated by the program and added to the input being checked to validate it eg modulus 11 method.

(ii) **Control totals**. For example, a batch total totalling the entries in the batch.

(iii) **Hash totals**. A system generated total used to check the reasonableness of numeric codes entered.

(iv) **Range checks**. Used to check the value entered against a sensible range, eg balance sheet account number must be between 5,000 and 9,999.

(v) **Limit checks**. Similar to a range check, but usually based on a upper limit eg must be less than 999,999.99.

## Backup controls

5.21 **Back-up** means to make a copy in anticipation of future failure or corruption. A back-up copy of a file is a duplicate copy kept separately from the main system and only used if the original fails.

5.22 The **purpose of backing up data** is to ensure that the most recent usable copy of the data can be recovered and restored in the event of loss or corruption on the primary storage media.

5.23 The **intervals** at which back-ups are performed must be decided. Most organisations back up their data daily, but back-ups may need to be performed more frequently, depending on the nature of the data and of the organisation.

## Protecting against viruses

5.24 The main protection against viruses is **anti-virus software** which constantly monitors systems for viruses and removes any that are found.

5.25 Personnel policies are also important in dealing with viruses.

- Staff's **information technology training** should include dealing with viruses
- **Disciplinary procedures** should be used against staff who use unauthorised software on the network.

5.26 External e-mail links can be protected by way of a **firewall** that may be configured to virus check all messages, and may also prevent files of a certain type being sent via e-mail (eg .exe files, as these are the most common means of transporting a virus).

## Encryption

5.27 **Encryption** aims to ensure the security of data during transmission. It involves the translation of data into secret code. To read an encrypted file, you must have access to a secret key or password that enables you to decrypt it.

5.28 Encryption is the only secure way to **prevent eavesdropping** (since eavesdroppers can get round password controls, by tapping the line or by experimenting with various likely passwords).

## Software piracy

5.29 An organisation can face problems through **unlicensed use** of software by staff on its own machines, or its staff illegally making copies for their own use of the software it owns itself.

5.30 Record keeping is the most important control **preventing** the **unlicensed use** of software:

- **Maintaining records** of **software purchase and licensing,** identifying the software being used on each machine
- Maintaining a **central secure store** of **disks**
- **Spot checks** to confirm that all software being used is licensed

## Fraud prevention

5.31 The UK's Audit Commission suggested six measures as being particularly important in the prevention and detection of fraud:

- **Involvement of internal audit**
- **Computer audit skills** in the internal audit function
- Rigorously implemented **computer security policy**
- All staff being given **computer awareness training**
- **Risk analysis** focusing on activities and functions most prone to abuse
- **Staff being employed** to **ensure compliance** with the organisation's computer security policy

5.32 In addition, organisations can take additional steps.

(a) **Instigate stringent controls** at the **periphery of the financial system,** at all points where money leaves the company.

(b) Program the computers to **change the controls** operated over **specific transactions.**

### Activity 4.8

As we have indicated e-mail can impose **legal** and **security** problems, and is often the gateway through which viruses can enter systems. Suggest at least five policies that could be implemented to combat these risks.

## 6 EVENT RISK

6.1 **Event risk** is the risk of loss due to single events that are unlikely but may have serious consequences. Political risk could be put into this category. Political risk is associated especially with less developed countries where events such as wars or military coups may result in an industry being taken over by the government and having its assets seized.

6.2 Natural or man-made disasters are the most obvious examples of event risk.

(a) A proper **fire safety plan** is an essential feature of security procedures, in order to prevent fire, detect fire and put out the fire. Fire safety includes:

- **Site preparation** (for example, appropriate building materials, fire doors)
- **Detection** (for example, **smoke detectors**)
- **Extinguishing** (for example, **sprinklers**)
- **Training** for staff in observing **fire safety procedures**

(b) **Flooding** and water damage can be countered by the use of **waterproof ceilings and floors** together with the provision of **adequate drainage**.

(c) Keeping up maintenance programmes can counter the leaking roofs or dripping pipes that result from **adverse weather conditions**. The problems caused by power surges resulting from lightning can be countered by the use of **uninterruptible (protected) power supplies**. This will protect equipment from fluctuations in the supply. Power failure can be protected against by the use of a **separate generator**.

(d) Threats from terrorism can be countered by **physical access controls** and consultation with police and fire authorities.

(e) Accidental damage can be avoided by **sensible attitudes to behaviour** while at work and **good layout** of workspaces.

### Contingency planning

6.3 A **contingency** is simply an event which may or may not happen in the future. A contingency plan sets out how to deal with the event.

6.4 A **disaster** occurs where the organisation's operations, or a significant part of them, break down for some reason, leading to potential **losses** of equipment, data or funds. The system **must recover as soon as possible** so that further losses are not incurred, and current losses can be rectified.

6.5 What is considered a disaster is relative to the size of the business and the significance of the item that breaks down. The failure of a hard drive in a single PC could be extremely serious for a small business which depended on that one computer, but in a large organisation it might cause minimal inconvenience, so long as backup copies of data files are maintained. On the other hand, the failure of a single dealer's workstation could cause a significant amount of lost business, or unnecessary exposure to risk.

6.6 Of course minor breakdowns occur regularly and will only require *short term* recovery plans such as agreements with a maintenance company for same or next-day on site repairs. Disasters which result in the destruction of a major facility or installation require a *long-term* plan.

6.7 A long-term disaster recovery plan will typically provide for:

(a) **Standby procedures** so that some operations can be performed while normal services are disrupted.

(b) **Recovery procedures** once the cause of the breakdown has been discovered or corrected.

(c) **Personnel management** policies to ensure that (a) and (b) above are implemented properly.

6.8 The plan must cover all activities from the initial response to the disaster, through to damage limitation and full recovery. Responsibilities must be clearly spelt out for all tasks. The contents of the plan will include the following.

| Section | Comment |
|---|---|
| **Definition of responsibilities** | It is important that somebody (a manager or co-ordinator) is designated to take control in a crisis. This individual can then delegate specific tasks or responsibilities to other designated personnel. |
| **Priorities** | Limited resources may be available for processing. Some tasks are more important than others. These must be established in advance. Similarly, the recovery program may indicate that certain areas must be tackled first. |
| **Backup and standby arrangements** | These may be with other installations, with a company that provides such services (eg maybe the hardware vendor); or reverting to manual procedures. |
| **Communication with staff** | The problems of a disaster can be compounded by poor communication between members of staff. |
| **Public relations** | If the disaster has a public impact, the recovery team may come under pressure from the public or from the media. |
| **Risk assessment** | Some way must be found of assessing the requirements of the problem, if it is contained, with the continued operation of the organisation as a whole. |

## Standby facilities

6.9 In some cases it may be prohibitively expensive to have duplicate facilities such as extra factories that just stand idle on the off-chance that a major disaster will occur. For large companies it may be possible to transfer production to other active facilities, in other countries, say, but this will inevitably put a strain on the other facilities.

6.10 More may be possible with administrative operations which are usually less specialised in terms of resources, or at least easier to duplicate on an *ad hoc* basis.

(a) **Computer bureaux** can agree to make their own systems available in the event of an emergency. Such an arrangement has to be specified in advance, as there might be other demands on a bureau's resources in the event of a widespread disaster.

(b) Co-operating with **other organisations** in the locality, through a mutual aid agreement, may be a way of pooling resources. However, these other organisations themselves might not, in the event, be able to spare the computer time.

(c) **Disaster standby companies** (operating specially set up computer rooms only used for the purpose) offer **office premises** with desks, telephones and storage space which are ready-equipped with computers and software of the same type as that used by their customers. In the event of a disaster, the customer can 'invoke' standby procedures and load backups of data to carry on essential business.

## 7 BUSINESS RISK

7.1 **Business risk** is the risk of loss due to changes in the competitive environment or to trends that damage the operating economics of a business. (These changes may seem like 'events', but the difference is that events are one-off and hard to anticipate, and management only kicks in if and when they happen.)

7.2 We will deal with business risk in general in a moment but first we will consider two particular types of risk that could be considered to fall into this category: legal risk and reputational risk.

### Legal risk

7.3 At worst, legal risk is the risk of unexpected losses due to **litigation**. For example, following the collapse of Enron in 2001 there was an increased awareness of the risk to directors and other officers of a company of litigation by shareholders claiming compensation for losses due to negligence and of action by the government for breaching the law. As a result, the premiums for directors' and officers' liability insurance were raised substantially by insurance companies. Some companies have incurred enormous liabilities due to litigation, such as claims for damage to health caused by asbestos or tobacco products.

7.4 Legal risk also arises through the possibility of **unfavourable legal decisions** and the chance of **changes in the law** or in **regulations**. The competition authorities may prevent a company from going ahead with a planned takeover of another company. The government may increase the rate of taxation on business income by an unexpectedly large amount. The EU or the US government may introduce new reporting requirements that impose considerable compliance costs on organisations.

7.5 Clearly **legal risk** in the sense of litigation is best avoided by not doing illegal things, and procedures should require operations to be checked with a **legal department** and/or **compliance departments** or with outside law firms and consultants wherever there is any doubt.

7.6 In the sense of change and adverse decisions legal risk may be managed to a varying extent by **lobbying** the government and ensuring that the organisation's views are known. Many organisations appoint retired senior **civil servants as non-executive directors**, as a means of gaining access to government.

7.7 Information about what is and is not legal or compliant should be made available to anyone who needs it, and a risk-focused organisation will be **proactive** about this, providing regular circulars about new risks that have arisen due to changes in the law, decisions in the courts, new regulations and so on, together with an analysis of the implications for the organisation.

7.8 A change of government may be a catalyst for regulatory and statutory change, but at present in developed economies it is fair to say that such changes are broadly predictable because of the scrutiny that political parties are subject to, and responses can be planned well in advance.

## Reputational risk

7.9 Reputational risk can also be considered a form of business risk. As you can no doubt guess this is the risk to the **reputation** of an organisation, for example to its **brand names**. This type of risk is often associated with bad publicity, and is a significant risk for a number of companies whose products or activities are considered by the public to be an environmental threat. A relatively new risk is that disgruntled customers will set up **weblogs** to complain about the bad service they have received or poor quality of products.

7.10 Reputational risk is typically handled by a **public relations** department. A cynic might associate this with what is commonly known as 'spin-doctoring', but in fact the Chartered Institute of Public Relations tell us that:

> 'Public relations is **the discipline which looks after reputation**, with the aim of earning understanding and support and influencing opinion and behaviour. It is the planned and sustained effort to establish and maintain goodwill and mutual understanding between an organisation and its publics.'

7.11 The ideal is that the public relations function serves as a mediator between the organisation and its publics with the aim of facilitating mutual understanding between the two. The communication is therefore a dialogue, not a monologue. If persuasion occurs it is as likely to persuade the organisation's management to change its attitude as it is to persuade the publics to change theirs. In an ideal situation, both management and publics will change their attitudes or behaviour, but if the PR function has brought the two sides together, and as long as both sides communicate well enough to understand the position of the other, then the PR effort will have been successful.

7.12 Any organisation with strong brands is also at risk that others will **illegally imitate** their brand names and product designs.

### Case example: Counterfeit parts

GM is focused on halting the counterfeiting of auto parts. Counterfeit parts harm the reputation of authorized GM parts distributors. If we do not step forward to fight for and protect ourselves by cracking down on counterfeiting through legal means, GM as well as the entire industry will be negatively impacted by decreased sales, fewer employment opportunities, falling long-term investment return rates, etc. Counterfeit parts, in fact, could one day overwhelm genuine parts.

As part of our intense effort to safeguard the reputation of our brands, we are taking bold steps to prevent and crack down on counterfeiters. We are closely cooperating with law enforcement agencies and with other major automakers. In addition, we are actively collecting evidence and doing our best to ensure counterfeiters are punished to the fullest extent of the law. We also are setting up a guardian mechanism for building a "clean" channel for the distribution of our products to ensure that consumers can purchase genuine high-quality products through official distributors authorized by GM without worry.

*(www.gmchina.com)*

## Managing business risk in general: environmental scanning

7.13 In more general terms managing business risk is a matter of **monitoring** the competitive environment and trends that may damage the operating economics of the business. This is otherwise known as **environmental scanning**.

(a) As a bare minimum environmental scanning will involve reading **newspapers** and relevant **trade publications**, and checking the **websites** of customers, partners, suppliers, competitors and the government.

(b) For a price the organisation can subscribe to the services of **specialist business information providers** like Reuters and LexisNexis and buy reports from syndicated sources such as Mintel and the Economist Intelligence Unit. The latter will contain statistics and detailed analysis of trends and future projections.

(c) **Market research** can be conducted or (commissioned from an agency) either as a one-off exercise or as an ongoing process. For example every week Tesco checks its own prices for 4,000 products (representing 49 per cent of its turnover) against the prices in Asda, Kwik Save, Morrison, Safeway, Sainsbury and Somerfield.

7.14 Of course, simply monitoring what is happening is of no value unless **action is taken to mitigate any risks identified**. If Asda charge less for Kellogg's cornflakes than Tesco then that is not just an interesting fact: there is a risk that Tesco will lose sales. The information will probably prompt Tesco to adjust its own prices, and it may prompt them to look into the amount it is paying Kellogg's, in case Asda are getting a better deal than they are.

### Activity 4.9

PAXOS is a company that makes compact disks. The company specialises in producing 'budget' price CDs of classical music. The firm built its list by recording young or unknown artists and orchestras from eastern Europe. Recording costs are kept low by the use of trained local sound engineers, rather than people flown in. Also, Paxos eschews the use of more complicated electronic sound engineering and mixing equipment. The firm now records areas of the repertoire other labels do not record. The company's main markets are Europe and North America.

Conduct a PEST analysis of this company. PEST factors are Political (and legal), Economic, Social (and cultural) and Technological.

## Scenario planning

7.15 Scenario planning is an attempt to build plausible views of a number of different possible futures, often in the form of a story. The technique derives from military strategy, but it was developed in a business context by **Shell** in the late 1960s and early 1970s, pioneered by **Pierre Wack**. As a result, Shell was prepared to deal with the oil shock that occurred in late 1973 and greatly **improved its competitive position** in the industry during the oil crisis and the oil glut that followed.

7.16 Remember that scenario planning (or building) is 'Wacky' and should not be confused with the more scientific financial scenario 'analysis', as covered in the previous chapter: **scenario analysis** in the context of your syllabus is a **financial risk management** technique with a **quantitative** basis. That said, the various terms are used interchangeably by many writers, so be prepared for confusion, if you decide to read around the subject.

7.17 Scenario planning is not about predicting a single certain future and it is not science fiction, although it may well incorporate probable developments like nanotechnology and stem cell technology if these are relevant.

7.18 The result of a scenario analysis is a group of distinct futures, all of which are plausible. This enables decision-makers to base their decisions on a variety of assumptions rather than a single set of assumptions. This is a much more realistic representation of the real world. The challenge is identifying how to recognise each of the possible scenarios when/if they emerge and deciding how deal with them.

7.19 The basic process of scenario planning involves:

(a) Identifying driving forces - taking into consideration future macro-environmental factors. Typically this means Political, Economic, Social, Technological, or PEST factors. The natural environment may be included as a separate category, although it could be considered an aspect of any of the other factors.

(b) Identifying predetermined factors – assessing what is inevitable about the future.

(c) Identifying critical uncertainties – assessing those areas where the future is uncertain, which can be prioritised according to importance and the degree of uncertainty.

(d) Developing scenario plots – a series of plausible alternative futures.

(e) Assessing the implications of different scenarios for the organisation and community of concern.

(f) Identifying and monitoring indicators – to enable continual reassessment and adaptation.

### Case example: Shell

Shell produce Global Scenarios every three years as a key part of the planning process. They recognise that there is no limit to the stories that could be concocted about the future but for developing our strategic thinking they have found it is more productive to focus on just two thought-provoking scenarios. The most recent set at the time of writing is *People and Connections* which looks as far ahead as 2020.

The first scenario, *Business Class*, explores what happens when the connected freedom of the globally interconnected elite and the only remaining superpower, the US, lead the world towards greater economic integration and a dream of economic prosperity for all. In this scenario, cities and other rising sources of power diminish the influence of national governments in a kind of 'new medievalism', while businesses pursue cutting-edge strategies to meet the volatile conditions of the time. Gas is 'the great game' in energy because consumers want it for health and environmental reasons, businesses want it as a source of new wealth, and the growth of fuel cells relies on it.

The second scenario – *Prism* – questions the monochromatic world of global integration and explores, instead, the persisting power of culture and history—the connections that matter—and the pursuit of multiple modernities as they emerge in a new regionalism. In these diverse environments, the heart of business is the ability to gain access and trust. Oil remains the dominant global fuel for another two decades, supporting a long oil game and allowing successful energy companies to build a platform for transition to a post-oil world.

*Source*: http://www.shell.com/static/media-en/downloads/peopleandconnections.pdf

7.20 At its most elaborate, scenario planning will be a lengthy process involving a dedicated strategy department and contributions from high level executives, internal and external technical experts, and industry leaders, so as to bring together as wide a range of perspectives as possible.

## Due diligence

7.21 **Due diligence** is the term used to describe the various processes that purchasers go through when considering buying something. It could be considered as a method of managing the risks that businesses face when acquiring other businesses. This is not an everyday occurrence and is largely a board decision.

## Chapter roundup

- **Operational risk** arises from the fact that businesses carry out operations: it is possibly best regarded as all risks faced by a business that are not financial risks. The main forms are process risk, people risk, systems risk, event risk and business risk.
- **Managing** operational risk is largely a matter of attempting to reduce it through sound business management practices.
- A **risk register** is a list of all the risks that have been identified together with standard information for each one such as category, priority, ownership, and response. Typically this would be in the form of a database.
- An **action plan** sets out what action or actions are necessary to reduce risk. Some actions may be ongoing controls, others will only be triggered in certain circumstances. It will specify the action owner, the action to be taken, cost and resource implications, timescales and reporting requirements.
- A **process** is a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer. **Process risk** is the risk that an organisation's processes may be **ineffective** (fail to achieve their objectives) or **inefficient** (achieve their objectives but at excessive cost).
    - **Ineffectiveness** is managed by means of **internal controls.**
    - **Inefficiency** may be tackled in a variety of ways: **business process re-engineering** involves rethinking and redesigning processes; **quality** initiatives may be evangelical exercises (TQM: 'get it right first time!') or founded on customer-focused and well-documented procedures (ISO 9001).
- **People risk** is the risk arising from staff constraints (for example insufficient staff, or inability to pay good enough wages to attract and retain the right quality of staff), incompetence, dishonesty, or a corporate culture that does not cultivate risk awareness, or encourages profits without regard to the methods used to make them.
- People risk is managed by **recruiting** the right people (and retaining them), and by ensuring that they **do the right things**. Selection procedures may involve **tests** and obtaining **third party evidence**. The recruitment and selection process itself is a risk and organisations need to consider compliance with laws about **discrimination**.
    - The employment **contract** may be used to minimise risk but if either party needs to resort to it the relationship has probably broken down already
    - **Bureaucratic** methods of people management use rules, policies, hierarchies of authority, documentation, and so forth to standardise behaviour and assess performance
    - Modern trends encourage employee **empowerment** but that makes it even more incumbent upon the organisation to take steps to ensure that its employees are competent, know and accept that they will be held accountable for what they do, are keenly aware of risk, and take ownership of risks that apply to what they do.
    - Training is provided to ensure the organisation has the **skills it** needs. It may also be used as a form of **cultural indoctrination** and team building, to teach the company jargon and so on.
    - The strength of individuals' **motivation** to do something will depend on the extent to which they expect the results of their efforts, if successfully achieved, to contribute towards their personal needs or goals. These may include financial reward or promotion.
    - **Performance management** is a process for establishing shared understanding about what is to be achieved, and an approach to managing and developing people in a way which increases the probability that it will be achieved in the short and long term
- For all practical purposes in modern business, **'systems'** means **computerised** systems. **Systems risks** include risks of physical damage, risks to data integrity and systems integrity, risks of fraud, and network risks such as viruses and hacking.

## Chapter roundup (continued)

- **Systems risks** can be managed by: controlling **people** via careful recruitment, job rotation and so on; controlling physical **access** via locks, entry systems, alarms and the like, and logical access via user names, passwords and logs; controlling **data integrity** using input controls such as range checks and check digits; **backup** controls; protection against **viruses** using anti-virus software and firewalls; encryption to ensure the security of data during transmission; controls over **software piracy**; and controls to prevent **fraud**.
- **Event risk** is the risk of loss due to single events that are unlikely but may have serious consequences. Natural or man-made disasters are the most obvious examples. Some events can be managed by means such as proper fire safety arrangements, good maintenance, uninterruptible power supplies and physical access controls.
- **Contingency plans** or disaster recovery plans typically include definition of responsibilities, priorities, backup and standby arrangements, communication with staff, public relations, and risk assessment.
- **Business risk** is the risk of loss due to changes in the competitive environment or to trends that damage the operating economics of a business.
    - **Legal risk** includes the risk of unexpected losses due to litigation, and also arises through the possibility of unfavourable legal decisions and the chance of changes in the law or in regulations. Strong legal departments and/or compliance departments may be needed, plus procedures to ensure that these departments are consulted when necessary. Lobbying the government to ensure that the organisation's views are known may be an effective way of influencing policy.
    - **Reputational** risk is the risk to the reputation of an organisation, for example to its brand names. This is typically managed by public relations.
- **Business risk** in general may be managed by **environmental scanning** using techniques such as PEST analysis: Political (and legal), Economic, Social (and cultural) and Technological factors. Information may be obtained from a wide variety of published sources or may be specially commissioned from market researchers.
- **Scenario planning** is an attempt to build plausible views of a number of **different possible futures**, often in the form of a story. This enables decision-makers to base their decisions on a variety of assumptions rather than a single set of assumptions. It may be a lengthy process involving a dedicated strategy department and contributions from high level executives, internal and external technical experts, and industry leaders, so as to bring together as wide a range of perspectives as possible.

## Quick quiz

1 What is the difference between process risk and systems risk?

2 Design a simple risk register, and a template for an action plan

3 What are the characteristics of a re-engineered process?

4 What is the meaning of the word 'product' in the context of the ISO 9000 standards and what controls should operate over product and service provision?

5 What are the implied duties of an employee under and employment contract?

6 Motivation is much the same thing as job satisfaction? True or False?

7 Explain the aim of computer input controls and give some examples.

8 What are the limitations of standby facilities?

9 Public relations is just spin-doctoring. True or false?

10 Describe the process of scenario planning.

## Answers to quick quiz

1 Arguably systems risk is one part of process risk, but for most businesses it means the risks to IT systems, and these are so great that they merit a category to themselves.

2 See the illustrations in Section 2 of this chapter.

3 Often several jobs are combined into one; workers make decisions; the steps in the process are performed in a natural order; the same process has different versions depending on the market, or the inputs etc.; work is performed where it makes most sense; checks and controls are reduced; reconciliation is minimised; a case manager provides a single point of contact; the advantages of centralised and decentralised operations are combined.

4 Product' in the ISO 9000 context means services, software, hardware or processed materials. Controls suggested are that: information that describes the product should be available; work instructions should set out how the product is made; any equipment used should be suitable for the job; monitoring and measuring devices should be available and properly used; authorisation to release the product for dispatch; controls over product delivery and post-delivery activities.

5 Reasonable competence to do the job; obedience to the employer's instructions unless they require him or her to do an unlawful act or to expose themselves to personal danger (not inherent in the work); duty to account for all money and property received during the course of his employment; reasonable care and skill in the performance of work; personal service - the employee may not delegate their duties without the employer's express or implied consent.

6 False. A person may derive no satisfaction from a job whatever and yet be highly motivated to do it well. It is more accurate to say that the strength of individuals' motivation to do something will depend on the extent to which they expect the results of their efforts, if successfully achieved, to contribute towards their **personal** needs or goals, which may have nothing to do with the job or the employer.

7 Input controls should ensure the accuracy, completeness and validity of input. Data verification means ensuring data entered matches the source (for example by reading back information to a customer over the telephone). Data validation means ensuring that data entered is not incomplete or unreasonable, using checks such as check digits, control totals, hash totals, range checks and limit checks.

8 In some cases it may be prohibitively expensive to have duplicate facilities such as extra factories that just stand idle on the off-chance that a major disaster will occur. For large companies it may be possible to transfer production to other active facilities, in other countries, say, but this will inevitably put a strain on the other facilities. More may be possible with administrative operations which are usually less specialised in terms of resources, or at least easier to duplicate on an *ad hoc* basis. However, arrangements have to be specified in advance, as there might be other demands on a standby facility's resources in the event of a widespread disaster.

9 Hopefully false. The ideal is that the public relations function serves as a mediator between the organisation and its publics with the aim of facilitating mutual understanding between the two. The communication is therefore a dialogue, not a monologue. If persuasion occurs it is as likely to persuade the organisation's management to change its attitude as it is to persuade the publics to change theirs. In an ideal situation, both management and publics will change their attitudes or behaviour.

10 Identify driving forces (PEST factors); identify predetermined factors (what is inevitable about the future); identify critical uncertainties; develop scenario plots – a series of plausible alternative futures; assess the implications of different scenarios for the organisation; identify and monitor indicators to enable continual reassessment and adaptation.

## Answers to activities

### Answer 4.1

There is no formal answer to this activity.

### Answer 4.2

This is to help you learn a basic format and contents for **exam question** purposes, so do have a go: the 'answer' doesn't really matter. Regarding the use of menus and drop down lists see the second illustration below.

### Answer 4.3

There is no formal answer to this activity.

### Answer 4.4

The Canadian office won't thank you if you do, because A4 (an ISO standard) is 210cm × 297cm whereas Canadians (and the US and some South American countries ) use 'Letter' as their standard paper size and that is just under 216cm × 280cm (exactly 8½ by 11 inches).

Because you took the risk of not bothering to take a few seconds to read the company specifications, or perhaps because the company couldn't spare the minute or so of time that it would have taken to record its different requirements, the Ottawa office will now have to waste time resetting all its printers and it will have to buy lots of new filing cabinets (and so will anyone in Canada that it sends its documents to)!

Excessive documentation may well be 'over the top' in some circumstances, but it clearly would have helped you, even in this example of a fairly mundane purchase.

### Answer 4.5

When procedures are very complex and require different inputs from many different people it can be very difficult for individuals to see the reason for doing things in a certain order or for maintaining certain records.

The number allocated may be used for a number of purposes (other than making it easier for difficult callers to phone up again and be more difficult!). It may be part of a system that measures length of time taken on different types of calls, and if certain types of calls become more frequent the organisation may need to allocate more resources to deal with them. By not recording this call the individual may inadvertently be helping to deprive his department of resources that it will need in the future.

When members of staff question the value of doing some part of their job, therefore, it is never acceptable to say 'We do it because that's what it says in the manual'. The explanation needs to be given in terms of how that task helps with other tasks. (If it doesn't, the procedure should be changed!)

### Answer 4.6

Here are some suggestions.

(a) It implies a loss of control: taken to extremes, this could border on anarchy. Discretion is being given to individuals generally unaccustomed to taking business decisions: there is the risk of poor decision making and a lack of awareness of the bigger picture.

(b) Centralised control offers advantages of whole-organisation perspective and consistency of performance between sub-units. Decentralisation of authority may lead to fragmentation, disintegration and inconsistency, as sub-units focus on their own objectives.

(c) If people feel they are being asked to take on more responsibility, they may not feel that job satisfaction is in itself a sufficient reward. The organisation may be subject to widespread pay claims.

(d) You may end up with too many chiefs and not enough Indians: someone has to perform low-skill, low-discretion jobs in the organisation. Emphasis on individual satisfaction and empowerment risks losing sight of organisational objectives.

## Answer 4.7

Here are some ideas, but you may have thought of others.

Attempts were made to **reduce** the risks: the last-minute talks, the extra buses, and the free river services.

However, the management have not given in to the Union's demands: this implies **acceptance** of the risks on the grounds that the cost of giving in is greater than the cost (to the company) of this strike and possible future strikes. Given the knock-on effect on London businesses the company has also accepted the damage that the strike will do to its reputation and to staff morale.

The situation contains **opportunities** for Transport for London: It is a chance to show off alternative services (buses and the river service) and it is important that management does all in its power to ensure that these services perform exceptionally well on the strike day. Some customers may decide that they prefer the alternatives and switch permanently.

## Answer 4.8

This is a matter that is fairly close to the heart of most employees whose companies allow them the privilege of email for personal as well as business use. Here are some suggestions for managing the risks.

(a) **Limits** should be imposed on the personal use of e-mail. A blanket prohibition may not work if employees can use webmail services instead, and may damage morale. A possible solution would be to provide a secondary personal e-mail address, usable from desk computers, but with limitations such as a prohibition on attachments.

(b) The policy should prohibit the sending of **defamatory**, abusive, sexist or racist **messages**, or downloading offensive material.

(c) E-mails to external customers should give the **company's name, address, telephone number** and **fax number** and full name of the person sending the e-mail. They should include a disclaimer.

(d) The sending of **confidential information** to external sources should be **prohibited** as far as possible. If confidential information has to be sent, it should be encrypted or password-protected.

(e) Ideally **external e-mails** should contain **matters of fact** only.

(f) Employees should be advised that e-mails may have to be **disclosed** in court, and hence they should not delete sensitive e-mails from the system, and should keep hard copies of sensitive e-mails. If there is a legal dispute, employees should not discuss it using e-mail.

(g) Security software should be used to **analyse attachments** for viruses and e-mails themselves for sensitive words or abusive language. Electronic limits can also be placed on the types of attachment specific users can send out.

## Answer 4.9

**Political and legal factors.** On the surface, classical music appears unaffected by political factors in comparison with, say, the armaments industry. However, there are relevant political and legal factors in the environment, and these include the following.

(i) International copyright law. Pirating is rife in certain countries, and copyright law has been covered in the GATT agreement. However, Paxos' markets in Europe and North America are fairly stable.

(ii) Enforceability of contracts. Paxos, presumably, has had adequate legal advice in drawing up its contracts. However, its more successful young artists may try to change them.

(iii) Indirectly, Paxos is affected by government policy towards the arts: are its chosen artists already in receipt of government subsidy?

**Economic factors** relate to the growth in the economy, the rate of inflation and so on. Paxos is able to produce budget price CDs because of its rigorous approach to costs, and its willingness to employ artists from eastern Europe.

In its main markets, CDs are very much a discretionary purchase, hence very vulnerable to a decline in consumer confidence. Paxos is also vulnerable to changes in costs. After all, as eastern Europe eventually catches up with the west, Paxos's costs will rise also as living standards reach western levels. However, this is unlikely to be a problem in the short term.

**Social and cultural factors**. Classical music is hardly a fad, and one might assume that with increasing prosperity, demand for CDs and recorded music generally is likely to increase. The success in the UK of a commercial radio station devoted to classical music (Classic FM) as well as the BBC's continued support for classical music (via Radio 3) suggest that classical music can reach out to a larger public. Much might depend in future, however, on the quality of music education, however, so that people keep in touch with this vibrant tradition. Recorded music of course competes with other leisure activities, but it is hard to imagine a world without it.

A slight worry might be that people assume that budget CDs are necessarily of a poorer quality. However, the quality of the recordings, as well as reviews on music programmes and specialist magazines should establish Paxos's reputation. Another concern might be the growth of a star system amongst classical artists, so that less well-marketed performers get less of a look in.

**Technological factors**. In recorded music, and in other things, the biggest technological development in recent years has been the distribution of music via the Internet. Paxos will need to enter into agreements with the leading providers of such services such as Apple iTunes, monitor the net in search of illegal copies and take appropriate legal action.

# Chapter 5 Financial risk and financial instruments

**Chapter topic list**


1 Financial risk

2 Credit risk

3 Market risk

4 Financial instruments and derivatives

5 The uses of derivatives


**Learning objective**

On completion of this chapter you will be able to:

- identify and discuss the main forms of both financial risk and describe the techniques that may be used to manage exposure to these types of risk

The detailed syllabus areas covered are:

*Managing financial risk*

- the nature of financial risk
- the main forms of financial risk
- the main techniques to manage financial risk

# 1 FINANCIAL RISK

## The nature of financial risk

**KEY TERM**

**Financial risk** arises from the risk to profits or wealth from uncertainties about the financial situation in the future.

1.1 As with operational risk there are numerous possible sub-categories but the most commonly identified are credit risk and market risk.

(a) **Credit risk** is 'the economic loss suffered due to the default of a borrower or counterparty' (e.g. a customer or supplier).

(b) **Market risk** is 'the exposure to potential loss that would result from changes in market prices or rates'. The relevant prices or rates might include market equity, commodity prices, interest rates and foreign exchange rates.

1.2 Financial risk is managed by using measures to control it such as cash flow management (a Subject Area 3 topic), the use of financial instruments, such as forward contracts, options and futures (see below and Part B) and by financing the company with the optimal level of gearing (see Part C).

1.3 In terms of the organisation the various aspects of financial risk may be the responsibility of the accounts department and credit controllers, overseen by the Chief Financial Officer, but the more complicated it gets and the larger the sums involved the more specialist a subject it is, and larger companies will usually have a dedicated Treasury department

# 2 CREDIT RISK

**KEY TERM**

**Credit risk** is 'the economic loss suffered due to the default of a borrower or counterparty'. (Lam)

2.1 Credit losses clearly affect financial institutions such as banks and mortgage lenders, but in all businesses they may arise from:

(a) Bad debts, when a debt cannot be collected from a debtor

(b) When payments from debtors are late, the interest cost (or 'cost of carry') of having to fund the debtors (ie invest in working capital) for a longer time than intended

(c) The administrative costs of chasing late payers

Debtor management is covered in Subject Area 3, Financial Strategy.

**Activity 5.1**

Refer to your study material for Subject Area 3, Financial Strategy and remind yourself of the issues by working through the exercises on management of debtors and creditors. In the BPP Interactive Text these are in Chapters 13 and 14.

2.2 Credit risk also affects a company that wants to **receive credit**, either from a supplier (trade credit), from a bank, or from investors (by issuing bonds). A company's ability to obtain finance in this way depends on the willingness of other organisations and individuals to provide credit, and what terms they impose, and that will depend on an assessment of the company's credit status.

## Credit analysis and credit assessments

2.3 Organisations that give credit to individuals (banks, credit card companies, and so on) have systems for assessing the credit risk of the individual, based on data such as the individual's domestic and family circumstances, type of job, annual salary, existence of other debts, and so on. You may well have filled in several such credit assessment forms yourself.

2.4 On the basis of the information received, the credit provider decides how much credit can be offered to the individual without incurring excessive credit risk, and allowing the individual to build up debts that he or she could have trouble in repaying.

2.5 Credit assessments are also carried out by banks on business customers applying for a loan or overdraft facility. The nature and scale of the credit checks will depend on the size of the business and the amount of money it wants to borrow. **An important element of the credit assessment will be a financial analysis of the business**. As a result of the assessment by the credit analysts of the bank, a decision will be made about:

(a) Whether or not to lend
(b) How much to lend
(c) On what terms (eg duration of loan, interest rate)

2.6 Credit analysis is an assessment of credit risk. A lender cannot avoid credit risk, just as a company that allows credit to its customers cannot avoid credit risk either. However, credit risk should be managed and controlled. Management calls for a judgement about the probability of non-payment (or late payment), and, in the case of bank lending, a decision about what interest rate should be charged to compensate for the risk. An organisation should not expose itself to such a large credit risk that its own financial position becomes uncertain.

## Credit ratings for bonds

2.7 In the international bond markets, a formal risk assessment is carried out on each planned new bond issue. The assessment is paid for by the organisation issuing the bonds, but is carried out by an independent credit rating agency, such as Moody's or Standard & Poor's. Depending on the credit rating given to the bond issue, investors can decide whether or not to subscribe for bonds in the new issue, and if so, what interest yield they would require as compensation for the credit risk. With bonds, the credit risk for the investor is that the borrower will fail to make scheduled interest payments, or might even go into liquidation before redeeming the bonds.

2.8 The credit rating of a bond is monitored throughout the term of the bond issue, and might be adjusted up or down by the credit rating agency. When a credit rating is downgraded, investors will demand a higher yield from the bond to compensate them for the higher credit risk. The bonds will therefore fall in market value.

## What are the credit ratings?

2.9 The credit ratings of each agency differ. Each agency has its own rating scale for short-term debt instruments and for long-term debt (notes and bonds). Each rating scale has a dividing point, and a credit rating above this point is known as an 'investment grade' rating, whereas a lower credit rating is referred to as a 'speculative grade' rating or a 'junk bond' rating.

### Case example

Although they are not examinable, you might be interested to see the main credit ratings for long-term debt that are used by Standard & Poor's and Moody's. These are the most commonly-reported.

(a) Standard & Poor's ratings might be modified by a plus or minus sign. Plus indicates a higher grading and minus a lower grading. For example, a rating of A- is lower than a rating of A.

(b) Moody's ratings have a suffix of 1, 2 or 3, with 1 being better than 2, which is better than 3. For example, Moody's ratings A1, A2 and A3 are equivalent to S & P's ratings of A+, A and A-.

**Standard & Poor's Long-Term Debt Ratings**

| *Rating* | *Characteristics* |
|---|---|
| *Investment grade* | |
| AAA | Highest rating. The bond issuer has an extremely strong capacity to make interest payments and repayment of principal. |
| AA | The bond issuer has a strong capacity to make interest payments and repayment of principal. |
| A | The bond issuer also has a strong capacity to make interest payments and repayment of principal, but has some susceptibility to adverse changes in business conditions. |
| BBB | The issuer has adequate capacity to make interest payments and repayment of principal, but this capacity could be reduced by adverse changes in business conditions. Not as secure as other investment grade ratings. |
| *Speculative grade* | |
| BB | Major uncertainties and exposure to adverse changes in conditions could result in the issuer being unable to make timely payments of interest and principal. |
| B | The issuer is currently able to meet interest payments and principal repayments, but there is a greater vulnerability to default than with a BB rating. |
| CCC | Vulnerability to default has been identified, and the issuer is depending on favourable conditions to avoid default. |

**Moody's Long-Term Debt Ratings**

| *Rating* | *Characteristics* |
|---|---|
| *Investment grades* | |
| Aaa | Best quality bonds. The debt principal is secure. Interest payments are very well protected by profits. |
| Aa | High quality bonds, but the quality is not quite as high as Aaa bonds. |
| A | The bonds possess many favourable attributes and are medium-to-upper grade. Adequate security for principal and interest. |
| Baa | Medium-grade bonds, being neither highly-protected nor poorly-secured. |
| *Speculative grades* | |
| Ba | Bonds with speculative characteristics as investments. Only a moderate protection for principal and interest payments. |
| B | Bonds lacking all the attributes of a desirable investment. Over time, interest payments and repayment of principal at maturity are not well assured. |
| Caa | Poor credit, with some threat to the security of principal or interest payments. Some such bonds might be in default already. |

### Using credit ratings

2.10 Credit ratings give investors a guide as to the likelihood of interest payments being made on time and in full, and of the debt principal being repaid at maturity. The credit rating is therefore a measure of risk, and affects the interest rate that a bond issuer must offer on the bonds, or even whether it will be able to issue the bonds at all. Higher yields must be offered on bonds with a higher credit risk.

2.11 Investors can use credit ratings and:

(a) Refuse to buy speculative grade bonds, or bonds below a particular investment grade
(b) Demand a higher yield/return from bonds with a lower credit rating
(c) Sell bonds they own if their credit rating is downgraded below a certain level

2.12 Credit ratings are now essential in all major debt markets, with the exception of the domestic government bond markets.

## 3 MARKET RISK

3.1 **Market risk** is risk arising from changes in **financial market** conditions. Exposure depends on the way a company finances its operations and its consequent susceptibility to adverse changes in the financial market such as changes in interest rates.

**KEY TERM**

**Market risk** is 'the exposure to potential loss that would result from changes in market prices or rates'. (Lam) The relevant prices or rates might include market equity, commodity prices, interest rates and foreign exchange rates.

3.2 As you'll find in Part B, market risk is also an alternative term for **systematic risk,** in other words risk in the 'system' that cannot be avoided by diversifying investments because it affects every investment.

### Interest rate risk

**KEY TERM**

**Interest rate risk** describes the possible variations in the business's interest cash flows that arise from unexpected changes in interest rates.

3.3 When a company borrows or lends funds, it is exposed to the risk of changes in the market rate of interest. Changes in the interest rate will result in the company either paying or receiving more or less interest than it might otherwise have done.

3.4 Suppose for example that a company borrows £10 million for one year at a fixed rate of interest of 7%, when it could have obtained an overdraft facility for £10 million for a year at 7.5%. If the interest rate were to fall, to the point where the company would have been paying overdraft interest of just, say, 6%, it will be paying interest on its fixed rate loan at 1% per annum more than it need have done. The annual cost of 1% interest on £10 million is £100,000.

3.5 Financial assets that provide a fixed rate of interest to their holders change in value with changes in market interest rates. For example, suppose that a bond pays 6% interest and is currently valued at par (100.00). The par value would indicate that investors currently expect to earn a yield of 6% on bonds of this type. However, if market interest rates on similar bonds went up, say to 8%, bond investors would expect to receive a yield of 8% on their investment. A bond paying out only 6% will no longer be worth 100.00, and the market price of the bond will fall (to £75, so that its yield - 6/75 - is 8%).

3.6 Interest rate risk also applies indirectly to shares. Shareholders receive dividends, not interest. However, when interest rates in the market go up or down, there is often a tendency for the expected dividend yields on shares to go up or down in the same direction. When interest rates rise, there is consequently a tendency for share prices, as well as bond prices, to fall. Similarly, when interest rates fall, bond prices will rise, and there might also be a rise in share prices as well.

3.7 Interest rate risk is explained more fully in Chapter 7.

### Foreign exchange risk

3.8 Foreign exchange risk, also called **currency risk**, is the risk to profits or wealth arising from changes in a foreign exchange rate. Suppose for example that a UK company owns a subsidiary company in the US, with net assets of $3,000,000. If the current exchange rate is £1 = $1.20, the US assets will be worth £2,500,000 when converted into the parent company's domestic currency. However, if the exchange rate were to change, and the dollar weakened so that £1 = $1.50, the US assets would slump in value to just £2,000,000. The loss of £500,000 in the sterling value of the assets would be entirely attributable to an adverse movement in the sterling/dollar exchange rate.

3.9 Foreign exchange risk is also explained more fully in Part B.

## 4 FINANCIAL INSTRUMENTS AND DERIVATIVES

**KEY TERM**

A **financial instrument** is a contract that gives rise to a financial asset for one party to the contract and a financial liability for the other party (the *counterparty*).

4.1 The concept of the financial instrument has long been in use by companies to assist them in the spreading and management of risk; the use of individual and sometimes 'exotic' forms of instruments being dependent on their risk appetite. The term 'financial instrument' is used in a number of ways and sometimes very imprecisely. The term covers a range of entities and contracts, which can be spilt into two main types: Primary and Secondary.

4.2 **Primary financial instruments** are familiar things such as equity shares, corporate bonds, loans, cash deposits, and debtors. In essence these instruments are defined as primary by the fact that they have an associated, measurable value.

4.3 **Secondary financial instruments** include a similarly wide and increasing number of entities, eg futures, options, interest and currency swaps, forward contracts, interest rate caps, collars and floors, forward interest rate agreements, commitments to purchase primary

instruments, and letters of credit to name but some. These secondary instruments are often referred to as **derivatives.**

## Derivatives

4.4 In Part B the mechanics and specific applications of a number of derivatives are explored, but the topic is often perceived as a difficult one by students so before delving into the detail it may be helpful to give a gentle introduction in this section and the next.

**KEY TERM**

**Derivatives** are defined as being financial instruments that *derive* their value from the price or actual value of an underlying asset or item. These underlying items may be primary instruments such as equities or bonds, but may also be commodities, interest or exchange rates or published indices, such as the FTSE 100 or CAC 40.

Some of these are traded on organised exchanges and are heavily regulated; others are not traded and are known as **over the counter** or **OTC** derivatives.

4.5 Sometimes the term derivative is further qualified, derivatives being those instruments whose value is derived from a physical asset, eg gold or oil. Financial derivatives on the other hand are those instruments whose value is derived from the value of an underlying primary financial instrument; eg a share option derives its value from the value of the underlying share.

4.6 For the sake of completeness, it is useful to give a clear definition of financial assets and financial liabilities, as these will help in understanding the basis for some of the secondary financial instruments discussed below.

(a) **A financial asset** can be cash, the right to receive cash or some other financial asset from the counterparty to a contract, the right to trade or exchange financial instruments with a counterparty under potentially advantageous conditions, or an equity instrument (including shares, warrants and options to subscribe for equity shares) in the enterprise of a counterparty.

(b) A **financial liability** may be defined as the legal obligation to deliver cash or some other financial asset to a counterparty, or to trade or exchange financial instruments with a counterparty under potentially disadvantageous conditions.

**Activity 5.2**

Have a look at the financial pages of a quality newspaper (ideally look at the *Financial Times*). Try listing as many **secondary** financial instruments as you can.

## Futures

**KEY TERM**

**Futures**. Simply stated, a **Future** is a contract, which may be traded or exchanged, to buy or sell an asset in the future at a set price for delivery and payment on a set date.

4.7 It should be emphasised that a future is a binding contract and a firm and binding promise by one party to buy and another party to sell a given, underlying asset at a set price at a set date. Futures were some of the first derivatives, the asset underlying the instrument normally being a commodity such as gold, coffee, oil or sugar. As the markets became more sophisticated, financial futures were developed and traded, with the underlying financial assets typically being bonds, shares and currencies.

4.8 Futures can be highly volatile instruments and are traded on organised exchanges, which undertake to standardise the framework of trade in terms of quantities and delivery dates and, through associated 'clearing houses', to police the fulfilment of the contracts. The clearing houses require participants or traders to 'trade on margin' or make a deposit with the exchange of a set percentage of all their outstanding contracts. This is a way for the exchange to limit its own exposure to the risk of default and poor liquidity, although responsibility for fulfilment of the contract lies with the parties to it and not with the exchange. Unlike many derivatives, the market in futures is heavily regulated by governmental bodies.

## Forwards

**KEY TERM**

A **forward contract,** like a future, is a binding promise to purchase or sell a set amount or value of an underlying asset at a set future time. Unlike a future, forwards are not traded; they are bespoke contracts between two parties.

4.9 Forwards can be based on commodities, currencies or even interest rates, this latter being known as a **Forward Rate Agreement** or **FRA**. Forwards are popular with companies who wish to minimise risk and increase the certainty associated with their cost profiles. For example, suppose a UK company knows in January that it will be buying and paying for Spanish oranges at a cost of €400,000 at the end of June. It could do nothing and buy Euros at the prevailing spot rate on the day of settlement, or, if it is unwilling to take the risk that the exchange rate may move against it, buy a forward contract at a set exchange rate. The rate may go either in the company's favour or against it, but by taking the forward contract, the company has managed its risk and avoided any surprises, good or bad.

## Swaps

**KEY TERM**

A **Swap** is an agreement between two counterparties to exchange the obligation to pay streams of cash over a given period.

4.10 Swaps became popular in the 1980s and have evolved since then. They tend to be of one of two types: **interest rate swaps** or **currency swaps.** Interest rate swaps are entered into by companies who wish to either a) manage their risk/exposure to fluctuations in interest rates over a long term or b) wish to borrow at a better rate than is being currently offered to them by a primary lender. Currency swaps are used where the counterparties wish to reduce exposure to movements in the exchange rate of a currency they require. The swaps market is not heavily regulated and does not operate via an exchange. Like forwards, they are bespoke, custom designed derivatives, with no set parameters. As such, the counterparties

can enter into agreements over a long time horizon and they also enjoy a greater degree of flexibility and privacy in their dealings.

### Options

**KEY TERM**

**Options** are the right but not the obligation to purchase (a call option) or sell (a put option) an underlying asset at a set price but at a future date.

4.11 There is a fundamental difference in the development of options between the US and the European markets. An American option differs from a European option by the exercise possibility. An American option can be exercised at any time up to the maturity date, unlike the European option, which can only be exercised at the maturity date. The seller or writer of the option receives a sum of money, the **option premium**, in consideration for granting the option purchaser the rights associated with the option. Options are a widely used tool in the management of financial risk.

4.12 Once again, these derivatives have evolved into some rather exotic beasts, eg futures options, which take a futures contract as the underlying asset, the value of which is of course itself derived from an underlying financial asset.

## 5 THE USES OF DERIVATIVES

5.1 Over the last thirty years the growth in form and use of derivative instruments has been immense. As a result the characteristics of the different types of derivatives are often very specific and make them suited to different purposes.

5.2 There are many users of derivatives who can be classified in terms of the roles that they perform, eg company treasurers, traders, investment managers etc. Their uses can also be defined in terms of four basic functional groups that relate to the reasons that the derivative instrument is employed:

- risk management
- hedging
- speculation
- arbitrage

### Risk management and hedging

**KEY TERM**

A **hedge** is a transaction to reduce or eliminate an exposure of risk.

5.3 Hedging, sometimes called exposure management, is a form of risk management used by companies to offset a variety of market risks. In essence, the company is trying to reduce the volatility, or increase the predictability of its profits and/or cash flows. To achieve this a company can use derivatives to offset adverse changes in underlying assets.

5.4 For example, consider a French company planning on acquiring a large piece of machinery from a foreign manufacturer, priced at $1,000,000 US. If the exchange rate rises they will

incur significant extra costs. The company may choose to hedge in order to manage some of this risk and, depending on their appetite for risk, may choose to use a forward contract or futures.

5.5 The basic idea is that a company uses financial instruments to transfer the risk they are trying to manage, via the market, to those with a higher appetite for risk. In other words, a hedge is an insurance against some or all of the risk associated with a particular business activity. When using a hedge, the instruments chosen often have an inverse relationship to the movements of the hedged transaction.

5.6 For example, consider a fund that has invested in stocks, and the fund manager expects the market to go down in the near-term. If the market does indeed fall, the net asset value (NAV) of the fund will also decline. The fund manager can minimise the loss by 'hedging' his portfolio in anticipation of the fall. Since he holds stocks, he will invest in derivatives in such a way that the contracts benefit from the fall in index value. The fund manager may choose to hedge all or only some of the risk. This depends on his hedging objectives.

## Hedging objectives

5.7 These vary widely between businesses and between transactions depending on the company's risk appetite. The main problem when deciding upon a hedging policy is to strike a balance between uncertainty and the opportunity cost. Setting hedging policy is a strategic decision; the success or failure of which can have profound impacts on a company.

## Does hedging matter?

5.8 Given the extensive use of hedging in general and derivatives in pursuit of exposure management in particular, it would seem that Corporate Treasurers, Financial Directors and shareholders generally think it does. Notwithstanding this, there are a number of authors who argue that it is largely irrelevant. Provided the expected level of profit remains unchanged the volatility is irrelevant as investors should take action to diversify their portfolio themselves and will thus be unwilling to pay a premium for the hedging activities of companies. The argument goes that investors will not be interested in individual fluctuations but in the performance of a diversified portfolio as a whole, which, if properly managed, will balance out the ups and downs of individual investments. These arguments would, therefore, seem to suggest that hedging would only be of interest to individual companies, and their managers whose performance assessment may be based on short-term measures.

5.9 For hedging to be justified in financial terms, it has to have a positive effect on the value of the company; ie it must increase net cash flow or reduce the company's cost of capital. Investors, irrespective of the actions of individual companies, can technically manage their main financial risks by using a diversified portfolio. The argument, however, ignores other, non financial, risks which may increase as a result of volatile earnings: reputational risk, increased incidence of liquidity shortages, higher contracting costs, etc, which may in themselves lead to an increase in the cost of capital.

## Speculation

5.10 Without risk there is no business. Speculators take a calculated risk on the movements in an underlying asset value and trade derivatives based on these in the expectation of making a profit. Derivative prices are volatile and thus the returns or losses on speculation can be great. Speculators choose to use derivatives for a number of reasons:

(a) They generally mirror the performance of the underlying asset from which their value is derived.

(b) They are more efficient to trade in: e.g. transaction costs associated with trading a derivative may be significantly lower than those incurred in trading the underlying asset.

(c) Speculators can sell derivatives before they buy them, if they anticipate a fall in value, from which they can still make a profit. This is known as ***shorting the market***.

(d) Derivatives markets are, generally speaking, more liquid than the markets associated with the underlying assets.

5.11 Speculators are often derided in the press; however, they do have a role to play in the development of efficient financial markets. Their activities can help to create liquidity in the markets, both for other speculators with different views, risk appetites or performance targets and also for other derivatives users.

## Arbitrage

**KEY TERM**

**Arbitrage** is the process of buying an instrument in one market and selling it either instantly or over a very short time horizon on another market exploiting differences in the price to make a profit.

5.12 Theoretically, the price of an instrument should be identical whichever market it is traded in. In reality, however, even with the development of multi-national and global trading this is not always the case. The technical definition of **arbitrage** is the trading of an instrument, which generates a risk free profit with no investment. This definition, however, assumes a perfect market with no transaction costs or other imperfections. This does not happen in reality but, as will be seen in Part B, arbitrage can be and is a major use of derivatives.

## Current issues with the use of financial instruments

5.13 As the global economy has developed, especially in the last 30 years, with increased internationalisation of trade, corporate organisations and capital markets, so the growth in the use and complexity of financial instruments, especially derivative instruments, has been manifest.

5.14 This explosion of popularity and sophistication has presented managers and investors with a double-edged sword.

(a) On the one hand, managers have access to a wider range of tools and techniques with which to manipulate and manage their risk profile and exposure.

(b) On the other hand, however, the use of derivative instruments potentially has a major impact on a business's financial performance and status.

5.15 A sound appreciation of the impact of using these instruments and the consequent risk exposure can be important in assessing a business's financial adaptability, cash generating ability and attractiveness for investors.

5.16 A business can quickly and dramatically **change its risk profile** through the use of financial instruments, a fact that would **not necessarily have been communicated to its investors and stakeholders**. Similarly the ongoing exposure levels may not have been apparent. As

well as using derivatives to manage risk, businesses may seek to use such instruments as speculative vehicles, increasing the benefits to the company if the value of the underlying asset moves in a favourable direction, but similarly multiplying the potential losses if the values move in the opposite direction.

5.17 **Accounting standards** have been issued to attempt to address some of the problems but these are highly controversial at the time of writing.

### Exam focus point

Fortunately the examiner has informed BPP that knowledge of specific standards is not required.

### Key learning points

- Financial risk can be divided into credit risk and market risk.
- **Credit risk** is 'the economic loss suffered due to the default of a borrower or counterparty'. A company takes on credit risk when it gives credit to customers (either trade credit or a loan or mortgage), and is itself a credit risk for organisations that lend to it or give it trade credit.
- Credit risk is assessed by **credit analysis**, which involves detailed financial analysis. The credit risk associated with bond issues is assessed by means of **credit ratings.**
- **Market risk** is risk arising from changes in **financial market** conditions. Exposure depends on the way a company finances its operations and its consequent susceptibility to adverse changes in the financial market. •Major categories of market risk are interest rate risk and foreign exchange risk.
- **Foreign exchange risk**, or **currency risk**, is the risk of higher or lower profits or losses than expected, as a result of uncertainty about future movements in an exchange rate between two currencies.
- **Interest rate risk** is the risk of higher or lower profits or losses than expected, as a result of uncertainty about future movements in an interest rate, or the general level of interest rates.
- Financial instruments are contracts that give rise to both a financial asset for one party to the contract and a financial liability or equity holding by the other party to the contract.
- **Primary** financial instruments are those that have an associated, measurable value such as equity shares, corporate bonds, loans, cash deposits, and debtors.
- Secondary financial instruments, or **derivatives** are financial instruments that derive their value from the price or actual value of an underlying asset or item. Examples include futures, forwards, swaps and options.
- There are three main **uses** for derivatives: risk management (hedging), speculation, and arbitrage.

## Quick quiz

1 Distinguish between credit risk and market risk

2 A credit rating agency changes the credit rating of a bond from AA to AA-. What is likely to happen to the market price of the bond?

3 A UK company regularly sells goods to customers in France, pricing the goods in sterling. How is the company exposed to foreign exchange risk?

4 An investor holds a quantity of 7% bonds. The market yield on similar bonds goes up from 5.75% to 6%. What will happen to the market price of the bonds?

5 When interest rates rise there is a tendency for expected dividend yields to *rise/fall* and for share prices to *rise/fall*. Delete as applicable.

6 Explain the difference between a primary and secondary financial instrument.

7 What is an OTC derivative?

8 What is the main difference between an American and a European option?

9 Why do companies hedge?

10 How would you define arbitrage?

## Answers to quick quiz

1 Credit risk is the economic loss suffered due to the default of a borrower or counterparty. Market risk is risk arising from changes in financial market conditions.

2 Credit risk is higher, so the market price of the bonds is likely to fall.

3 The company is exposed to changes in the exchange rate between sterling and the euro. If the euro falls in value against sterling, the purchase price of the company's goods will become more expensive to the French customers, who might therefore stop buying the goods and switch to a cheaper supplier, for example a supplier within the euro currency zone.

4 Bond investors now want a higher yield. The price of all fixed interest rate bonds will therefore fall.

5 When interest rates rise there is a tendency for expected dividend yields to rise and for share prices to fall.

6 A primary financial instrument is one which has an intrinsic, associated and measurable value in its own right. A secondary instrument derives its value from an underlying asset.

7 An OTC or Over the Counter derivative is one which is not generally traded on or regulated by an exchange and is normally bespoke, e.g. swaps and forwards.

8 American options are exercisable at any time up to the date of maturity, European options may only be exercised on the maturity date.

9 Companies hedge in order to offset a variety of risks; eg market risk, interest rate risk, currency risk etc. reducing the volatility, or increasing the predictability of its profits and/or cash flows.

10 Arbitrage is the process of buying an instrument in one market and selling it either instantly or over a very short time horizon on another market exploiting differences in the price to make a profit.

## Answer to activities

### Answer 5.1

There is no formal answer to this activity.

### Answer 5.2

A list of secondary financial instruments may include:

- Swaps
- Options
- Collars and Floors
- Caps and Ceilings
- Forwards
- Futures
- FRAs
- Letters of Credit
- Note issuance facilities
- Commitments to purchase primary instruments

# *Part B*

## *Management of financial risk*

# Chapter 6 Currency risk

## Chapter topic list

1 Risk and foreign exchange
2 Buying and selling currency
3 Managing transaction exposures
4 Forward exchange contracts
5 Quoting a forward rate: premiums and discounts
6 Implications of using forward contracts to hedge
7 Money market hedge
8 Hedging economic and translation exposure

## Learning objective

On completion of this chapter you will be able to:

- identify and discuss the main forms of both financial and operating risk and describe the techniques that may be used to manage exposure to these types of risk

The detailed syllabus areas covered are:

*Managing financial risk*

- the main forms of financial risk (foreign exchange risk)
- the main techniques to manage financial risk

# 1 RISK AND FOREIGN EXCHANGE

## KEY TERM

**Currency risk** is the sum of the possible variations in the home currency value of the business's foreign currency transactions due to unexpected changes in foreign exchange (forex) rates.

1.1 A company may become exposed to **foreign exchange risk** or **currency risk**:

(a) As an exporter of goods or services
(b) As an importer of goods or services
(c) Through having an overseas subsidiary company
(d) Through being the subsidiary of an overseas company
(e) By borrowing in a foreign currency or lending a foreign currency

1.2 Currency risk arises from changes in an exchange rate. The volatility of exchange rates can be very high. Perhaps the most notable example in recent years has been the exchange rate between the euro and the US dollar. When the euro was launched in 1999, the exchange rate was about 1 euro = 1.19 dollars. Just two years later, by the end of 2000, the exchange rate was below 1 euro = 0.90 dollars, a fall in value of about one quarter. During 2001-2 alone it fluctuated between a high of 0.96 and a low of 0.83 – a variation of ± 7% around average. Exchange rates can change by substantial amounts over time, but they might also be quite volatile during much shorter periods of time, such as over the course of a week, or even during the course of a single trading day. There are large and active currency markets in all the major freely-exchangeable currencies, and exchange rates in the market continually change in response to supply and demand.

1.3 There are several different categories of currency risk.

(a) **Transaction exposure**. A transaction exposure arises when a company buys goods on credit that it will pay for in a foreign currency, or sells goods on credit for which it will receive payment in a foreign currency. Unless the risk is 'hedged', probably by means of a forward contract, the exposure lasts from the time the trading transaction occurs until the time the foreign currency payment is made or received. A transaction exposure also arises when a company borrows in a foreign currency, because it takes on a commitment to make interest payments in that currency, and to repay the loan principal in that currency at maturity. Unless the exposure is hedged, the exposure lasts for the duration of the loan.

(b) **Translation exposure**. Translation exposure arises whenever there is a foreign subsidiary in a group of companies. When the consolidated financial accounts are prepared for the group, the assets, liabilities, and the profits of the subsidiary must be translated into the currency of the parent company. Changes over the year in the exchange rate between the currency of the subsidiary and the currency of the parent company affect the reported net asset values and profits of the subsidiary, and give rise to gains or losses on translation.

(c) **Economic exposure**. Economic exposure arises whenever a company is exposed to the effect of exchange rate movements on its international competitiveness. All companies that buy or sell abroad, and all companies with foreign competitors, have economic exposures to currency risk. For example, a UK company might use raw materials which are priced in US dollars, but export its products mainly within the EU. A

depreciation of sterling against the dollar or an appreciation of sterling against the Euro will erode the competitiveness of the company.

## 1.4 EXAMPLE: TRANSACTION EXPOSURE

A UK company buys goods from a supplier in Australia, at an agreed price of A$270,000. At the time the transaction was made, the exchange rate was £1 = A$3.00. Under the terms of sale, the UK company is required to pay for the goods one month after delivery in the UK. When the payment is eventually due, the UK company arranges with its bank to buy A$270,000 in order to make the payment. It finds that the exchange rate has changed, and is now £1 = A$2.70.

A transaction exposure has existed between the time the transaction price was agreed and the date of making the payment. In this example, the Australian dollar has strengthened in value against sterling during the period of the exposure. When the transaction was agreed, the UK company would have expected to pay £90,000 (270,000/3.00) for the goods, but the actual payment in sterling was £100,000 (270,000/2.70). The change in the exchange rate has been adverse, and the 'loss' to the company has been £10,000.

1.5 During the period of the transaction exposure, the exchange rate might have moved in favour of the UK company. If the Australian dollar had fallen in value against sterling, the actual cost to the UK company would have been less than the £90,000 originally expected. For example, if the exchange rate on the payment date had been £1 = $3.20, the cost to the UK company would have been just £84,375 (270,000/3.20).

## 1.6 EXAMPLE: ECONOMIC EXPOSURE

A UK company buys raw materials in the US, paying in US dollars. It uses the materials to produce goods that it sells in the UK and in countries of the euro zone. The materials cost per unit is US$5.40. The company's products sell for £10 in the UK and €15 in other European countries. The exchange rates are £1 = US$1.35 and £1 = €1.50.

At these exchange rates, the UK company is paying £4 per unit (5.40/1.35) for raw materials from the US and is receiving £10 per unit (15/1.50) for each item that it sells in Europe.

The company is exposed to changes in both the sterling/dollar exchange rate and the sterling/euro rate. Suppose for example that the sterling/dollar rate changes from £1 = $1.35 to £1 = $1.20. The dollar is now worth more in sterling, and the cost of material purchases, at $5.40 per unit, will now cost more in sterling. The UK company will now pay £4.50 per unit (5.40/1.20). The company's profits will fall. If it tries to recover the higher costs by raising prices, other rival producers in Europe might win much of the company's business by holding their prices steady.

Suppose that the euro fell in value against sterling, to £1 = €1.60. By selling its products in Europe at €15 per unit, the UK company would now receive only £9.375 (15/1.60). The company's profits would therefore fall. If it tried to raise its prices in euros, to €16, other rival producers in Europe would probably win much of the company's business by holding their prices steady.

1.7 Currency risk is a two-way risk. In the example above, the UK company would gain competitiveness at the expense of rivals if the US dollar weakened against sterling or the euro strengthened in value.

1.8 Companies can therefore gain or lose from changes in an exchange rate. The issue for risk management, however, is to what extent should currency exposures be tolerated. Is it

reasonable to accept the risk that profits earned from business trading operations could be reduced, or even eliminated entirely, by adverse exchange rate movements?

## 2 BUYING AND SELLING CURRENCY

2.1 Companies buy the currency they need to make payments. Small companies will arrange to purchase the currency through their bank. Similarly, companies receiving payments in foreign currency can arrange to sell the currency through their bank. Companies that make large and regular foreign currency payments or have large and regular receipts in currencies will deal directly with one or more of the major banks that are active in the foreign currency market.

2.2 Suppose that a UK company has to pay a foreign supplier US$10,000.

(a) The company will ask its bank to sell it $10,000. The bank is buying sterling in exchange for US dollars. The company is selling sterling and buying dollars.

(b) The bank will quote the price (exchange rate) at which it will buy sterling in exchange for the dollars. The company must accept this rate or go to another bank to find a better rate. If the bank's rate is, say $1.4102, the bank will charge the company the following amount for the currency.

$$\frac{\$10,000}{\$1.4102 \text{ to } £1} = £7,091.19$$

2.3 Similarly, suppose that a UK company is paid US$10,000 by a customer in the USA, and wants to convert the dollars into sterling. It will ask its bank to buy the dollars. The bank is selling sterling and buying the dollars, and the company is buying sterling and selling the dollars. Suppose the rate quoted by the bank is $1.4116. It will therefore buy the $10,000 in exchange for:

$$\frac{\$10,000}{\$1.4116 \text{ to } £1} = £7,084.16$$

### Base currency and variable currency

2.4 When an exchange rate is quoted, there is a **base currency** and a **variable currency**. The rate is quoted as a given amount of the variable currency for one unit of the base currency. When an exchange rate changes, it is the amount of the variable currency for each unit of the base currency that goes up or down.

2.5 For example, when an exchange rate is £1 = US$1.3985, we can say that the 'sterling/US dollar rate is 1.3985'. The base currency is named first, and the variable currency second. If the sterling/US dollar rate falls we mean that the US dollar (the variable currency) has **strengthened** in value against the base currency. When an exchange rate goes up, we mean that the variable currency has **weakened** in value against the base currency.

2.6 A bank quotes two rates, one at which it will buy the base currency in exchange for the variable currency, and one at which it will sell the base currency.

(a) The **bid rate** is the rate at which **the bank** will **buy the base** currency and sell the variable currency.

(b) The **offer rate** or **ask rate** is the rate at which **the bank** will **sell the base** currency and buy the variable currency.

2.7 When the bank buys the base currency, its customer is selling the base currency and buying the variable currency. Similarly, when the bank sells the base currency, the customer is buying the base and selling the variable currency. Unless you are familiar with exchange rates and currency dealing, trying to work out which of the two exchange rates to apply to a transaction, the bid price or offer price, can be confusing. Remember, however, that **the bank will apply the rate that is more favourable to itself**.

2.8 Banks make a profit from selling and buying currency from the difference or 'spread' between their bid rates and offer rates. Exchange rates in the financial pages of a newspaper usually report an exchange rate as the mid-point between the bid rate and offer rate as at the end of trading the previous day, together with the 'bid/offer spread'. For example, the exchange rate for sterling against the Swiss franc might be reported as:

(a) A mid-price of 2.5083

(b) With a bid offer spread of 072 – 094. In other words, the bid rate is 2.5072 and the offer rate 2.5094 (the spread being given in terms of 100ths of the variable currency)

## Spot rates

2.9 A currency spot rate is the exchange rate at which a bank will buy or sell currency now, for settlement in two working days' time. The spot rate is therefore the current exchange rate for 'immediate' delivery (ie for delivery in two days). All the rates so far mentioned in this chapter have been spot rates.

## Direct and indirect currency quotes

2.10 In the financial markets, a currency might be quoted as the base currency or as the variable currency.

(a) A **direct quote** is the amount of domestic currency which is equal to one foreign currency unit, so that the foreign currency unit is the base currency.

(b) An **indirect quote** is the amount of foreign currency which is equal to one domestic currency unit, so that the domestic currency is the base currency. In the UK indirect quotes are invariably used but, in most countries, direct quotes are more common.

### Activity 6.1

Use the exchange rates in this table to answer the questions that follow.

| | *Bid* | | *Offer* |
|---|---|---|---|
| Sterling/euro | 1.6439 | - | 1.6449 |
| Sterling/Swiss franc | 2.4876 | - | 2.4898 |
| Sterling/Hong Kong dollar | 10.9976 | - | 11.0002 |

(a) What would be the cost to a UK company of buying Hong Kong dollars to make a payment of HK$250,000 to a supplier?

(b) A UK company receives a payment of €70,000 from a customer and converts this into sterling. What is the sterling income?

(c) A UK company has to repay a loan of 2 million Swiss francs. What will this cost in sterling?

### Changes in spot rates and transaction exposure

2.11 Much international trade involves credit. An importer will take credit, often for several months and sometimes longer, and an exporter will grant credit. One consequence of taking and granting credit is that international traders defer the receipts and payments arising from their trade to a later date. They will know:

(a) What foreign currency they will receive or pay
(b) When the receipt or payment will occur
(c) How much of the currency will be received or paid

2.12 **Importers and exporters** alike will be concerned about the profit they can expect to make from trade.

(a) An exporter invoicing a foreign buyer in the buyer's currency will expect to exchange the foreign currency proceeds from the buyer into domestic currency and earn enough domestic currency to cover costs and make a profit.

(b) Similarly, a UK company might import goods from abroad and be invoiced in foreign currency. If the company re-sells the goods in the UK, it will produce a price list for UK customers, or agree prices in sterling with its customers, so as to earn enough domestic currency from selling the goods to pay the foreign supplier in foreign currency, and make a profit.

2.13 The risk to profit margins is in the **movement in exchange rates** during the period of the transaction exposure, as the following question illustrates.

#### Activity 6.2

Bulldog Ltd, a UK company, buys goods from New Zealand which cost NZ$100,000. The goods are re-sold in the UK for £32,000. At the time of the import purchase the sterling/New Zealand dollar exchange rate is 3.5650 - 3.5800.

*Required*

(a) What is the expected profit on the re-sale?

(b) What would the actual profit be if the spot rate at the time when the goods are paid for has moved to:

(i) 3.0800 - 3.0950
(ii) 4.0650 - 4.0800?

Ignore bank commission charges.

## 3 MANAGING TRANSACTION EXPOSURES

3.1 A company can reduce or eliminate its transaction exposures in various ways. Action to reduce or eliminate an exposure is known as **hedging** the risk or hedging the exposure. Methods of hedging transaction exposures include:

(a) Forward exchange contracts (these are explained later)
(b) Buy or sell in domestic currency
(c) Matching receipts and payments
(d) Leading and lagging
(e) In some instances, matching assets and liabilities in a currency
(f) Money market hedges (these are explained later)
(g) Currency options (Chapter 9)
(h) Currency futures (Chapter 8)

## Currency of invoice: buy or sell in domestic currency

3.2 One way of avoiding exchange risk is for:

(a) An exporter to invoice foreign customers in the exporter's domestic currency, or for

(b) An importer to arrange with his foreign suppliers to be invoiced in his domestic currency

3.3 However, although either the exporter or the importer can avoid exchange risk in this way, only one of them can deal in his domestic currency. The other must accept the exchange risk.

3.4 If a UK exporter is able to invoice an overseas buyer in sterling, the foreign exchange risk is transferred to the overseas buyer. Similarly, a UK-based importer might persuade an overseas supplier to invoice in sterling rather than in a foreign currency, and in this way the currency risk would be borne by the foreign supplier.

3.5 An **alternative method** of achieving the same result is to negotiate contracts expressed in the foreign currency but specifying a fixed rate of exchange as a condition of the contract.

3.6 The drawback to this method of hedging risk is the possibility of losing business in foreign markets. There are significant marketing advantages for an exporter who takes on the currency risk and invoices in foreign currency. A foreign buyer is more likely to buy goods that can be paid for in domestic currency, without any concern about currency risk.

In some export markets, foreign currency (often the US dollar) is the normal trading currency, and so UK exporters might have to quote prices in that currency for customers to consider buying from them.

## Matching receipts and payments

3.7 A company that buys and sells in the same currency, or borrows and lends in the same currency, can reduce or eliminate its foreign exchange transaction exposure by matching receipts and payments. Wherever possible, a company expecting to make payments and to 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.

3.8 For example, suppose that a UK company expects to make a payment of US$100,000 in one month's time, and to receive a payment of US $125,000 at about the same time. It can plan to use the money received to make the payment, which means that it has a net transaction exposure of only US $25,000 of dollar income.

3.9 The process of matching currency receipts and payments, sometimes known as **offsetting** receipts and payments, 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.

3.10 Offsetting receipts and payments provides a perfect hedge against currency risk, to the extent that receipts and payments can be matched, and should be used to manage the currency risk wherever possible. However, since a company is unlikely to have exactly the

same amount of receipts in a currency as it makes payments, it will still be exposed to the extent of the surplus of income.

### Leading and lagging

3.11 Leading and lagging means making payments in advance of the due payment date (leading), or delaying payments beyond the agreed payment date (lagging). Leading or lagging might be used to take advantage of foreign exchange rate movements. For example, suppose that a UK company has to make a payment of US$150,000 in two months' time, but at the current spot rate, dollars are very cheap. The company might therefore decide to make the payment earlier, taking advantage of the current exchange rate to obtain the dollars for a low price in sterling. On the other hand, when a company has to make a payment in a foreign currency, the currency might seem over-priced at the current exchange rate. The company might decide to delay (lag) the payment in the hope that the exchange rate will change and the foreign currency will fall in value.

3.12 With a lead payment, paying in advance of the due date, there is a finance cost to consider. This is the interest cost on the money used to make the payment.

### 3.13 EXAMPLE: LEADS AND LAGS

A company owes $30,000 to a US supplier, payable in 90 days. It suspects that the US dollar will strengthen against sterling over the next three months. The spot exchange rate is $1.50 = £1.

The company could pay the $30,000 now, instead of in 90 days' time. This would cost £20,000 now, which is a payment that could have been delayed by 90 days. The cost of this lead payment would be interest on £20,000 for 90 days. If the interest rate is, say, 6% per annum, the interest cost would be about £296 (£20,000 × 6% × 90/365).

3.14 Of course, if the company has a dollar bank account, it could buy the dollars today and simply put them on deposit for 90 days before paying the US supplier. The dollars on deposit would earn some interest to at least partially off-set its interest cost on the £20,000.

### Matching assets and liabilities

3.15 A company that expects to receive a substantial amount of income in a foreign currency at some time in the future will be concerned that this currency may weaken in value. It can hedge the risk by borrowing in the foreign currency and using the eventual currency receipts to repay the loan. For example, a company with US dollar debtors can hedge its exposure to a fall in the value of the dollar by taking out a US dollar overdraft. Similarly, suppose that a UK company has a large investment in shares in a US company, on which it regularly receives dividends. The company can hedge its exposure to a fall in the value of the dollar against sterling by taking out a US dollar loan and using the dollar dividend income to make the interest payments on the loan.

## 4 FORWARD EXCHANGE CONTRACTS

4.1 A widely-used method of hedging currency risk is the **forward exchange contract**. A forward contract is a contract made now to buy or sell currency at a future date, at a rate of exchange that is fixed now.

**KEY TERM**

A **forward exchange contract** is:

(a) An immediately firm and binding contract between a bank and its customer (or between two banks)

(b) For the purchase or sale of a specified quantity of a stated currency, in exchange for another stated currency

(c) At a rate of exchange fixed at the time the contract is made

(d) For performance (settlement of the contract) at a future time, which is agreed when making the contract. This future time will be either a specified date, or any time between two specified dates.

4.2 A forward contract fixes an exchange rate for a future time, and can therefore be used to hedge a transaction exposure.

## The forward rate compared with the spot rate

4.3 The rate quoted by a bank for selling or buying a currency forward will be different from the spot (ie current) rate. For example, the spot rate for £/US$ might be 1.4362 - 1.4370 but the 'one month forward' rate might be quoted as 1.4353 - 1.4361 and 'three months forward' as 1.4331 - 1.4342.

4.4 Suppose a British company, which needs to pay $1,000,000 to a US supplier in one month's time, is given these quotes by a bank. It can fix the exchange rate with absolute certainty by entering into a forward contract to buy $1,000,000 at the rate of 1.4353, giving a cost of £696,718.46. In this instance, the cost in sterling is slightly more expensive than at the spot rate of 1.4362. At the spot rate, the cost would have been £696,281.85. This is because in this example, the dollar is stronger against the pound in the forward market than in the spot market.

4.5 Forward rates are not necessarily more expensive. For example, suppose that a British company needs to pay 2,000,000 South African rands to a supplier in three months. The sterling/rand spot rate might £1 = R11.2003 – 11.2186, and the three month forward rate might be R11.3533 – 11.3695.

(a) By making a forward contract to buy the rands in three months time, the British company will fix the cost at £1 = R11.3533, ie at £176,160.24.

(b) At the current spot rate of 11.2003, the cost of buying R2,000,000 would have been £178,566.65.

In this instance, the forward rate is more favourable to the bank's customer than the spot rate.

4.6 So if the forward rate is not necessarily more expensive to the bank's customer than the spot rate, how is the forward rate determined?

(a) It might be tempting to think that a forward rate is the best estimate of the bank as to what the actual spot rate will be at the future date, when the forward contract reaches settlement. This is not the case, however. Banks do not set their rates by guessing at future changes in the market.

(b) The **difference between a spot rate and a forward rate is due to the difference in current interest rates** between the two currencies.

4.7 Suppose that the spot sterling/US dollar exchange rate is £1 = $1.2500, and that the three month interest rate on sterling is 6% per annum whereas the three month interest rate on US dollars is 4% per annum. (Note: interest rates are quoted on an annual basis, even when the borrowing or lending term is less than one year.)

An investor with $1,000,000 and a need for sterling in three months' time should be indifferent, financially speaking, between the following alternatives.

(a) He could sell the dollars for sterling at the spot rate to obtain £800,000 ($1,000,000/1.2500), and invest this money for three months at a rate of 6% per annum, to earn £800,000 × 6% × 3/12 = £12,000 in interest. This would give a total investment of £812,000 after three months.

(b) He could hold on to the dollars for three months, investing them at 4% per annum, to earn interest of $1,000,000 × 4% × 3/12 = $10,000. This would give a total investment after three months of $1,010,000.

4.8 For the investor to be indifferent as to which course of action he takes to obtain sterling income after three months, $1,010,000 and £812,000 must be equivalent in value. In other words, the forward rate now for a sterling/dollar contract to be settled in three months' time must be $1,010,000/£812,000, ie £1 = US$1.2438.

4.9 A forward exchange rate is therefore dependent on the spot rate and the short-term fixed interest rates in each currency when the forward contract is made. All these market values are certain when the contract is signed. The forward rate can therefore be calculated today without making any estimates of future movements in the spot rate. **Future spot rates** depend largely on future events and will often turn out to be very different from the forward rate. However, the forward rate is probably an **unbiased predictor of the expected value of the future exchange rate**, based on the information available today. That is, if the dollar is at a premium on the forward market, it is likely to strengthen on the spot market in future.

## Fixed forward contracts and option forward contracts

4.10 A forward exchange contract may be either **fixed** or **option**.

(a) '**Fixed**' means that performance of the contract will take place on a specified date in the future. For example, a two months forward **fixed** contract taken out on 1 September will require performance on 1 November.

(b) '**Option**' means that performance of the contract may take place, at the option of the customer, at any time between two specified dates. With an option forward contract, the bank will quote the forward rate that is most profitable to itself. For example, suppose that a company wishes to buy US dollars in exchange for sterling, at any time from a date one month ahead up to two months ahead. The bank will quote its offer rate for sterling/US dollar, because it is selling the base currency, sterling. It will quote either its one month forward offer rate or its offer rate for two months forward, depending which of these two rates is more profitable to itself.

It is important to note that option forward exchange contracts are different from **currency options**, which are explained in Chapter 9.

## 5 QUOTING A FORWARD RATE: PREMIUMS AND DISCOUNTS

5.1 Forward rates might be quoted in either of two ways. The most obvious method is to quote the actual rate. This is the method now used by much of the financial press, including the *Financial Times*.

5.2 Another method is to quote a forward rate by specifying the amount by which the spot rate and the forward rate differ. This difference is sometimes referred to as the **forward points**. For most currencies, one point in an exchange rate is 0.0001.

5.3 Suppose for example that the spot rate for sterling against the Canadian dollar is £1 = C$2.1831 and the three months forward rate is £1 = C$2.1692. The difference between the two rates is (2.1831 – 2.1692) = C$0.0139 or 139 points. The forward rate might be quoted as 0.0139 or 139 points, rather than as C$2.1692.

5.4 When forward rates are quoted in points of difference, it is essential to know whether the difference should be added to the spot rate or subtracted from the spot rate.

5.5 To indicate whether forward points are added to or subtracted from the spot rate, the terms **premium** and **discount** are used.

(a) When the forward rate for a variable currency is stronger than the spot rate (which means that the interest rate is lower for the variable currency than for the base currency), the forward rate is said to be at a **premium** to the spot rate.

(b) When the forward rate for a variable currency is weaker than the spot rate (which means that the interest rate is higher for the variable currency than for the base currency), the forward rate is said to be at a **discount** to the spot rate.

5.6 To obtain the forward rate, you should:

(a) **Subtract the premium** from the spot rate
(b) **Add the discount** to the spot rate

This can be very confusing, because it is probably natural to assume that a discount should be subtracted. This is not the case. A **discount is added** to the spot rate.

5.7 When a currency is quoted forward at a **premium** to the spot rate, the number of **forward points** is **higher for the bid rate than for the offer rate**.

5.8 When a currency is quoted forward at a **discount** to the spot rate, the number of **forward points** is **lower for the bid rate than for the offer rate**.

5.9 These guidelines can be summarised as follows.

| Variable currency has lower interest rate | Variable currency has higher interest rate |
|---|---|
| Variable currency stronger forward than spot | Variable currency weaker forward than spot |
| Forward points higher for bid rate (left hand side) than for offer rate | Forward points lower for bid rate (left hand side) than for offer rate |
| Forward rate quoted at a **premium** to the spot rate | Forward rate quoted at a **discount** to the spot rate |
| **Subtract the premium** from the spot rate | **Add the discount** to the spot rate |

### Why quote forward rates as premiums or discounts to the spot rate?

5.10 You might be wondering why it should be necessary to quote forward exchange rates as a premium or discount to the spot rate, when it might seem much more straightforward to quote the actual forward rate instead. Premiums and discounts are used by dealers in the foreign exchange markets (or 'FX markets') for two main reasons.

(a) Forward differentials, ie the size of the premium or discount, very often remain unchanged when the spot rate changes. Quoting differentials therefore calls for fewer price changes on a dealer's price information screen.

(b) There is a common type of transaction between banks in the FX markets, known as a FX swap. For this type of transaction (which is beyond the scope of the syllabus) the amount of the forward points is much more significant than the actual exchange rate. FX dealers therefore quote points of price, not actual exchange rates.

### Activity 6.3

Use the information in this table to answer the questions that follow.

| | *Spot rate* | *3 months forward* | *6 months forward* |
|---|---|---|---|
| Sterling/US dollar | 1.4865 – 1.4875 | 75 – 68 pm | 107– 95 pm |
| Sterling/euro | 1.5310 – 1.5318 | 106 – 98 pm | 157 – 145 pm |
| Sterling/NZ dollar | 3.3318 – 3.3380 | 16 – 22 dis | 66 – 75 dis |

(a) A company wants to buy US$500,000 six months forward. What price will it pay in sterling if it arranges a forward contract?

(b) A company wants to sell €700,000 three months forward in exchange for sterling. What amount of sterling will it receive in three months if it arranges a forward contract?

(c) A company wants to sell NZ$800,000 three months forward in exchange for sterling. What amount of sterling will it receive in three months if it arranges a forward contract?

## 6 IMPLICATIONS OF USING FORWARD CONTRACTS TO HEDGE

6.1 A forward contract is a binding contract. Once made, both parties are legally obliged to perform their obligations, and settle the transaction at the agreed settlement date. This means that a forward exchange contract can be used to hedge currency risks by fixing the rate 'now' and preventing unforeseen losses from adverse changes in the exchange rate between 'now' and the future date when the currency transaction is required. At the same

time, it means that if the exchange rate moves the other way, in a favourable direction, it is also impossible to benefit from any profit arising from the unforeseen change in the exchange rate after the forward transaction has been made.

6.2 Even so, a manager might prefer to avoid an unforeseen loss by fixing the exchange rate now, even if this means having to forgo an unexpected profit in the event of a favourable movement in the spot rate. **Risk management is not about maximising profit, it is about controlling the risk.**

## 6.3 EXAMPLE

A UK importer knows on 1 April that he must pay a foreign seller 26,500 Swiss francs in one month's time, on 1 May. He can arrange a forward exchange contract with his bank on 1 April, whereby the bank undertakes to sell the importer 26,500 Swiss francs on 1 May, at a fixed rate of 2.6400.

The UK importer can be certain that whatever the spot rate on 1 May, he will have to pay on that date:

$$\frac{26{,}500}{2.6400} = £10{,}037.88$$

If the spot rate on 1 May is **lower than 2.6400**, the importer would have successfully protected himself against a weakening of sterling, and would have avoided paying more sterling to obtain the Swiss francs. If the spot rate is **higher than 2.6400**, sterling's value against the Swiss franc would mean that the importer would pay more under the forward exchange contract than he would have had to pay if he had obtained the francs at the spot rate on 1 May. He cannot avoid this extra cost, because a forward contract is binding.

### Activity 6.4

A UK company wants to borrow £1,000,000 for one year. The cost of borrowing sterling would be 6%. The company finance director has noticed, however, that he could borrow in Japanese yen at an interest rate of just 1%. The current spot rate for sterling/yen is £1 = 170 yen. The one year forward rate is £1 = 162 yen.

Would it profit the company to borrow in yen for one year, and fix the cost of paying interest and repayment of the loan principal in one year's time by arranging a forward contract to fix the exchange rate?

# 7 MONEY MARKET HEDGE

7.1 A further method of hedging against currency risk is to use a money market hedge. This involves taking advantage of different interest rates in different countries.

## 7.2 EXAMPLE

A UK business is due to receive $100,000 in 6 months time for goods sold to a US customer.

The spot rate is 1.8970 - 1.8990.

Interest rates in the UK and the US are as follows:

| | *Borrow* | *Lend* |
|---|---|---|
| US | 8% | 7% |
| UK | 6% | 5% |

The first step is for the company to borrow enough dollars now to ensure that this borrowing plus interest for six months will equal $100,000 in six months time. The annual borrowing rate for dollars is 8% therefore we will use 4% for six months giving the amount that the business will borrow as:

$100,000/1.04 = $96,154

This borrowed amount of dollars will then be converted into sterling at the current spot rate:

$96,154/1.8990 = £50,634

This sterling amount will then be invested at the sterling interest rate for six months (5%/2 = 2.5%) and at the end of the six month period will be worth:

£50,634 × 1.025 = £51,900

When the $100,000 is received in 6 months time this will be used to pay off the dollar loan of $96,154 which with interest will then amount to $100,000.

7.3 In this way the company will know in advance that the net sterling receipt will be £51,900 rather than waiting for six months to see what the exchange rate is.

## 8 HEDGING ECONOMIC AND TRANSLATION EXPOSURE

### Economic exposure

**KEY TERM**

**Economic exposure** arises from the risk that exchange rate movements might reduce the international competitiveness of a company.

8.1 **Transaction exposure**, which has been the main subject of this chapter, can be seen as a short-term version of economic exposure. Economic exposure reveals itself in different ways, as shown in the following examples.

8.2 Suppose a UK company invests in setting up a subsidiary in eastern Europe, but the currency of the eastern European country depreciates continuously over a five-year period. The cash flows remitted to the UK are worth less in sterling each year, causing a reduction in the value of the investment project.

8.3 Another UK company buys raw materials which are priced in euros. It converts these materials into finished products which it exports mainly to the US, pricing the goods in dollars. Over a period of several years, the pound depreciates against the euro but strengthens against the US dollar. The sterling value of the company's income declines while the sterling cost of its materials increases, resulting in a drop in the value of the company's cash flows.

8.4 If there are fears that a company has large economic exposures, this perceived risk could reduce the company's value and the price per share. Protecting against economic exposure might therefore be necessary in order to protect the company's share price.

8.5 A company need not even engage in any foreign activities to be subject to economic exposure. For example if a company trades only in the UK but the pound strengthens appreciably against other world currencies, it may find that it loses UK sales to a foreign competitor who can now afford to charge cheaper sterling prices.

## Hedging economic exposure

8.6 Various actions can reduce economic exposure, including the following.

(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. A multinational will try to match assets and liabilities in each currency so far as possible.

(b) **Diversifying the supplier and customer base**. A company might buy from a number of different sources, and pay in different currencies. It might also sell abroad into different currency zones. If the currency of one of the supplier countries strengthens, purchasing can be switched to a cheaper source.

(c) **Diversifying operations world-wide**. On the principle that companies that confine themselves to one country have the most severe economic exposures, international diversification is a method of reducing the risk.

(d) **Currency swaps** (covered in detail in Chapter 9).

## Translation exposure

**KEY TERM**

**Translation exposure** is the risk that a company with a foreign subsidiary will report losses when it prepares its consolidated financial accounts for the group, due to an adverse exchange rate movement.

8.7 Translation losses can result from re-stating the book value of a foreign subsidiary's assets at the exchange rate on the balance sheet date.

8.8 For example, suppose that a German subsidiary of a UK company has fixed assets of €105 million at the start and end of the year. Suppose the sterling/euro exchange rate changes during the year from, say, 1.40 to 1.50. The fixed assets of the subsidiary, translated into sterling, would fall from £75 million to £70 million, and the parent company would have to report a loss of £5 million in its group accounts for the year.

8.9 The profits of the subsidiary also have to be translated. Suppose that the same subsidiary made profits of €3,500,000 last year and this year. If last year's profits were translated into sterling at 1.40, whereas this year's are translated at 1.50, the reported profit from the subsidiary, even though remaining the same in euros, would fall from £2,500,000 to £2,333,333.

Such losses will not have an impact on the firm's cash flow unless the assets are sold. Even so, they can affect the share valuation of the parent company.

8.10 There are opposing arguments as to whether translation exposure is important. The arguments centre on whether the reporting of a translation gain or loss does actually affect

the company's share price. There is a powerful argument that, to the extent that cash flows are not affected, translation exposure can be ignored. On the other hand, those who believe that accounting results are an important determinant of share price argue that translation losses should be reduced to a minimum.

8.11 Translation exposures can be hedged to an extent by group borrowing in the currency of the foreign subsidiary. Returning to the example above, the parent company could hedge the translation exposure by borrowing in euros, possibly as much as the assets of the subsidiary. If the assets of the subsidiary fall in value when translated into sterling, there would be a corresponding fall in the sterling value of the company's debt liability. Similarly, any fall in the value of the subsidiary's profits, when translated into sterling, would be offset to some extent by a fall in the sterling value of the interest payments.

## Key learning points

- Currency risk is the possibility of losses (or gains) arising as the result of changes in the exchange rate. There are three categories of currency risk, **transaction exposures**, **translation exposures** and **economic exposures**.
- Currencies are bought and sold on the FX markets. Banks quote **spot prices** for each rate. The lower **bid rate** is the price at which it will buy the base currency and the **offer rate** is the rate at which it will sell the base currency.
- Companies buying or selling currency at spot rates are not hedging their currency exposures.
- There are different ways of **hedging transaction exposures**. These include matching receipts and payments, leading and lagging, and (most common) forward exchange contracts.
- A **forward exchange contract** is a binding agreement to buy or sell a quantity of one currency in exchange for another, at a future date, and at a rate of exchange that is fixed in the contract.
- A **forward rate differs from the spot rate** because of the **interest rate differential** between the two currencies.
- The forward rate might be quoted in forward points, rather than as an actual exchange rate, and the forward rate is said to be at a **premium** or a **discount** to the spot rate. A **premium is subtracted** from the spot rate and a **discount is added** to the spot rate.
- A forward exchange contract can be used to **hedge a transaction exposure** by fixing the rate in advance for a future currency transaction, and so eliminating any risk of exchange rate movements up to the time that the transaction takes place.
- A **money market hedge** is another method of effectively fixing the rate of exchange in advance.
- **Translation exposures** might affect the share price of a parent company with foreign subsidiaries. An exposure can be reduced by borrowing in the domestic currency of the subsidiary.
- **Economic exposures** are long-term in effect and of strategic importance. Hedging economic exposures could result in a relocation of operations (or some of them) to another country or currency zone.

## Quick quiz

1 What are the three broad categories of currency risk?

2 The Malaysian ringgit is quoted spot against sterling at 5.3580 – 5.3591. A UK company wants to buy 200,000 ringgits. What will they cost?

3 Define a forward exchange contract.

4 What is meant by the principle of interest rate parity? (Hint. It is the rationale for the difference between spot and forward exchange rates)

5 A spot rate is 3.4678 and the six months forward rate is at a discount of 249 points to the spot rate. What is the forward rate for six months?

6 A UK company has economic exposure to the euro, because its main markets are in Europe and most of its competitors are Continental European producers. How might the company hedge this exposure?

7 A UK company has a US subsidiary. It is concerned about a possible fall in the dollar's value. The company needs to borrow to finance an expansion programme in the US. How might it hedge the translation exposure?

## Answers to quick quiz

1 Transaction risk, translation risk, economic risk

2 (200,000/5.3580) = £37,327.36

3 A binding agreement to buy or sell an agreed quantity of one currency in exchange for another, for 'delivery' at a future date, and at a rate of exchange that is fixed in the contract.

4 The difference between a spot rate and a forward rate of exchange can be explained by the difference in interest rates between the two currencies.

5 (3.4678 + 0.0249) = 3.4927

6 Move its operations from the UK to Continental Europe.

7 Borrow in dollars to finance the expansion programme.

## Answers to activities

### Answer 6.1

(a) The company is buying Hong Kong dollars, the variable currency, and selling sterling, the base currency. The bank is therefore buying the base and selling the variable, so the (lower) bid rate applies. The cost of the Hong Kong dollars will be:

$$\frac{\text{HK\$250,000}}{10.9976} = £22,732.23$$

(b) The company is selling euros, the variable currency, and buying sterling, the base currency. The bank is therefore selling the base and buying the variable, so the (higher) offer rate applies. The revenue to the company from the sale of the euros will be:

$$\frac{€70,000}{1.6449} = £42,555.78$$

(c) The company is buying Swiss francs, the variable currency, and selling sterling, the base currency. The bank is therefore buying the base and selling the variable, so the (lower) bid rate applies. The cost of the Swiss francs will be:

$$\frac{\text{SFr 2,000,000}}{2.4876} = £803,987.78$$

### Answer 6.2

(a) Bulldog must buy New Zealand dollars to pay the supplier, and so the bank is selling New Zealand dollars and buying sterling, the base currency. The lower (bid) rate therefore applies to the transaction. The expected profit is as follows.

| | £ |
|---|---|
| Revenue from re-sale of goods | 32,000.00 |
| Less cost of NZ$100,000 in sterling (÷ 3.5650) | 28,050.49 |
| Expected profit | 3,949.51 |

(b) (i) If the actual spot rate is 3.0800, the result is as follows.

| | £ |
|---|---|
| Revenue from re-sale | 32,000.00 |
| Less cost (NZ$100,000 ÷ 3.0800) | 32,467.53 |
| Loss | (467.53) |

(ii) If the actual spot rate is 4.0650, the result is as follows.

| | £ |
|---|---|
| Revenue from re-sale | 32,000.00 |
| Less cost (NZ$100,000 ÷ 4.0650) | 24,600.25 |
| Profit | 7,399.75 |

## Answer 6.3

(a) The company is buying US dollars, the variable currency, and selling sterling, the base currency. The bank is therefore buying the base currency and the (lower) bid rate applies. The forward rate is:

| | |
|---|---|
| Spot | 1.4865 |
| Minus 6 months premium | 0.0107 |
| | 1.4758 |

The cost in sterling will be:

$$\frac{\text{US\$500,000}}{1.4758} = £338,799.30$$

(b) The company is selling euros, the variable currency, and buying sterling, the base currency. The bank is therefore selling the base currency and the (higher) offer rate applies. The forward rate is:

| | |
|---|---|
| Spot | 1.5318 |
| Minus 3 months premium | 0.0098 |
| | 1.5220 |

The receipt in sterling will be:

$$\frac{€700,000}{1.5220} = £459,921.16$$

(c) The company is selling NZ dollars, the variable currency, and buying sterling, the base currency. The bank is therefore selling the base currency and the (higher) offer rate applies. The forward rate is:

| | |
|---|---|
| Spot | 3.3380 |
| Add 3 months discount | 0.0022 |
| | 3.3402 |

The receipt in sterling will be:

$$\frac{\text{NZ\$800,000}}{3.3402} = £239,506.62$$

## Answer 6.4

If the company borrowed in sterling, the interest cost would be £1,000,000 x 6% = £60,000. After one year, the cost of paying interest and repaying the loan would be £1,060,000.

If the company borrowed yen, it would need to borrow 170 million yen (and convert this into sterling at the spot rate of 170). Interest would be 170,000,000 yen x 1% = 1,700,000 yen. The company would have to pay interest and principal of 171,700,000 yen in one year's time. If this transaction is hedged with a forward contract at a rate of 162, the cost in sterling would be (171.7 million/162) £1,059,876.54.

The cost would be about the same as borrowing in sterling. This is what would be expected, because forward rates reflect interest rate differentials between the two currencies.

# Chapter 7 Interest rate risk

## Chapter topic list

1 The main interest rates in the UK financial markets

2 Variable rate and fixed rate borrowing

3 Money market transactions

4 Default risk

5 Interest rate changes

6 Interest rate exposures

## Learning objective

On completion of this chapter you will be able to:

- identify and discuss the main forms of both financial and operating risk and describe the techniques that may be used to manage exposure to these types of risk

The detailed syllabus areas covered are:

*Managing financial risk*

- the main forms of financial risk (interest rate risk)
- the main techniques to manage financial risk

# 1 THE MAIN INTEREST RATES IN THE UK FINANCIAL MARKETS

1.1 We use the term 'interest rates' to refer to a large variety of different rates in the financial markets. The most commonly-quoted interest rates in the UK financial markets are as follows.

(a) The **base rates** of the clearing banks. Banks lend money to small companies and individual customers at certain margins above their base rate. The base rate is set independently by each clearing bank, although in practice, an increase in the base rate of one bank will be followed by similar changes by other banks. The base rate is raised or lowered in response to changes in other interest rates in the financial markets, but is not itself a market rate of interest. It is an 'administered rate', decided by each bank.

(b) The **repo rate**. This is a rate of interest set by the Monetary Policy Committee of the Bank of England, and is a rate at which the government arranges short-term lending transactions (known as 'sale and repurchase agreements' or 'repos') with banks. A change in this rate, headline news whenever it occurs, affects many other interest rates in the financial system, such as LIBOR and mortgage rates.

(c) The most significant short-term interest rate in the UK money markets is referred to as the London Inter-Bank Offered Rate, **LIBOR**. For many loans to companies, banks set interest rates at a margin above LIBOR rather than at a margin above base rate.

(d) The **Treasury bill rate**. This is the rate at which the Bank of England sells Treasury bills to the discount market. It is an average rate, since discount houses tender for bills and tender prices vary.

(e) The **yields on gilt-edged securities**. Gilt-edged securities are issued for terms of up to 20 years or even longer. The financial markets identify a number of 'benchmark issues' of gilts and use the current interest yields on these issues as a measure of the 'risk-free' rate of interest on investment. The issues of gilts selected as benchmarks for the market have different remaining terms to maturity, which means that there are benchmark yields for all maturities up to 20 years or longer.

1.2 There are many other different interest rates you might see quoted, for example:

(a) The yield on bank deposit accounts or building society accounts.

(b) The bank overdraft rate for personal customers.

(c) The mortgage rate for home loans.

(d) Various money market rates, such as the yield on deposits with discount houses, the rate of discount on bank bills or 'fine' trade bills, the yield on sterling certificates of deposit, and the yield on local authority deposits.

## Why are there so many different interest rates?

1.3 There are several reasons why interest rates differ in different markets and market segments.

(a) **Risk**. Higher risk borrowers must pay higher rates on their borrowing, to compensate lenders for the greater risk involved.

(b) The **need to make a profit on re-lending**. Financial intermediaries make their profits from re-lending at a higher rate of interest than the cost of their borrowing.

(c) The **duration of the lending**. Normally, long-term loans will earn a higher yield than short-term loans.

(d) The **size of the loan**. Deposits above a certain amount with a bank or building society might attract higher rates of interest than smaller deposits.

(e) **International interest rates**. The level of interest rates varies from country to country. The reasons for these variations are:

(i) Differing rates of inflation from country to country
(ii) Government policies on interest rates and foreign currency exchange rates

(f) **Different types of financial instrument**. Different types of financial 'asset' or financial 'instrument' attract different rates of interest. This is largely because of the competition for deposits between different types of financial institution.

## 2 VARIABLE RATE AND FIXED RATE BORROWING

2.1 Many companies rely on bank loans for finance. Although some bank loans are at a fixed rate of interest, it is usual for interest rates to be charged at a **variable rate** or **floating rate of interest**. When the interest rate is variable, the bank will alter the interest rate payable in response to changes in interest rates in the money markets.

2.2 In the loan agreement, the variable rate of interest payable will be set at a fixed margin above a benchmark rate of interest. For small companies, the benchmark might be the bank's base rate. A company might therefore pay interest at 2% above base rate, and if the bank changes its base rate, the rate of interest will be raised or lowered accordingly.

**KEY TERM**

**LIBOR** or the London Inter-Bank Offered Rate is the rate of interest applying to wholesale money market lending between London banks.

2.3 Many companies borrow at a rate of interest set at a margin above **LIBOR**. LIBOR is an interest rate on short term lending between top-rated banks. Confusingly, every prime bank has its own LIBOR rates and there is a different rate for each term of lending, such as a one-month LIBOR rate, a two-month rate, three-month LIBOR and so on. LIBOR rates are quoted for terms up to one year or longer. Average market rates for LIBOR (a one-month rate, two-month rate, three-month rate, etc) are published daily by the British Bankers Association.

2.4 A company might therefore arrange to borrow, say, £10 million for five years at a rate of 175 basis points above LIBOR. One basis point is one hundredth of one per cent, so 175 basis points would be 1.75%. If interest is payable every three months, the benchmark interest rate would be the three-month LIBOR rate, ie the current market rate for three-month lending. If interest is payable every six months, the benchmark interest rate would be the six-month LIBOR rate, and so on. For each interest period, the rate of interest payable would be established by taking the appropriate LIBOR rate at the start of the period, and adding the appropriate margin. Thus, if a company is paying 175 basis points above three-month LIBOR, it will pay interest every three months, and if the three-month LIBOR rate is, say, 5.50% at the start of an interest period, the interest rate for that period would be (5.50% + 1.75%) 7.25%.

2.5 Borrowing for a long term at a fixed rate of interest is difficult for many companies. However, large companies have access to the bond markets. They are able to issue long-term bonds or shorter-term notes. Most issues of bonds or notes pay a fixed rate of interest. For

example, a company might issue 5% bonds with a face value of US$100 million. It would pay interest of US$5 million each year on the bonds until maturity, probably in two equal six-monthly amounts.

## 3 MONEY MARKET TRANSACTIONS

3.1 The examples of variable and fixed rate interest above refer to longer-term borrowing and lending. The **money markets** deal in borrowing and lending for periods **up to one year**. There are several different interest rates in the money markets, but the most significant is the inter-bank market, for which the key interest rate is LIBOR.

3.2 When a company borrows or places a deposit in the money market, the rate is fixed for the full term of the loan or deposit. Loan interest is payable at the end of the term, rather than at regular intervals over the term of the loan. Similarly, deposit interest is receivable at the end of the term, but not until then.

### 3.3 EXAMPLE

A company borrows £8 million for six months on the money market, through its bank. It pays an interest rate of LIBOR plus 50 basis points. The six-month LIBOR rate at the start of the loan was 5.25%. If the interest period is 184 days, what interest is payable on the loan?

$$\text{Interest} = \text{Loan principal} \times \text{Interest rate} \times \frac{\text{Days in loan period}}{365}$$

In this example:

$$\text{Interest} = £8{,}000{,}000 \times 5.75\% \times \frac{184}{365} = £231{,}890.41$$

### Activity 7.1

A company borrows £5 million for four years at an interest rate of six-month LIBOR plus 100 basis points. For the initial interest period of 181 days, the LIBOR rate is 6.20%. Six-months later, the interest rate is re-set for the current LIBOR rate of 6.75%. Six-months after that, the interest rate for the third interest period is re-set for the current LIBOR rate of 5.80%.

*Required*

Calculate the interest payable at the end of each of the first three interest periods.

## 4 DEFAULT RISK

4.1 There is always some risk with debt that the borrower will fail to make interest payments on time or might fail to repay the loan principal at maturity of the loan. This credit risk for debt capital such as bank loans and corporate bonds is known as **default risk**. The default risk varies with the borrower. The UK government is a risk-free borrower in the UK markets, and a FTSE 100 company should be a lesser risk than a small private company.

4.2 The relative **risks of default** for different borrowers are reflected in differences in the interest rates that each borrower will have to pay. Since the risk of default by the UK government is virtually nil, the government pays lower interest rates on its borrowings than even blue-chip companies.

**Exam focus point**

The examiner has indicated to BPP that you do not need to know how to perform calculations relating to default risk.

## 5 INTEREST RATE CHANGES

### Interest rate changes and capital gains or losses on bonds

5.1 When market interest rates on bonds (or other fixed interest financial instruments) go up or down, there will be a fall or rise in the market value of bonds. Bond prices fall when interest rates go up, and rise when interest rates fall.

5.2 For example, suppose the UK government issues long-term gilts at a coupon interest rate of, say, 7% and the market rate of interest is also 7%, the market value of the securities will be £100 per £100 face value of the stock (or '£100 per cent'). This is because bonds have a par value whenever they offer a coupon rate of interest equal to the current market interest yield.

(a) Suppose that interest rates in the market subsequently rise to, say, 10% the re-sale value of the gilts will fall to about:

$$£100 \times \frac{7\%}{10\%} = \text{ £70.00 per £100 face value of the stock}$$

An investor in the gilts will make a capital loss of £30 per cent (plus selling costs) if he decides to sell the securities.

(b) If nominal interest rates subsequently fall to, say, 5%, the re-sale value of the gilts will rise to:

$$£100 \times \frac{7\%}{5\%} = £140 \text{ per £100 face value}$$

An investor could then sell his asset for a capital gain of £40 per cent (less selling costs).

### Interest rate changes and financing decisions

5.3 Interest rates are important for financial decisions by companies.

(a) When interest rates are low, it might be financially prudent:

(i) To borrow more, preferably at a fixed rate of interest, and so increase the company's gearing.

(ii) To borrow for long periods rather than for short periods.

(iii) To pay back loans on which the rate of interest is high and to take out new loans at a lower interest rate.

(b) When interest rates are high and expected to remain at that level or even go higher:

(i) A company might decide to reduce the amount of its debt finance, and to substitute it with new equity finance, such as retained earnings.

(ii) A company which has a surplus of cash and liquid funds might switch some of its short-term investments out of equities and into interest-bearing securities.

(iii) A company might opt to raise new finance by borrowing at a variable interest rate (for example by taking out a loan with a variable interest rate linked to LIBOR) rather than borrowing long-term funds at fixed rates of interest (by issuing bonds). The company would then benefit from any eventual fall in interest rates.

### Interest rate changes and new capital investments

5.4 When interest rates go up, and so the cost of finance to a company goes up, the **minimum return that a company will require** on its own new capital investments will go up too. Some new capital projects might be in the pipeline, with purchase contracts already signed with suppliers, and so there will often be a time lag before higher interest rates result in fewer new investments.

5.5 A company's management should give close consideration, when interest rates are high, to keeping investments in assets, particularly unwanted or inefficient fixed assets, stocks and debtors, down to a minimum in order to reduce the company's need to borrow.

## 6 INTEREST RATE EXPOSURES

6.1 An organisation has some exposure to interest rate risk if it:

(a) Has any assets that earn interest
(b) Has any liabilities on which interest is paid

6.2 Companies with massive amounts of financial assets and liabilities, eg commercial banks, face the greatest interest rate risks. Not surprisingly, they have developed extensive risk management systems to hedge and control these risks. Some institutions have more financial assets than liabilities: these include investment institutions and investment funds.

6.3 Many non-bank trading companies might have a few interest-bearing financial assets, but substantial borrowings. Borrowing creates an exposure to interest rate risk.

### What interest rate risks might be hedged?

6.4 The following analysis focuses on non-bank companies with large amounts of debt finance. All the different interest-bearing debts that make up the total debts of a company are referred to as its **debt portfolio**.

6.5 The risks for a company are as follows:

(a) It might pay more in interest than it need have done, putting the company perhaps at a disadvantage against competitors that succeeded in borrowing more cheaply.

(b) It might be unable to pay all its interest and principal repayment obligations when they fall due. Failure to meet payment obligations will affect the credit standing of the company, and could even result in insolvency and liquidation.

6.6 There are five important considerations for companies in managing their debt portfolio.

(a) **Keeping interest costs as low as possible, but at the same time controlling the risk that interest costs will be higher than expected or higher than necessary**. One aspect of hedging interest rate risk could be to fix the rate of interest payable in advance of borrowing.

(b) **Maturity mix**. The company must avoid having too much debt being repayable within a short period. For example, if a company has five loans, each of £1 million, it should avoid arranging the loans so that all five mature within a short space of time, obliging the company to find £5 million from somewhere to repay them all. The maturity of debts should be sufficiently spread over time to avoid the risk of cash flow difficulties.

(c) **Refinancing risk**. This risk occurs when a company borrows for a period that is shorter than the length of time for which the capital is actually needed. For example, a company might need £5 million for six years, but arrange to borrow for an initial period of just two years. At the end of the second year, when the loan has to be repaid, the company has the problem of finding replacement finance, ie refinancing. Its ability to refinance, and the interest rate it would have to pay, will depend on conditions in the loan markets at the time the refinancing is required.

(d) **Currency mix**. Companies with foreign currency assets (eg overseas subsidiaries) should consider borrowing in the same currencies, to hedge currency risk.

(e) The **mix of fixed interest and floating rate debts**. A company might have fixed rate loans and variable rate loans in its debt portfolio.

(i) Too much fixed interest rate debt will create an unnecessary cost when market interest rates fall. A company might find itself committed to high interest costs that it could have avoided if it had borrowed at a floating rate.

(ii) Too much borrowing at a variable rate of interest (such as bank overdrafts and medium-term bank lending) leads to high costs when interest rates go up. A company might find itself faced with rising interest costs that could have been avoided if it had arranged fixed rate borrowing.

6.7 These interest rate concerns give rise to interest rate risk, which should be managed. There are various ways of hedging interest rate risk, all of them used by banks but also used on occasions by companies.

## To hedge or not to hedge?

6.8 Where the magnitude of the interest rate risk is immaterial in comparison with the company's overall cash flows, one option is to **do nothing** and to accept the effects of any movement in interest rates which occur. The alternative is to **hedge**.

**KEY TERM**

**Hedging** means taking action to reduce or 'cover' an exposure to risk.

6.9 Hedging has a cost, either a fee to a financial institution or a reduction in profit. However, companies might well consider the costs to be justified by the reduction in financial risks that the hedging achieves. The degree to which the exposure is covered is the **hedge efficiency**: a perfect hedge has 100% efficiency.

6.10 Interest rate risk can be hedged with a variety of 'instruments', such as Forward Rate Agreements (FRAs), futures, options and swaps. All these will be explained in more detail in later chapters.

## Key learning points

- The main benchmark interest rates in the UK financial markets are the **Bank of England's repo rate**, **LIBOR** and **yields on gilt-edged securities**. Interest rates differ between financial instruments and between financial institutions.
- **Money market** rates are interest rates for short-term lending or investing. 'Short-term' means up to a year or so.
- Companies might borrow at a **fixed rate** or a **variable rate** of interest. Most bank loans are at a variable or 'floating' rate of interest, with the interest rate set at a fixed margin above LIBOR or base rate. Most bond issues are at a fixed rate of interest.
- A concern for lenders or bond investors is the risk of non-payment of interest or debt capital by the borrower. This is **default risk**. Default risk adds to the cost of borrowing, because the interest rate will be higher.
- When there is a rise or fall in the general level of interest rates, all **market prices of** debt securities will change. Interest rate changes might also affect financing decisions and investment decisions by companies.
- **Interest rate risk** includes (a) the risk of paying more interest on debt than necessary, (b) the risk of losses on interest-earning investments and (c) the risk of being unable to meet debt payment obligations. Risk management issues include ensuring that the maturity mix of debt instruments is manageable and maintaining a suitable balance between fixed rate and floating rate borrowings.
- Banks and the financial markets have developed a number of **instruments for managing interest rate risk**, including FRAs, options, futures and swaps.

## Quick quiz

1 A company borrows for three years at 145 basis points above six-month LIBOR. What will be the rate of interest payable on the loan for a six-month interest period if LIBOR for the period is fixed at 6.35%?

2 What will happen to the market price of Treasury bills when market interest rates fall?

3 What is maturity mix? Why is it relevant to risk management?

## Answers to quick quiz

1 6.35% + 1.45% = 7.80%

2 Treasury bills are a short-term debt instrument. When interest rates fall, the market value of Treasury bills will therefore rise.

3 The maturity mix of an organisation's debts refers to the spread of maturity dates for the debt, ie the dates on which the debts must be repaid or renewed. When a company has to repay a large amount of debts at about the same time, it could face a cash flow crisis, and might be unable to meet all its interest payment and debt repayment obligations (ie there might be a default risk).

## Answer to activity

## Answer 7.1

For the first period, the interest payable is 7.20%, which is 100 basis points above the LIBOR rate of 6.20% pa

$$\text{Interest} = £5{,}000{,}000 \times 7.20\% \times \frac{181}{365} = £178{,}520.55$$

For the second period, the interest payable is 7.75%. The length of the period must be 184 days (since the first six months were 181 days)

$$\text{Interest} = £5{,}000{,}000 \times 7.75\% \times \frac{184}{365} = £195{,}342.47$$

For the third period, the interest payable is 6.80%. The length of this period must again be 181 days, assuming that it is not a leap year.

$$\text{Interest} = £5{,}000{,}000 \times 6.80\% \times \frac{181}{365} = £168{,}602.74$$

# Chapter 8 Futures

## Chapter topic list

1 Derivatives
2 The characteristics of futures
3 Closing a position before delivery
4 Futures: definitions and terminology
5 Margin and the central counterparty
6 Currency futures
7 Basis risk and hedge efficiency
8 Choosing between forward contracts and currency futures

## Learning objective

On completion of this chapter you will be able to:

- identify and discuss the main forms of both financial and operating risk and describe the techniques that may be used to manage exposure to these types of risk

The detailed syllabus areas covered are:

*Managing financial risk*

- the main techniques to manage financial risk (futures contracts)

# 1 DERIVATIVES

**KEY TERM**

A **derivative** is any financial contract whose value is derived from the value of another 'underlying' asset. The most commonly-transacted derivatives are futures, options and swaps.

1.1 Derivatives can be used to manage financial risk, by allowing one party to the transaction to transfer the risk to the other party. Together with forward contracts for foreign currency and interest rates, derivatives can be used to manage currency risk and interest rate risk.

1.2 Derivatives markets have existed for a long time, but the markets for financial derivatives only developed in the 1970s, with the development of options pricing theory by the US academics, Black, Scholes and Merton.

1.3 This chapter describes currency and interest rate futures.

# 2 THE CHARACTERISTICS OF FUTURES

**KEY TERM**

**Futures** are a form of forward contract. Unlike normal forward contracts, which are over the counter transactions, futures are exchange-traded. Futures contracts are bought and sold on futures exchanges. The parties agree to buy/sell a quantity of an item for delivery and settlement at an agreed future date. The price is agreed when the contract is made.

2.1 Futures have their origins in the markets for commodities such as wheat, coffee, sugar, meat, oil, base metals and precious metals. The prices of all of these commodities fluctuate seasonally and are also subject to large changes because of unpredictable events such as storms, drought, wars and political unrest. To avoid the uncertainty arising from large swings in prices, buyers and sellers of these commodities would agree quantities and prices in advance. This encouraged investment in production and benefited buyers and sellers alike by enabling them to plan in advance.

2.2 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 rapidly when the contracts were **standardised** in terms of **delivery date** and **quantity** (and **quality** specifications). This enabled the futures contracts to be traded purely on the basis of price, like shares on a stock exchange. Speculators, with no particular interest in the underlying commodity, traded on the futures markets and greatly increased their liquidity and efficiency. Today commodity futures contracts are traded on futures exchanges all over the world, the largest and most important of which are in Chicago (the **Chicago Mercantile Exchange** (**CME**) and the **Chicago Board of Trade** (**CBOT**)).

2.3 The abolition of US exchange control regulations in 1971 led to volatility in exchange rates and bond prices. This encouraged the futures exchanges to introduce **financial futures contracts** in interest rates, exchange rates and stock exchange indices. For example, CME set up a specialist division called the International Monetary Market (IMM) which has

become the world's largest financial futures market. CME also has a special link with the Singapore Exchange (SGX). The London International Financial Futures and Options Exchange (LIFFE) was set up in 1982. A European rival to LIFFE, created from the German, Swiss and Austrian futures markets, is **Eurex**, based in Frankfurt.

### Difference between forward contracts and futures contracts

2.4 The key difference between a forward contract and a futures contract is as follows.

(a) A forward contract is negotiated '**over the counter**' between a buyer and a seller. For example, a currency forward contract is negotiated between a bank and its customer and a commodity forward contract is negotiated between a producer and a buyer. This means that the contract can be **tailored** to the customer's exact requirements. Three things must be negotiated: quantity to be delivered, delivery date and price.

(b) A futures contract is bought and sold on a futures exchange, which operates like a stock exchange. In order to make a futures contract tradeable it must be **standardised** as to quantity and delivery date. The only factor that is traded is the price. The prices of futures contracts change continuously and are quoted by the futures exchange and in the financial press like share prices or currency prices.

**Futures are therefore for trading price risk. A futures contract fixes the price of the underlying item in advance of delivery/settlement date.**

2.5 For example:

(a) Cotton futures are traded on NYCE (New York Cotton Exchange) with a standard contract size of 50,000 lbs and only five standard delivery dates each year in March, May, July, October and December

(b) Euro currency futures are traded on the IMM (International Monetary Market, Chicago) with a standard contract size of €125,000 and only four standard delivery dates per year, in March, June, September and December

2.6 The standardisation of contract sizes means that amounts required must be rounded to the nearest whole number of contracts. For example, a requirement to buy € 950,000 must be dealt with on the futures market by buying 8 contracts (€950,000/€125,000 per contract = 7.6 contracts, which is 8 contracts to the nearest whole number). This introduces some inaccuracies when transactions are being hedged.

2.7 However, it is the standardisation of delivery dates which results in the biggest difference between the way that futures contracts and forward contracts are used. Whereas most forward contracts are settled by delivery of the actual currency or commodity, it is very unlikely that the person who buys euro futures or cotton futures will need the commodity at exactly the same time as the standardised date when the futures contract is settled. For this reason the vast majority of futures contracts are not settled by delivery but by 'closing out'.

## 3 CLOSING A POSITION BEFORE DELIVERY

3.1 Futures are traded for a specific settlement/delivery date. However, instead of waiting until settlement to conclude the transaction, someone holding a position in futures can close the position at any time up to settlement date. On closing the position, there will be an overall gain or loss on the futures transactions.

(a) Someone who has **bought futures** contracts is said to be 'long' in the futures or to hold a **long position**. A long position can be closed by **selling** an equal number of the contracts for the same settlement date. For example, someone who has purchased 100 September sterling LIBOR futures can close the position by selling 100 September sterling LIBOR futures at any time before settlement date in September.

(b) Someone who has **sold futures** contracts is said to be 'short' in the futures or to hold a **short position**. (It is possible to sell futures contracts without having anything to sell because settlement does not take place until a later date.) A short position can be closed by purchasing an equal number of the contracts for the same settlement date. For example, someone who has sold 200 March British pound futures can close the position by buying 200 March British pound futures at any time before settlement date in March.

3.2 The ability to establish either long or short positions, and to close positions at any time before delivery/settlement date, adds considerably to the flexibility of futures contracts as instruments for managing price risk (or for price speculation).

## 3.3 EXAMPLE: CLOSING OUT

On IMM (International Monetary Market) on 1 July the price of euro-US dollar futures with a September settlement date is 0.8600 (ie €1 = $0.8600). By 31 July the price of these futures contracts has moved to $0.8800. Your company buys 8 euro futures contracts on 1 July and sells 8 euro futures contracts on 31 July. What gain or loss has been made?

## 3.4 SOLUTION

Each euro futures contract has a standard size of €125,000 (see above). Euro futures contracts with a standard settlement date in September are called 'euro September contracts'.

(a) **On 1 July**, when you buy 8 euro September contracts at $0.8600, you have contracted to buy €125,000 × 8 = €1,000,000 in September, paying a price in US$ of 0.8600 × 1,000,000 = $860,000. Like a forward contract, a futures contract is a binding obligation on both parties.

(b) **On 31 July**, when you sell 8 euro contracts, you incur a second obligation. This is to sell €1,000,000 on the same date in September, receiving the price of US$ 0.8800 × 1,000,000 = $880,000. Combining the two transactions, the purchase and sale of one million euros cancel out, leaving you with a profit in dollars of $20,000.

3.5 Closing out of futures contracts is used both by hedgers and speculators. In the example above, a speculator with no particular interest in euros could have made a profit by buying futures contracts on 1 July and selling them on 31 July. Likewise a company which actually needed to buy one million euros on 31 July could have hedged by using the same technique. Let us extend the example a little.

## 3.6 EXAMPLE: HEDGING BY CLOSING OUT FUTURES CONTRACTS

On July 1 the spot exchange rate for the euro against the dollar (€/$) is 0.8465. Euro September futures are trading at a price of 0.8460.

Note that the spot rate and the futures price will be close together, but not exactly the same. As with currency forward contracts, the difference represents the interest rate differential between dollars and euros for the period 1 July to the settlement date September. Future events will normally cause the spot rate and the futures price to move **in the same direction.** If the euro spot price strengthens, the futures price will also strengthen.

Your company needs to buy one million euros with US dollars on July 31. You are happy with the July 1 exchange rate but are afraid that the euro might strengthen over the next month. You decide to 'lock into' today's exchange rate by buying 8 euro September contracts at $0.8460. If the euro strengthens on the spot market, you will be able to sell the futures contracts at a profit which will offset the increase in the spot price of the euros.

*Required*

Illustrate the effect of using the futures hedge under the following two scenarios.

(a) By 31 July, the spot exchange rate has strengthened to €/$0.8589 and the September futures price moves to 0.8584.

(b) The spot exchange rate weakens to €/$0.8405 and the September futures price moves to 0.8400.

## 3.7 SOLUTION

The company's **target payment** at the July 1 spot exchange rate is $0.8465 × 1,000,000 = $846,500. Buying the 8 euro contracts gives you an obligation to buy €1,000,000 for (0.8460) $846,000 at the settlement date in September. However, the company needs to buy the euros on 31 July, not in September, so it will achieve this by closing out its futures contracts and buying the euros on the spot market on 31 July. The results shown below are for each of the two scenarios.

| | *Scenario 1* | | *Scenario 2* | |
|---|---|---|---|---|
| *Futures hedge (8 contracts)* | *€/$* | *$* | *€/$* | *$* |
| July 1: Buy €1,000,000 at | 0.8460 | (846,000) | 0.8460 | (846,000) |
| July 31: Sell €1,000,000 at | 0.8584 | 858,400 | 0.8400 | 840,000 |
| Gain/(loss) from futures market | | 12,400 | | (6,000) |
| *Cash transaction* | | | | |
| July 31: €1,000,000 are actually bought at | 0.8589 | (858,900) | 0.8405 | (840,500) |
| Net cost of the euros | | (846,500) | | (846,500) |

In **Scenario 1**, the euro strengthens and the additional cost of buying the currency on July 31 is exactly offset by a gain from the futures market. In **Scenario 2**, the euro weakens and the cheaper cost of buying the currency is offset by a loss from the futures market.

The net result is that the company has 'fixed' or 'locked into' its target exchange rate of $0.8465. The hedge achieves the same type of result as using a forward foreign exchange contract. Unfortunately futures hedges are not always as perfect as the one illustrated in the above example but, before looking at the complications, we will define a few terms.

# 4 FUTURES: DEFINITIONS AND TERMINOLOGY

## KEY TERMS

A **futures contract** can be defined as 'a standardised contract covering the sale or purchase at a set future date of a set quantity of a commodity, financial investment or cash'. A **financial future** is a futures contract which is based on a financial instrument, rather than a physical commodity. There are financial futures for interest rates, currencies, stock market indices and some individual company's shares. A **currency future** is a futures contract to buy or sell one currency in exchange for another.

### Specifications of futures contracts

4.1 A futures contract has certain specifications, established by the futures exchange on which it is traded. They include:

(a) The nature and quantity of the underlying item
(b) Delivery/settlement date
(c) The method of delivery (physical delivery or cash settlement)
(d) How the reference price for the item is fixed, for the purpose of settlement
(e) The minimum price movement in the contract
(f) The value of each unit of price movement

### The underlying item

4.2 Futures are traded for a wide range of items.

(a) **Agricultural futures** include futures in grain (wheat, maize, barley, etc.), soya (soyabeans, soyabean oil, soyabean meal) and meat and livestock (live cattle, lean hogs and pork bellies).

(b) **Energy futures** include futures in crude oil, heating oil, gas oil, natural gas and unleaded gasoline.

(c) **Metals futures** are futures in base metals (aluminium, aluminium alloy, lead, nickel, tin, zinc and copper) and precious metals (gold, platinum, palladium and silver).

(d) Futures in '**softs**' include futures in cocoa, coffee, sugar, cotton and orange juice.

(e) There are futures contracts in a variety of other commodities, such as lumber, pulp and paper.

(f) **Financial futures** include stock index futures, currency futures and interest rate futures.

(g) With **stock index futures**, the underlying item is a notional portfolio of shares that constitute a stock market index. Movements in the futures price reflect movements in the stock market index itself. Stock index futures are traded in most major stock market indices, such as Standard & Poor's 500 and the FTSE 100.

(h) The largest futures exchange for trading **currency futures** is the Chicago Mercantile Exchange (International Monetary Market division). The underlying item is a quantity of one currency deliverable in exchange for another currency, and the futures price is an exchange rate. The major contracts are for the US dollar against the euro, the Japanese yen, the Swiss franc and sterling.

(i) **Interest rate futures**. There are **short-term interest rate futures** (**STIRs**) and **bond futures**. With short-term interest rate futures, the underlying item is commonly a notional deposit for a given term (eg a three-month deposit of US dollars). With bond futures, the underlying item is a quantity of notional bonds.

## Standard quantities

4.3 For each futures contract, there is a standard quantity of the underlying item, such as 100 tonnes of wheat, 1,000 barrels of crude oil, a notional portfolio of shares, £62,500 in exchange for US dollars, a notional three-month deposit of US$1,000,000 or US$100,000 (nominal value) of notional US Treasury bonds.

4.4 A person wanting to trade a larger quantity of the underlying item must buy or sell an appropriate quantity of contracts. For example, if the underlying quantity is 100 tonnes of wheat, someone wishing to buy futures for 2,000 tonnes of wheat would need to buy 20 wheat futures contracts. Similarly, someone wishing to sell futures on US$1 million of notional US Treasuries would need to sell 10 contracts.

## Delivery dates

4.5 A futures contract has a last trading day and a delivery and settlement date.

(a) The last trading day is the last day on which contracts for settlement in that month can be traded. In the case of short-term interest rate futures, for example, the last trading day is (a specified time) on the business day before delivery day.

(b) Delivery day and settlement day is when buyers and sellers must carry out the terms of their contract.

4.6 As explained earlier, most buyers and sellers of futures do not keep their positions open until delivery day. Instead, they close their positions before delivery day. However, some positions are kept open, and these must be settled in accordance with the rules and procedures of the exchange. Depending on the rules of the exchange for the particular contract, delivery and settlement might involve:

(a) Actual delivery of the underlying item for the price originally agreed in the contract (eg with currency futures and bond futures), or

(b) A cash settlement, without any exchange of the underlying item (eg with short-term interest rate futures).

## Delivery months

4.7 Financial futures contracts are traded for at least four delivery days each year, in March, June, September and December. Contracts are referred to by their delivery day, eg March eurodollar futures or December yen futures. Prices can be obtained and contracts can be traded for up to several years ahead, depending on the size and liquidity of the market for the particular contract. Most trading, however, is in near-dated contracts.

## Futures pricing

4.8 Each type of futures contract is priced in a particular way, reflecting the way in which the underlying item is priced in the markets. The price might be expressed, for example, in dollars per tonne, cents per pound weight, as an exchange rate (currency futures), as a stock market index level (stock index futures) or as a bond price. The prices of short-term interest rates are quoted as 100 minus the annual rate of interest on the underlying deposit: for example, a price of 94.00 represents an interest rate of 6.00%.

4.9 There are several aspects of price.

(a) ***Contract price***. The contract price is the price agreed between the buyer and the seller of the future.

(b) ***Market price***. Futures are continually traded. Prices will rise or fall in response to market conditions and changing expectations about future price movements up to delivery day.

(c) ***Daily settlement price***. At the end of each trading day, the exchange authorities establish a closing price for a future. This is based on transaction prices in the short time before the end of the day's trading, and it becomes the exchange's daily settlement price for the contract. The daily settlement price is used to calculate the profit or loss on futures positions, and the change in the profit or loss since the previous day. This is a process known as **marking to market**. The daily settlement price can be used by traders to monitor their positions, and it is also used to establish the amount of 'variation margin' required to cover a position. Variation margin is explained later.

(d) ***Exchange Delivery Settlement Price (EDSP).*** On the last trading day for a contract, the exchange authorities decide the Exchange Delivery Settlement Price or EDSP. This, together with the contract price, is used to decide what payments are due on cash-settled contracts on delivery/settlement day.

## Price changes: ticks

4.10 When the market price of futures goes up, there is a gain for holders of long positions in the contract (ie buyers make a profit when the price goes up). A fall in the futures price provides a gain for holders of short positions (ie sellers make a profit when the price goes down).

4.11 Each contract has a minimum price movement, known as a **tick**. When prices go up or down, the price change can be stated in term of the number of ticks. For example, if the tick for a contract is 0.0001, a fall in price of 0.0025 would be a fall of 25 ticks.

4.12 For each futures contract, a tick has a fixed value. For example, suppose the tick for an oil future is $0.01 (one cent) and the underlying item is 1,000 tonnes of oil. Each tick of price movement will represent a rise or fall of $10 (1,000 × $0.01) in the value of the contract.

4.13 Measuring price changes in ticks means that gains or losses in futures positions can be calculated easily and simply, in terms of a number of ticks and a value per tick. For example, suppose that the value of a tick is $10. If the value of a future goes up by, say, 16 ticks, there will be a gain of $160 per contract for a holder of a long position in the contract and a corresponding loss of $160 for the holder of a short position. Someone with a long position of, say, 50 contracts would therefore make a profit of $8,000 (16 ticks × $10 per tick × 50 contracts) on the position, given a price rise of 16 ticks.

### Examples of contract specifications

4.14 You do not need to learn contract specifications for the examination. However, it might be useful to look at the specifications for a number of currency futures.

| *Currency futures* | *Futures exchange* | *Quantity of currency* | *One point of price (tick)* | *Tick value/ value per point of price* |
|---|---|---|---|---|
| Euro | CME | €125,000 | 0.01 cents per € | $12.50 |
| British pound | CME | £62,500 | 0.01 cents per £ | $6.25 |
| Japanese yen | CME | 12.5 million yen | 0.0001 cents per yen | $12.50 |
| Swiss franc | CME | SFr 125,000 | 0.01 cents per SFr | $12.50 |

### Calculating gains or losses on futures positions

4.15 Gains or losses on futures positions can be calculated by reference to the number of ticks by which the contract price has moved. For instance, suppose that a company is long in sterling currency futures, having purchased 15 contracts at 1.4258. The current market price, as measured by today's daily settlement price, is 1.4436.

| | |
|---|---|
| Bought at | 1.4258 |
| Current value | 1.4436 |
| Gain | 0.0178 = 178 ticks. |

178 ticks × $6.25 × 15 contracts = $16,687.50.

## 5 MARGIN AND THE CENTRAL COUNTERPARTY

5.1 Transactions on futures are made for their clients by members dealing on the futures exchange. The buyer and the seller each report the transaction to the exchange authorities.

5.2 The exchange then comes between the buyer and seller, and substitutes itself as the other party to the transaction for the buyer and for the seller. The buyer and seller no longer have a contract with each other. Instead, the buyer has a contract to buy the futures from the exchange and the seller has a contract to sell the futures to the exchange. (In practice, a clearing house acts for the futures exchange as the 'central counterparty' to all transactions. For LIFFE, the role of the central counterparty is performed on behalf of the exchange by the London Clearing House, or LCH.)

5.3 By acting as the **counterparty** to every transaction, for every buyer and seller of futures on the exchange, the exchange effectively guarantees that the contract will be performed. There is no 'counterparty risk' that the other party will fail to perform its side of the agreement at the settlement date.

5.4 To protect itself against counterparty risk from the buyer and the seller, the exchange takes a cash deposit, known as an **initial margin**. Similarly, the dealer acting for a client by purchasing or selling futures will take an initial margin from the client. The amount of the initial margin varies between the different futures contracts and the different exchanges, but might typically amount to about 5% of the value of contracts. 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.

5.5 Thereafter, any daily variations in the contract price are covered by a **variation** margin. Gains on the position during the day are advanced to the trader's account but losses must be covered by advancing further margin or collateral. This process is known as **marking to market**.

5.6 The fact that futures trading can be carried out **on the margin** in this fashion makes it very attractive to speculators. For example, if you buy $580,000 worth of futures contracts, you might only have to advance $29,000 initial margin. Thereafter, if the value of the contracts increases steadily over the next month to $600,000, you need advance no more. When you close out you make a gain of $20,000 and your $29,000 is refunded. Your percentage return in one month is $20,000/$29,000 = 69% compared with the 3.45% you would have made if you had to advance the full $580,000. Under volatile trading conditions, percentage gains can be far higher than this. It goes without saying, however, that similar percentage *losses* can be made, sometimes amounting to several times the initial outlay.

5.7 When a loss is made on a futures position, the margins already paid will be retained by the exchange to cover the loss (although any surplus margin that has been paid in excess of the amount of the loss will be returned).

## 6 CURRENCY FUTURES

6.1 So far, this chapter has described futures in fairly general terms. You need to understand, however, how futures may be used to hedge financial risk. We shall therefore look at currency futures in more detail.

### Hedging currency risk: to buy or sell futures?

6.2 Suppose that a company decides to hedge a currency transaction exposure using futures rather than a forward contract. The first questions to be asked are:

(a) Should the futures contracts be bought or sold?
(b) How many contracts?
(c) Which settlement date?

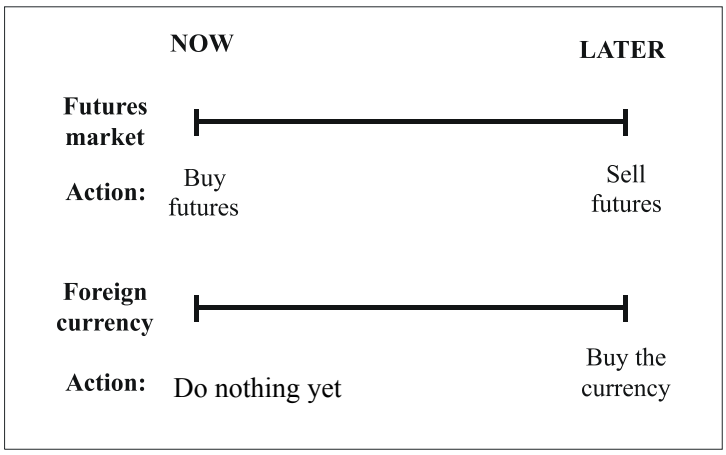
### To buy or to sell?

6.3 Most currency futures transactions are made on the Chicago Mercantile Exchange, where all currency futures are for a currency **against the dollar**. Currencies can only be bought or sold for US dollars. Currency futures on the CME are priced in terms of dollars and cents per one unit of the other currency. The basic rules to apply are as follows.

(a) If you need to **buy** a currency on a future date with US dollars, take the following action.

***Step 1.*** **Buy** the appropriate currency futures contracts **now**

***Step 2.*** **Close out by selling** the same number of futures contracts on the date that you buy the actual currency




This was the procedure used in the example involving euro futures earlier in this chapter.

(b) If you need to **sell** a currency on a future date for US$, take the following steps.

***Step 1.*** **Sell** the appropriate currency futures contracts **now**

***Step 2.*** **Close out by buying** the same number of futures contracts on the date that you sell the actual currency

## 6.4 EXAMPLE: CURRENCY FUTURES (1)

A US company will receive a dividend of three million Swiss francs in 70 days' time, and will convert this currency into US dollars. What action should it take on the futures market to hedge currency risk?

## 6.5 SOLUTION

In 70 days, the Swiss francs will need to be sold for dollars. The company wants to hedge the currency risk and fix the effective Swiss franc/US dollar exchange rate.

(a) It wants to **sell Swiss francs** and buy dollars. It should **sell Swiss franc futures now** and buy them in 70 days when it sells the actual Swiss francs.

(b) The contract size is SFr125,000, so 24 contracts should be sold now, and purchased later to close out the position.

### Non-US companies

6.6 If companies are not based in the United States but wish to hedge the receipt or payment of US dollars, they must re-state their requirements in a format which shows whether their **own currency** needs to be bought or sold.

## 6.7 EXAMPLE: CURRENCY FUTURES (2)

A British company expects to receive US$4 million in six months' time. How can it hedge this receipt on the futures market in the US?

## 6.8 SOLUTION

The company cannot sell US dollar futures, because they do not exist. However, it can trade in British pound futures. It should re-state its requirements as a need to **buy pounds** with

dollars in six months' time. It must therefore **buy sterling futures** now and sell them in six months to close the position.

**Activity 8.1**

A German company needs to pay US dollars to an American supplier in 90 days. How can it hedge the transaction using futures?

### Transactions not involving US dollars

6.9 If a company wishes to buy or sell a currency with another currency, neither of which are US dollars, it needs to deal in more than one type of contract. This complication makes the use of the currency futures markets much more complex than the use of forward markets and contributes to their relative lack of popularity.

### 6.10 EXAMPLE: CURRENCY FUTURES (3)

A UK company has purchased steel from Japan and needs to pay for this in 90 days' time. How can it hedge the cost of the purchase by using currency futures in the US?

### 6.11 SOLUTION

The company needs to buy Japanese yen. On the futures market, it can hedge this by buying Japanese yen futures. On the futures market yen are bought with US dollars. The company therefore needs to **sell sterling futures** (to get dollars) and **buy yen futures** (with dollars). In 90 days it will close out by buying sterling futures and selling yen futures.

### How many contracts?

6.12 Futures can only be bought or sold as a whole number of contracts.. A problem is **how many contracts to use when the receipt or payment is in US dollars**. The method normally used is to convert to the other currency using the exchange rate implicit in the futures contract (ie today's contract price). When hedging, there is no necessary advantage in rounding **up** because futures trading can produce a loss as regularly as a profit.

### 6.13 EXAMPLE: CURRENCY FUTURES (4)

A UK company expects to receive 5 million US dollars in six months' time from a customer. How can it hedge this receipt on the US futures market? The current spot rate is £/$ 1.4310 and the relevant sterling futures contract is trading at £/$ 1.4275.

Show how the futures transaction provides a hedge against the currency exposure, if the spot rate in six months' time is £/$1.4800 and the futures price is $1.4790.

### 6.14 SOLUTION

The company will presumably sell the dollar receipts in exchange for sterling. It will therefore be **buying sterling**. To hedge its exposure on the futures market, it must **buy sterling futures**. One futures contract is for £62,500.

Using the futures contract price, $5 million has a current sterling equivalent value of $5,000,000/1.4275 = £3,502,627.

Since the sterling contract size is £62,500, the number of contracts to be used = £3,502,627/£62,500 = 56.04, rounded to the nearest whole number = 56.

The company should buy 56 sterling contracts now at a price of $1.4275 and sell 56 contracts in six months to close the position. The futures transaction will fix the effective exchange rate at about $1.4275. The effective rate will not be exactly this amount, because the hedge is not perfect. This is partly because the company buys 56 contracts, not 56.04 contracts, but is mainly because of the reduction over time in the difference between the spot sterling/dollar rate and the futures price.

When it sells the contracts in six months, the futures price is $1.4790.

| | $ |
|---|---|
| Buy futures at | 1.4275 |
| Sell futures at | 1.4790 |
| Gain per contract | 0.0515 |
| | |
| Total gain = 56 contracts × 515 ticks × $6.25 per tick | $180,250 |

| | $ |
|---|---|
| US dollars received in six months from the customer | 5,000,000 |
| Add gain, cash received in dollars from closing futures position | 180,250 |
| Total dollar receipts | 5,180,250 |
| | |
| Spot rate in six months | $1.4800 |
| Sterling receipts on sale of dollars (5,180,250/1.4800) | £3,500,168.92 |

The effective exchange rate secured by the futures transaction for the sale of the $5,000,000 receipts is therefore $5,000,000/£3,500,168.92 = $1.4285.

### Activity 8.2

A UK company has to make a payment in four months' time for goods delivered from a Middle Eastern supplier. The purchase price will be in US dollars, and will be $1,125,000. The company wants to fix the cost of this payment in sterling, and has chosen to use the futures market to do this. The current spot sterling/US dollar rate is $1.5000, and this is also the current futures price.

*Required*

(a) Explain how futures can be used to hedge the company's currency exposure.

(b) What will be the effective exchange rate secured by the futures transaction if the spot rate in four months' time is 1.4000 and the futures price is also 1.4000?

## Which settlement date?

6.15 Currency futures are traded for a period of about six to nine months before the settlement date is reached. This means that at any time there will be a choice of up to three settlement dates to choose from. To hedge currency receipts and payments a futures contract must have a settlement date **after** the date that the actual currency is needed. Usually the best hedge is achieved by selecting the contract which matures **next after** the actual cash is needed.

## 6.16 EXAMPLE: CURRENCY FUTURES (5)

For example, in July, suppose the following figures are quoted.

*Sterling futures: contract size £62,500: price in $ per £*

| | *12 July price* |
|---|---|
| Sep | 1.5552 |
| Dec | 1.5566 |
| Mar | 1.5574 |

(a) Your company, based in Britain, will receive US$2,000,000 on 13 December. How should you hedge the receipt using futures?

(b) What is the effective rate fixed by the futures transactions if the spot rate on 13 December is 1.5480, the December futures are trading at 1.5480 and the March futures are trading at 1.5460?

## 6.17 SOLUTION

(a) The receipt of dollars is hedged by buying sterling futures now (12 July) and selling sterling futures on 13 December. The September contract will be no use because it expires in September, three months before the cash transaction will occur. Either of the other two contracts can be used, but in this example, the December contract is more likely to be used.

Assuming the December contract is chosen, the receipt of $2,000,000 converts, using the futures contract price, to $2,000,000/1.5566 = £1,284,852. The contract size is £62,500. The number of contracts to be bought is £1,284,852/£62,500 = 20.56, rounded to 21 contracts.

*Summary*. On 12 July, buy twenty-one December sterling contracts at £/$ 1.5566. On 13 December, sell twenty-one December sterling contracts.

(b)

| | $ |
|---|---|
| Buy futures at | 1.5566 |
| Sell futures in December at | 1.5480 |
| Loss per contract | 0.0086 |
| | |
| Total loss = 21 contracts × 86 ticks × $6.25 per tick | $11,288 |

| | $ |
|---|---|
| US dollars received | 2,000,000 |
| Subtract dollar losses on futures trading | (11,288) |
| Net dollar receipts, to be sold spot in December | 1,988,712 |
| | |
| Spot rate on 13 December | $1.5480 |
| Sterling receipts (1,988,712/1.5480) | £1,284,698 |

The net sterling receipts from the $2,000,000 and the futures hedge is therefore £1,284,698, giving an effective exchange rate for the $2,000,000 of ($2,000,000/£1,284,698) 1.5568. This is close to the futures rate in July, when the futures hedge was created.

## 7 BASIS RISK AND HEDGE EFFICIENCY

7.1 A future's price may be different from the spot price, and this difference is the **basis**.

Basis = spot price – futures price

The basis will move towards zero at the delivery date. If it did not, arbitrage profits would be possible. If, for example, the basis was negative at the delivery date, profits could be earned by selling futures contracts (at the higher price) and simultaneously buying the underlying item in the cash market (at the lower price) for delivery to the futures buyers.

7.2 A risk to companies hedging a currency risk exposure with futures is that the futures market does not always provide a perfect hedge. This can result from two causes.

(a) The first reason is that amounts must be **rounded to a whole number of contracts**, causing inaccuracies.

(b) The second reason is **basis risk**. This is the risk that the futures market price might move by a different amount from the price of the underlying currency. 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*.

## 7.3 EXAMPLE: HEDGE EFFICIENCY

Palace Inc, a company based in the US, imports glassware products from Krystal AG, a company in Germany, and pays for them in euros. The company is due to pay €1,300,000 in 30 days time and wishes to hedge the risk that the euro will strengthen against the dollar using currency futures. The spot rate today is €/$0.8503 and the euro futures contract is trading at 0.8425.

*Required*

(a) Show how the futures hedge is set up.

(b) Show the net cost of the payment after using the futures hedge under the following two scenarios:

**Scenario 1.** After 30 days the spot price moves to 0.8812 and the futures price moves to 0.8730.

**Scenario 2.** After 30 days the spot price moves to 0.8380 and the futures price moves to 0.8310.

In each case, compute the hedge efficiency.

## 7.4 SOLUTION

(a) The company needs to buy euros and hedges against a strengthening in the euro by buying euro futures now. They will be sold in 30 days time. The number of contracts to be bought is €1,300,000/€125,000 = 10.4. Rounding to the nearest whole number gives 10 contracts. Note that there is nothing necessarily to be gained by rounding **up** because the futures market may give a gain or a loss.

*Summary: Buy 10 euro contracts at €/$0.8425*

(b) Since the spot rate today is 0.8503, the **target cost** for the payment of the euros should be €1,300,000 × 0.8503 = $1,105,390.

The results of the hedge under each scenario are given below.

| | *Scenario 1* | | *Scenario 2* | |
|---|---|---|---|---|
| *Futures hedge (10 contracts)* | €/$ | $ | €/$ | $ |
| Today: Buy 10 at | 0.8425 | | 0.8425 | |
| In 30 days: Sell 10 at | 0.8730 | | 0.8310 | |
| Gain/(loss) per contract in ticks | 305 | | (115) | |
| Total gain/(loss) on 10 contracts: | | | | |
| 10 × $12.50 × no. of ticks | | 38,125 | | (14,375) |
| *Cash transaction* | | | | |
| In 30 days: €1,300,000 are | | | | |
| actually bought at | 0.8812 | (1,145,560) | 0.8380 | (1,089,400) |
| Net cost of the euros | | (1,107,435) | | (1,103,775) |

7.5 The futures hedge gives slightly more or less than the target payment of $1,105,390 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 | 1,105,390 | 1,105,390 |
| Actual cash payment | 1,145,560 | 1,089,400 |
| Gain/(loss) on spot market | (40,170) | 15,990 |
| Futures gain / (loss) | 38,125 | (14,375) |
| Hedge efficiency | 94.9% | 111.2% |

The hedge efficiency is measured as the gain (in either the cash market or the futures market) and expressing it as a percentage of the offsetting loss.

## 8 CHOOSING BETWEEN FORWARD CONTRACTS AND CURRENCY FUTURES

8.1 A futures market hedge attempts to achieve the same result as a forward contract, which is to fix the exchange rate in advance for a future foreign currency payment or receipt. As we have seen, hedge inefficiencies mean that a futures contract can only fix the exchange rate subject to a margin of error. This suggests that forward contracts are more efficient for hedging than currency futures. It is useful at this stage to consider the potential advantages and disadvantages of futures hedges over forward contracts.

8.2 Forward contracts are agreed 'over the counter' between a bank and its customer. Futures contracts are standardised and traded on futures exchanges. This results in the following advantages and disadvantages.

**Advantages of futures over forward contracts**

(a) Transaction costs should be lower.

(b) 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.

**Disadvantages of futures compared with forward contracts**

(a) The contracts cannot be tailored to the user's exact requirements.

(b) Hedge inefficiencies are caused by having to deal in a whole number of contracts and by 'basis risk'. Basis is the difference between the current spot rate and the current futures rate. The basis changes in size over time, and narrows towards zero as the futures contract nears settlement date. Changes in the basis over time mean that a hedge using currency futures will be imperfect. Basis risk is the risk that the hedge will be imperfect due to changes in the basis.

(c) Only a limited number of currencies are the subject of futures contracts, although the number of available futures is growing.

(d) The procedure for converting between two currencies, neither of which is the US dollar, is more complex for futures than for a forward contract.

In general, the disadvantages of futures mean that the market is much smaller than the currency forward market.

## Activity 8.3

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:

(a) A sale to a US customer of goods for $205,500
(b) A sale to another US customer for £550,000
(c) A purchase from a US supplier for $875,000

On 1 May the £/$ spot rate is 1.5500 - 1.5520 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*

| *Contract settlement date* | *Contract price $ per £* |
|---|---|
| Jun | 1.5370 |
| Sep | 1.5180 |
| Dec | 1.4970 |

*Required*

(a) Compute the net amount receivable or payable in pounds if the transactions are covered on the forward market.

(b) Show how a futures hedge could be set up.

(c) Compute 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 December sterling futures price has moved to 1.5650.

(d) Discuss the efficiency of the futures hedge.

## Key learning points

- **Financial derivatives** are financial instruments, bought or sold either over the counter or on a derivatives exchange, whose values are based on an underlying financial item, such as a quantity of currency, a quantity of bonds or a notional loan or deposit.
- **Futures** are standardised exchange-traded contracts for the sale or purchase of commodities or financial items or other items such as metals. **Financial futures** are contracts for the purchase/sale of a quantity of currency, a notional deposit, a stock market index or shares in some individual companies.
- Because the underlying quantity of the item and delivery dates are standardised, futures are an instrument for trading in the price of the underlying item. Futures can therefore be used to **hedge** financial risk, such as currency risk.
- **Currency futures** are an alternative to forward exchange contracts. Currency futures are settled by physical delivery of the underlying item.
- A futures contract is for a standard quantity of an underlying item. To hedge the price risk for a larger amount of the underlying item, it is necessary to buy or sell a number of futures contracts, rounding the quantity required to the nearest whole number.
- Most futures positions are closed before the delivery date, so that relatively few futures contracts reach delivery and settlement.
- Flexibility in dates is achieved by closing a futures position. A person buying a futures contract (without previously having sold contracts) takes a **long position**. A seller of futures takes a **short position**. The holder of a long position makes a gain when the market price of the future rises. The holder of a short position makes a gain from a fall in the market price.
- A position is closed by reversing the original transaction: the holder of a long position closes the position by selling futures. A short position is closed by buying futures. When a position is closed, there is a net gain or loss on the futures transaction.
- When two parties make a futures transaction, the **clearing house** of the exchange 'steps in' and becomes the other party to the transaction for both the buyer and the seller. The clearing house becomes the seller to the buyer, and becomes the buyer to the seller. In this way, the exchange is able to guarantee performance of all contracts and removes 'counterparty risk'. It also allows the exchange (clearing house) to organise the settlement and closing out of contracts.
- The clearing house/exchange protects itself from counterparty risk by requiring all buyers and sellers of futures to pay an **initial margin** (cash deposit). Further margin will be required ('**variation margin**') to cover any daily losses on a futures position. The margin is returned when the position is closed or the contracts reach settlement. However, if a position is closed at a loss, the margin is retained to pay for the loss.
- A **currency future** is a contract to buy or sell a standard quantity of one currency in exchange for a quantity of another, at a rate of exchange fixed when the contract is made. The most heavily-traded currency futures are CME (IMM) futures, which trade a standard quantity of British pounds, euros, yen, Swiss francs and other currencies against the US dollar.
- Futures do not provide a perfect hedge. A part of the problem is that the amount to be hedged does not equate to a whole number of the relevant futures contracts. The main problem, however, is **basis risk**, ie variations in the difference between the spot market price for the underlying item and the futures price. The extent to which a position in futures has provided a hedge can be measured by a **hedge efficiency** percentage.

## Quick quiz

1 A company wants to hedge the risk of a fall in the value of the Malaysian ringgit against the British pound. Can it do this using currency futures?

2 A company buys 50 euro currency futures on the CME (IMM) at 0.8756 and subsequently closes the position at 0.8920. What is the overall gain or loss on the futures transactions?

3 What is initial margin?

4 The initial margin on a British pound currency futures contract on IMM is, say, $3,500. A company buys 10 contracts at 1.4400. The next day, the exchange daily settlement price is 1.4380. What is the initial margin payable on day 1 and what variation margin might be called the next day?

5 A financial future can be used to hedge a long-term exposure to currency risk. True or false?

6 A French company is expecting to pay US$6 million in the near future but is worried about a rise in the value of the dollar. How might it hedge this risk using futures?

## Answers to quick quiz

1 Only with difficulty. There is no futures contract for British pounds against the ringgit. Another method of hedging, such as a forward contract or a currency option, would be more appropriate.

2 Rise in market price = 0.8920 – 0.8756 = 0.0164 or 164 ticks. Value per tick = $12.50. Overall gain on 50 contracts = 50 × $12.50 × 164 ticks = $102,500.

3 An initial deposit payable to the clearing house of the exchange, by both the buyer and the seller of futures, to cover foreseeable/potential losses on the futures position in the first day. Futures exchange members pay initial margin to the clearing house and clients pay initial margin to the exchange member.

4 Initial margin payable = $35,000. The loss on the position on the first day is $0.0020 or 20 ticks, at a value of $6.25 per tick. On 10 contracts the variation margin payable to cover the loss might be (20 × 10 x $6.25) = $1,250.

5 False. A financial future is for hedging against the risk of changes in currency rates in the fairly short-term future, since most futures contracts are traded for delivery dates of up to 12 months ahead.

6 The company needs to buy US dollars to make the payment, and so must sell euros. It can hedge the position with futures by selling euro currency futures. The quantity of futures to sell depends on the euro/dollar exchange rate for the futures.

## Answers to activities

### Answer 8.1

The company needs to buy US dollars to make the payment, and so needs to **sell euros**. It must therefore **sell euro futures** now, and close its position in 90 days by buying euro futures.

### Answer 8.2

(a) The company will want to buy US dollars to make the payment, and sell sterling. It should therefore hedge the exposure by selling British pound futures.

At the current exchange rate of 1.5000, $1,125,000 is the equivalent of £750,000. At £62,500 per contract, the company should therefore sell (£750,000/£62,500) 12 contracts at 1.5000.

In four months it should close its position by buying 12 contracts at 1.4000.

| | $ |
|---|---|
| Sell futures at | 1.5000 |
| Buy futures at | 1.4000 |
| Gain per contract | 0.1000 |
| Total gain = 12 contracts x 1,000 ticks x $6.25 per tick | $75,000 |

| | $ |
|---|---|
| US dollars required | 1,125,000 |
| Subtract dollars received from futures transactions | (75,000) |
| Dollars to be purchased spot | 1,050,000 |
| Spot rate | $1.4000 |
| Sterling cost of dollar purchases (1,050,000/1.4000) | £750,000 |

(b) The overall cost in sterling is £750,000, and since the purpose was to fix a rate in advance for the purchase of $1,125,000, the effective exchange rate is ($1,125,000/£750,000) = £1 = $1.5000. This is the spot rate/futures rate at the date of the original futures transaction.

The futures transactions have therefore fixed the effective exchange rate at $1.50.

## Answer 8.3

(a) The sterling receipt does not need to be hedged, because this is the company's domestic currency.

Before hedging any US dollar transactions with forward or futures contracts, a cheaper hedge should be obtained by matching receipts against payments. The dollar receipt can be matched against the payment giving a net payment of $669,500 on 31 October. The only requirement for hedging with a forward contract or with futures is therefore to hedge the net payment of $669,500. The company needs to buy dollars in order to make this payment.

The appropriate spot rate for buying dollars on 1 May (bank sells) 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 = £443,377. The net cash received on October 31 will therefore be £550,000 – £443,377 = £106,623.

(b) To set up a **futures** hedge, December contracts must be used. The June and September contracts will have expired by October. To hedge a payment of $669,500 means that the company will have to *sell* pounds to get dollars. It therefore needs to *sell* sterling futures in May and buy them in October.

The number of contracts to be sold is found by using the December futures price:

$669,500/1.4970 = £447,228, which is 447,228/62,500 contracts = 7.16 contracts, rounded to 7 contracts. The futures hedge is set up by selling seven December sterling contracts at 1.4970.

(c) The tick value of the sterling contract is $0.0001 per pound × £62,500 = $6.25 per contract. Between May and October the dollar weakens against the pound, which means the payment in October will be cheaper than the original target, but unfortunately it also means that the futures hedge gives the company a loss.

*Futures hedge*

| | |
|---|---|
| May 1: sell at | 1.4970 |
| Oct 31: buy at | 1.5650 |
| Loss in ticks | 680 |

The total loss made on the futures hedge is 7 contracts × 680 ticks × $6.25 = $29,750. This dollar loss must be purchased at the same time as the net dollar payment of $669,500. Total dollars required is therefore $669,500 + $29,750 = $699,250. This is purchased at the spot rate on 31 October.

Cost in £ = 699,250/1.5800 = £442,563, which is slightly cheaper than the cost on the forward market. The net receipt in £ on 31 October is therefore £550,000 – £442,563 = £107,437.

The futures contract has produced a slightly cheaper hedge than the forward rate.

(d) In this example, the futures contract exhibits substantial basis risk because, although in May the dollar is at a substantial premium on the forward and futures markets, by October it has weakened and the December contract is much nearer its settlement date. The futures price therefore swings by more than the spot rate and gives a bigger loss than we would like. The original target payment for the US dollars at the 1 May spot rate would have been 669,500/1.5500 = £431,935. The actual payment for $669,500 at the October spot rate would have been 669,500/1.5800 = £423,734. The gain on the spot market is only £431,935 – £423,734 = £8,201.

# Chapter 9 Options

## Chapter topic list

1 The characteristics of options
2 Exercising an option
3 Option premium
4 Currency options
5 Interest rate options
6 Profits or losses on option positions
7 Options trading strategies

## Learning objective

On completion of this chapter you will be able to:

- identify and discuss the main forms of both financial and operating risk and describe the techniques that may be used to manage exposure to these types of risk

The detailed syllabus areas covered are:

*Managing financial risk*

- the main techniques to manage financial risk (options)

# 1 THE CHARACTERISTICS OF OPTIONS

**KEY TERM**

An **option** is an instrument that gives its holder the right, but not the obligation, either to buy or to sell a quantity of an underlying item, at a price fixed by the option agreement, on or at any time up to and including a specified future date.

1.1 (a) An option giving its holder the right to buy the underlying item is called a **call option**.
(b) An option giving its holder the right to sell the underlying item is called a **put option**.

1.2 Financial options include share options, currency options and interest rate options.

1.3 The most familiar type of option is probably company share options. A company might have a share option scheme for employees. Employees are given options under the terms of a scheme to buy shares in their company, on or after a future date (and up to a latest date), at a price that is fixed when the options are granted. Company share options are therefore a form of call option. If the employee exercises the option at a future date, the company issues new shares to the employee, who pays the agreed price to acquire them. If the share price has risen since the options were first granted, the employee makes an immediate profit on the transaction.

1.4 Company share option schemes differ from other types of financial options, because employees are rewarded by the grant of options, and do not have to pay for them. With most financial options, the option holder has to pay to acquire an option, and buys the option from an option seller, who is also known as the option writer.

(a) A person can buy an option, and becomes the option holder. The terms '**option buyer**' and '**option holder**' effectively mean the same thing.

(b) The **purchase price** of an option is called the **option premium**.

(c) An option buyer purchases the option from a seller. The seller receives the premium for selling the option. When a new option is created and sold, we say that the option is 'written'. The terms '**option seller**' and '**option writer**' effectively mean the same thing.

## Exercise price or strike price

1.5 An option gives its holder the right either to buy or to sell the underlying item at a price that is fixed by the option agreement. For example, a person might hold a call option on 2,000 shares in ABC plc at a price of 500p per share. This would give the holder the right, but not the obligation, to buy 2,000 shares in the company, at a price of 500p.

1.6 The fixed purchase price for a call option and the fixed selling price for a put option are known as the **exercise price**, **strike price** or **strike rate** for the option.

## Expiry date

1.7 Every option has an expiry date, after which the rights of the option holder lapse.

### American and European style options

1.8 A company share option might give its holder, an employee in the company, the right to buy a quantity of shares at any time between an earliest and a latest specified future date.

1.9 Most financial options are different, however, and give the holder the right to exercise the option either:

(a) On a specific future date, which is also the expiry date for the option: these options are called **European-style** options, or

(b) At any time up to and including a specific future expiry date: these options are called **American-style** options

The terms 'European' and 'American' have nothing to do with which type of option is traded in which countries. Both types of option are traded in all countries.

### The underlying financial instrument

1.10 The underlying instrument or item for a financial option might be:

(a) A quantity of shares

(b) A quantity of one currency, that can be either purchased (call option) or sold (put option) at the exercise price for the option

(c) A bank loan or deposit, where the strike price is the interest rate payable on the loan or receivable on the deposit

### Exchange-traded and OTC options

1.11 Options are bought and sold on options exchanges and 'over the counter'. Share options in the largest UK companies are traded on LIFFE and some currency options are exchange-traded, for example on the Philadelphia Stock Exchange in the US. Most currency options and interest rate options are arranged over the counter between buyer and seller, and tailored to the buyer's specific requirements. The only exchange-traded interest rate options are options on interest rate futures, which give their holder the right to buy or sell interest rate futures at the agreed exercise price.

1.12 For over the counter options, the option writer is usually a bank. A company wishing to arrange an OTC option would therefore negotiate the terms with its bank. For exchange-traded options, the option writer is anyone who undertakes to sell options in a transaction.

## 2 EXERCISING AN OPTION

### An option as a right, not an obligation

2.1 A key aspect of an option is that it gives its holder a right but not an obligation. For example, the holder of call options on shares in ABC plc at a £4.25 exercise price has a right to buy the shares at £4.25, but need not exercise this right if it is not to his or her advantage. If the market price of the shares is only £4.00 when the options can be exercised, the option will not be exercised, because the option holder would be better off by letting the option lapse. **Options offer a choice to the option holder** between:

(a) **Exercising** the right to buy or sell at strike price, and
(b) Not exercising this right and allowing the option to **lapse**

It is this **element of choice** for the option holder that is the big distinction between options and futures or forward contracts.

2.2 The option seller or option writer does not have any choice. If the option holder exercises the option, the option seller must comply with the terms of the option agreement and enable the option holder to either buy the underlying item (call option) or sell the underlying item (put option) at the strike price.

### When is an option exercised?

2.3 An option will be exercised by its holder, either on the expiry date for the option but possibly (with an American-style option) before the expiry date. An option will only be exercised if it is in the option holder's interests. In other words, an option will only be exercised if the strike price for the option is more favourable to the option holder than the current market price for the underlying item.

#### Activity 9.1

You hold the following European-style options at expiry date.

(a) A put option on 6,000 shares in Lock plc with an exercise price of 545p. The current market price of the shares is 510p.

(b) A call option on 10,000 shares in Trim plc with an exercise price of 378p. The current market price of the shares is 330p.

(c) A call option on 500,000 euros in exchange for the dollar, at an exchange rate of €1= US$0.9000 when the current exchange rate is $0.9500.

(d) A put option on £250,000 in exchange for the dollar at a strike rate of £1 = US$1.4500, when the current exchange rate is $1.4100.

(e) A call option on a notional loan, giving you the right to borrow a quantity of funds for six months at a strike rate (LIBOR) of 5%, when the current six-month LIBOR is 5.6%.

State in each case whether you would exercise the option or allow the option to lapse.

### The gain or loss on exercising an option

2.4 Options can be described as a 'zero sum' transaction, because the combined profits of the option writer and the option buyer must always be zero. If the option buyer makes a gain, the option writer must lose an equal amount. Similarly, if the option writer makes a gain, the option buyer must make a loss of an equal amount.

2.5 There are two elements in the calculation of the gain or loss to the option holder and the option writer. These are:

(a) The option premium: this is income for the option writer and a cost for the option buyer.

(b) The gain for the option buyer and loss for the option writer when (and if) the option is exercised.

## 2.6 EXAMPLE

An investor holds a call option on 2,000 shares in XYZ plc at a strike price of 460p. The option premium was 25p per share. Calculate the gain/loss for the option buyer and the option writer if the share price at the expiry date for the option is:

(a) 445p
(b) 476p
(c) 500p

## 2.7 SOLUTION

(a) The option will not be exercised. The option writer will make a profit of 25p per share (£500 in total), from the option premium. The option holder loses this amount, by paying the premium.

(b) The option will be exercised, giving the option holder a gain of (476 – 460)p, ie 16p per share. However, the gain from exercising the option is more than offset by the cost of the premium (25p per share), leaving the option writer with a net profit of 9p per share, and the option buyer with a loss of the same amount. This is (2,000 × 9p) £180 in total.

(c) The option will be exercised, giving the option holder a gain of (500 – 460)p, ie 40p per share. This gives the option buyer a net gain, after deducting the premium of 25p per share, of 15p per share or (× 2,000 shares) £300 in total. The option writer suffers a net loss of £300.

2.8 You should notice from this example that:

(a) The maximum net loss that an option holder can make is the cost of the option premium. This loss arises when the option is not exercised.

(b) Similarly, the maximum net profit that an option writer can make is the revenue from the option premium. This maximum profit is achieved only if the option is not exercised.

### Buying options as a hedge or insurance policy

2.9 A speculator can buy call or put options, and hope to profit from a favourable price movement in the underlying item, such as a favourable movement in a share price, exchange rate or interest rate. When options are purchased as a hedge, however, the option buyer is simply taking out insurance in case the price of the underlying item moves adversely.

2.10 Someone using an option as a hedge would prefer not to have to exercise the option at all, because this means that the market price of the underlying item is more favourable than the option strike price. The option holder will incur less cost or earn more income by letting the option lapse and making a transaction in the market.

## 2.11 EXAMPLE

Suppose a UK company needs to buy 1,000,000 Singapore dollars to pay for imports of computer disk drives in one month's time. Although the Singapore dollar (S$) is expected to weaken over the next month, the company wants to hedge the risk of a rise in the value of the S$ using a currency option. It therefore buys a call option on S$1,000,000 at an exercise price of S$/£ 2.50. The cost of the premium is £5,000.

(a) If the S$ strengthens to, say, £/S$2.40, the option will be exercised and the company will buy S$1,000,000 at the exercise price of S$2.50, for a cost of (1,000,000/2.50) £400,000. Including the cost of the premium, the UK company has obtained the Singapore dollars for £405,000, an effective exchange rate of (S$1,000,000/£405,000) £1 = S$2.4691.

(b) However, if the S$ weakens to, say, £/S$2.65, it will be cheaper to allow the option to lapse and buy the dollars at the spot rate of 2.65. The cost to the company would be (1,000,000/2.65) £377,358. Adding the cost of the option premium, the total cost to the company will be £382,358, giving an effective exchange rate of (S$1,000,000/£382,358) £1 = S$2.6154.

In this example the company has purchased an option as a hedge, **but it hopes that it will not have to use it**. In this respect an option hedge is like an insurance policy. The company purchases the option from the writer in the same way as an individual may purchase medical insurance. It is there if you need it, but you hope you will not need it.

## 3 OPTION PREMIUM

### In-the-money, on-the-money and out-of-the-money options

3.1 An option is in-the-money, on-the-money or out-of-the-money.

(a) An in-the-money option has a strike price that is more favourable to the option holder than the current market price of the underlying item. An option will be exercised by its holder if it is in-the-money when it can be exercised.

(b) An on-the-money or at-the-money option has a strike price that is exactly equal to the current market price of the underlying item.

(c) An out-of-the-money option has a strike price that is less favourable to the option holder than the current market price of the underlying item. If an option is out-of-the-money on its exercise date/expiry date, it will not be exercised. The option holder will prefer to let the option lapse and either buy the underlying item (call option holder) or sell the underlying item (put option holder) at the market price, rather than at the option strike price.

3.2 When an option is first written, it may be in-the-money, on-the-money or out-of-the-money. In-the-money options will cost more to buy than out-of-the-money options.

### Intrinsic value and time value

3.3 An option has a value. This is its premium. The premium is the amount that an option buyer is willing to pay to acquire it, and the amount that the option writer wants to receive for selling it.

3.4 The premium for an option consists of two elements, **intrinsic value** and **time value**. Together, intrinsic value and time value add up to the option premium.

**KEY TERM**

The **intrinsic value** of an option is computed on the assumption that its expiry date is today. In-the-money options would be exercised and have a value equal to the difference between the exercise price and the current share price. Out-of-the-money options would not be exercised and would therefore have zero intrinsic value.

3.5 The intrinsic value of calls and puts can be summarised in the following formulae.

(a) The **intrinsic value of a call option** is the higher of

(i) the current market price of the underlying item **minus** the exercise price, and
(ii) zero

An out-of-the-money call option therefore has an intrinsic value of zero

(b) The **intrinsic value of a put option** is the higher of

(i) the exercise price **minus** the current market price of the underlying item, and
(ii) zero

An out-of-the money put option therefore has an intrinsic value of zero.

**KEY TERM**

The **time value** of an option is the value placed by the market on the possibility that the price of the underlying item might move against the option writer in the time remaining until the option expires.

3.6 Time value reflects the possibility that an option will become in-the-money, or more deeply in-the-money, in the future.

3.7 For example, suppose that the current premium for a put option on British pounds (in exchange for US dollars) at a strike rate of $1.4500 is 8 cents. The option, exercisable in two months' time, is for £31,250. The current sterling/dollar exchange rate is $1.4300.

(a) The cost of the premium at the current market price is £31,250 × 8 cents per £1, ie $2,500.

(b) The intrinsic value of the option is ($1.4500 – $1.4300) = $0.0200, ie 2 cents. The total intrinsic value is therefore 31,250 × 2 cents = $625.

(c) The time value of the option is the difference between the premium of 8 cents and the intrinsic value of 2 cents, ie it is 6 cents, or 31,250 × $0.06 = $1,875 in total.

3.8 There are several factors that determine the amount of time value in an option. These include the remaining time to the expiry date and the volatility in the market price of the underlying item. An option with a longer remaining time to expiry has a higher time value. Time value diminishes as an option approaches its expiry date, and on the expiry date, time value is zero. The value of an option at the expiry date consists entirely of intrinsic value.

### Activity 9.2

It is now the beginning of June. The current euro/US dollar exchange rate is 0.8540. An August put option on euros on the Philadelphia Stock Exchange at a strike price of 0.8600 has a market price of 1.93 cents per euro. An August put option at a strike price of 0.8400 has a market price of 1.04 cents per euro. One option is for €62,500.

*Required*

(a) How much would it cost to buy each of these options?

(b) What is the intrinsic value and the time value of an option at a strike rate of (a) 0.8600 and (b) 0.8400?

## 4 CURRENCY OPTIONS

4.1 Forward exchange contracts and currency futures contracts are binding contracts to buy or sell a given quantity of foreign exchange, that can be used to fix the effective future exchange rate for a currency transaction. Some companies might be uncertain whether or not they might need to buy or sell currency in a few months' time. Other companies might know that they will need to buy or sell some currency in a few months, but are uncertain about the quantity. Companies uncertain about their future currency requirements are unable to enter forward exchange contracts or futures contracts without the risk of contracting to sell more currency than they will actually have when the time comes, or the risk of having to buy more currency than they actually need.

4.2 Forward cover against currency risk can be obtained for companies in this position by buying currency options.

**KEY TERM**

A **currency option** is an agreement involving a right, but not an obligation, to buy or to sell a quantity of currency in the future at a stated rate of exchange (the **exercise price**), in exchange for a specified second currency.

4.3 Most currency options are negotiated over-the-counter with a bank, although some exchanges trade currency options. The largest exchange for trading currency options (currencies such as sterling and the euro against the US dollar) is the Philadelphia Stock Exchange. Currency options may be either European-style or American-style.

4.4 As with other types of option, buying a currency option involves paying a premium to the option writer. The cost of the option is the maximum the option holder can lose. A premium for an option to buy or sell a quantity of sterling in exchange for US dollars will be priced in cents per pound. Similarly, an option to buy or sell a quantity of euros in exchange for sterling will be priced in pence per euro.

### Traded currency options

4.5 A company wishing to purchase an option to buy or sell sterling might deal in traded currency options on the Philadelphia Stock Exchange. A schedule of prices for £/$ options is set out in tables such as the one shown below.

*Philadelphia SE £/$ options £31,250 (cents per pound)*

| *Strike* | | *Calls* | | | *Puts* | |
|---|---|---|---|---|---|---|
| *price* | *Aug* | *Sep* | *Oct* | *Aug* | *Sep* | *Oct* |
| 1.400 | 2.58 | 3.13 | - | - | 0.67 | - |
| 1.410 | 2.14 | 2.77 | 3.24 | 0.05 | 0.81 | 1.32 |
| 1.420 | 1.23 | 2.17 | 2.64 | 0.16 | 1.06 | 1.71 |
| 1.430 | 0.50 | 1.61 | 2.16 | 0.32 | 1.50 | 2.18 |
| 1.440 | 0.15 | 1.16 | 1.71 | 0.93 | 2.05 | 2.69 |

4.6 Note the following points.

(a) The contract size is £31,250. A call option is therefore an option to buy £31,250 in exchange for dollars and a put option is an option to sell £31,250.

(b) Option premiums are in cents per pound.

(c) If a company wanted the option to buy £125,000 in exchange for dollars in September, it can buy 4 call options on sterling (since £125,000/£31,250 per contract = 4 contracts). To have the option to buy pounds at an exchange rate of $1.410, it would need to pay a premium of 2.77 cents per pound (check for yourself in the table). The total premiums for the 4 option contracts would be 125,000 × $0.0277 = $3,462.50.

(d) For a higher exchange rate, the premium for a call option is lower, since the higher exchange rate is less favourable to the buyer of the option. More dollars are needed to buy the same number of pounds.

(e) A put option here is the option to sell sterling in exchange for dollars. The premium on put options is higher for the higher exchange rate since the purchaser will receive more dollars for each pound sold than with the lower exchange rate.

(f) Notice also that, due to the time value of options, the premium for an option at any given strike rate is higher for an option with a more distant expiry date.

### The purpose of currency options

4.7 The main purpose of currency options is to reduce exposure to adverse currency movements, while allowing the holder to profit from favourable currency movements. They are particularly useful for companies in the following situations:

(a) 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.

(b) To support the tender for an overseas contract, priced in a foreign currency (see the example below).

(c) To allow the publication of price lists for its goods in a foreign currency.

(d) To protect the import or export of price-sensitive goods. If there is a favourable movement in exchange rates, options allow the importer/exporter to profit from the favourable change (unlike forward exchange contracts, when the importer/exporter is tied to a fixed rate of exchange by the binding contract). This means that the gains can be passed on in the prices to the importer's or exporter's customers.

4.8 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.

### 4.9 EXAMPLE: CURRENCY OPTION

Tartan plc has been invited to tender for a contract in Switzerland with the bid priced in Swiss francs. Tartan thinks that the contract would cost £1,850,000. Because of the fierce competition for the bid, Tartan is prepared to price the contract at £2,000,000, and since the exchange rate is currently £1 = SFr 2.50, it puts in a bid of SFr 5,000,000. The contract will not be awarded until after six months, but when it is awarded, the full contract price will be payable immediately to the successful bidder.

4.10 What currency risks is Tartan exposed to? There are two possible adverse outcomes.

(a) Tartan plc might decide to hedge against the currency risk on the assumption that it will be awarded the contract in six months' time. To hedge this risk, it might enter into a forward exchange contract to sell SFr 5,000,000. Suppose the forward rate is SFr

2.4800. The company will enter a binding agreement to sell SFr5,000,000 in exchange for £2,016,129 in six months.

Now suppose that the company fails to win the contract. It must still honour the terms of the forward contract and so it must buy SFr5,000,000 to meet its obligation under the forward contract. If the exchange rate has changed to, say, £1 = SFr 2.4600:

| | £ |
|---|---|
| At the outset: | |
| Tartan sells SFr5,000,000 forward at £1 = SFr 2.48 | 2,016,129 |
| Six months later: | |
| Tartan buys SFr5,000,000 spot to cover the hedge, at £1 = SFr2.46 | (2,032,520) |
| Loss | (16,391) |

(b) Instead of arranging a forward contract to hedge the potential exposure, Tartan plc might decide not to make a forward exchange contract at all, but to wait and see what happens. Suppose that Tartan is awarded the contract six months later, but by this time, the value of the Swiss franc has fallen sharply, say, to £1 = SFr2.70.

| | £ |
|---|---|
| Tartan wins the contract for SFr5,000,000, which has a sterling value of (£1 = SFr 2.70) | 1,851,852 |
| Cost of the contract | (1,850,000) |
| Profit | 1,852 |

Due to the change in the exchange rate, the anticipated profit from the contract, which was £150,000 when the tender was made, is almost wiped out.

4.11 A currency option would, for the fixed cost of the premium, eliminate these risks for Tartan plc. When it makes its tender for the contract, Tartan might purchase an over-the-counter put option to sell SFr5,000,000 in six months' time, and the selected strike rate might be £1 = SFr2.50. Suppose the premium costs £40,000.

(a) The worst possible outcome for Tartan plc is now a loss of £40,000. This will happen if the company **fails to win the contract, and the option is not exercised**.

(b) If the company fails to win the contract but the option is profitable, the company will buy SFr 5,000,000 at the current spot rate and exercise the option to sell them at 2.50. The profit on the currency dealing will partially (or perhaps entirely) offset the £40,000 cost of the premium.

(c) If the company **wins the contract** and the spot rate for Swiss francs has risen above the strike rate of 2.50, the company will exercise its put option. It will sell the SFr 5,000,000 at the strike rate 2.50, to earn £2,000,000, rather than sell the francs in the spot market to earn fewer pounds.

| | £ | £ |
|---|---|---|
| Proceeds from selling SFr 5,000,000 at 2.50 | | 2,000,000 |
| Cost of contract | 1,850,000 | |
| Cost of currency option | 40,000 | |
| | | 1,890,000 |
| Net profit | | 110,000 |

(d) If Tartan **wins the contract** and the Swiss franc has strengthened against sterling, the spot sterling/Swiss franc rate will be below the strike rate of 2.50, and Tartan will let the option lapse and will sell the SFr5,000,000 at whatever the spot rate happens to be. For example, if Tartan wins the contract and the exchange rate has moved to £1 = SFr2.25, Tartan will sell the SFr5,000,000 at this rate to earn £2,222,222, and will incur costs, including the abandoned currency option, of £1,890,000.

| | £ | £ |
|---|---|---|
| Proceeds from selling SFr5,000,000 at 2.25 | | 2,222,222 |
| Cost of contract | 1,850,000 | |
| Cost of currency option | 40,000 | |
| | | 1,890,000 |
| Net profit | | 332,222 |

**Tutorial note.** In practice the currency option could be used to cover the period between the date when Tartan makes the tender offer and the date when the Swiss purchaser awards the contract, if this date is known in advance. Any further period until the sales proceeds are received could be covered by a forward contract.

### Comparison of currency options with forward contracts and futures contracts

4.12 In comparing currency options with forward or futures contracts, important points of distinction are as follows:

(a) 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; this is because of the **premium cost of the option**.

(b) 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**.

### 4.13 EXAMPLE

Crabtree plc is expecting to receive 20 million Mexican pesos in three months' time. The current spot rate is £1 = 13.3383 - 13.3582 pesos. Compare the results of the following actions.

(a) The receipt is hedged using a forward contract at the rate 13.3548.

(b) The receipt is hedged by buying an over-the-counter (OTC) option from the bank, exercise price 13.30, with a premium cost of 15 pence per 100 pesos.

(c) The receipt is not hedged.

In each case compute the results if, in three months, the exchange rate has moved to:

(i) 15.00
(ii) 12.50

### 4.14 SOLUTION

The target receipt at today's spot rate is 20,000,000/13.3582 = £1,497,208.

(a) The receipt using a forward contract is fixed with certainty at 20,000,000/13.3548 = £1,497,589. This receipt will be fixed, regardless of what the spot rate is in three months' time.

(b) The cost of the put option is (20,000,000) × 15p/100 = £30,000. This must be paid at the start of the contract.

The results under the two scenarios are as follows.

| *Scenario* | *(i)* | *(ii)* |
|---|---|---|
| Exchange rate | 15.00 | 12.50 |
| Exercise price | 13.30 | 13.30 |
| Exercise option? | YES | NO |
| Exchange rate used | 13.30 | 12.50 |
| | £ | £ |
| Pounds received | 1,503,759 | 1,600,000 |
| Less option premium | (30,000) | (30,000) |
| Net receipt | 1,473,759 | 1,570,000 |

(c) The results of not hedging under the two scenarios are as follows.

| *Scenario* | *(i)* | *(ii)* |
|---|---|---|
| Exchange rate | 15.00 | 12.50 |
| Pounds received | £1,333,333 | £1,600,000 |

**Summary.** The option gives a result between that of the forward contract and no hedge. If the Mexican peso weakens to 15.00, the best result would have been obtained using the forward market (£1,497,589). If it strengthens to 12.50, the best course of action would have been to take no hedge (£1,600,000). In both cases the option gives the second best result, being £30,000 below the best because of its premium cost.

The potential advantage of using an option, however, is that it provides a hedge against the currency risk and at the same time allows the option holder to benefit from any favourable movement in the exchange rate up to the option's expiry date.

### Activity 9.3

Your company intends to purchase goods from a Hong Kong supplier, for which a payment of HK$25 million will be required in three months. The current spot rate of exchange is £1 = HK$11.0600 and a three-month forward contract can be arranged at £1 = HK$11.00.

As an alternative, your company could arrange to take out an option on Hong Kong dollars. At a strike price of £1 = HK$11.00, a call option would cost 7 pence per HK$100 and a put option would cost 5 pence per HK$100.

(a) What would the company have to pay in sterling, if a forward contract is used to hedge the currency risk?

(b) What is the most the company would have to pay in sterling, if an option at a strike rate of 11.0000 is used to hedge the risk?

(c) What would the company pay in total if the exchange rate in three months is £1 = HK$11.10, and an option at a strike rate of 11.0000 is used to hedge the risk?

## Drawbacks of currency options

4.15 The major drawbacks of currency options are as follows.

(a) The cost of the premium can be quite high, although the exact amount depends on the expected volatility of the exchange rate

(b) Options must be paid for as soon as they are bought

(c) Tailor-made options lack marketability

(d) Traded currency options are not available in every currency

## 5 INTEREST RATE OPTIONS

### KEY TERMS

An **interest rate option** grants the option holder the right, but not the obligation, to deal at an agreed interest rate (the option strike rate) at a future maturity date. The term **interest rate guarantee (IRG)** refers to an interest rate option that hedges the interest rate for a single interest period of up to one year. Alternatively, the terms **borrower's option** and **lender's option** are used to describe single interest period interest rate options.

5.1 Interest rate options can also be arranged to cover a series of future interest periods.

5.2 Interest rate options are tailor-made, over-the-counter instruments. They can be purchased from major banks, with principal amounts, the length of the interest period, the currency, the exercise/expiry date and the strike rate (ie the rate of interest) all subject to negotiation and agreement. Interest rate options can be either European-style or American-style, although most interest rate options are European-style. (Note: the only exchange traded interest rate options are options on interest rate futures, which are traded on futures exchanges.)

### Borrower's option

5.3 A borrower's option gives its holder the right, but not the obligation, to obtain a **notional** loan on a specified principal amount at a fixed rate of interest, which is the strike rate for the option. The notional loan has a specified starting date, which is the expiry date of the option, and a fixed term or maturity. A borrower's option is therefore a call option on a notional short-term loan.

5.4 The strike rate for the option is an interest rate for a benchmark or reference rate of interest, such as the three-month sterling LIBOR rate, the six-month dollar LIBOR rate or the three-month EBF euribor rate, and so on.

5.5 The option is on a notional loan, not an actual loan. If the option is exercised, the option writer is not required to provide an actual loan at the specific interest rate. Instead, the option writer must make a cash payment to the option holder, known as a **settlement for difference**.

5.6 With a borrower's option:

(a) If at expiry the current market rate of interest is lower than the option strike rate, the option holder will let the option lapse.

(b) If at expiry the current market rate of interest is higher than the option strike rate, the option holder will exercise the option. The option writer will be required to make a payment to the option holder for the difference between the market rate of interest and the strike rate.

**Exam focus point**

The examiner has indicated to BPP that you do not need to know how to calculate cash settlements or effective borrowing costs.

### Lenders' options

5.7 A lender's option gives its holder the right, but not the obligation, to make a notional loan for a specified principal amount and a specified term, starting at a future date (the option's expiry date) at a fixed rate of interest. This rate of interest is the option strike rate. A lender's option is therefore a put option on a notional short-term loan.

5.8 A lender's option can be used to guarantee a minimum rate of interest receivable on a short-term loan or on a short-term investment.

5.9 Most of the features of lenders' options are similar to those of borrowers' options. However, whereas a borrower's option is a call option on a loan, a lender's option is a put option on a loan.

(a) If, at expiry of the option, the current rate of interest is lower than the option strike rate, the option will be exercised. Like borrowers' options, lenders' options are cash settled, and the option writer will make a cash payment to the option holder for the difference between the benchmark interest rate and the option strike rate.

(b) If at expiry the current market rate of interest is higher than the option strike rate, the option holder will let the option lapse.

### Using borrowers' and lenders' options

5.10 Borrowers' and lenders' options are used:

(a) To hedge exposures to short-term interest rate risk
(b) To speculate on interest rate movements

5.11 As hedging instruments, borrowers' options are used to guarantee a maximum borrowing cost and lenders' options are used to guarantee a minimum interest yield on lending or investing.

### Limitations of borrowers' and lenders' options

5.12 Borrowers' and lenders' options have some limitations.

(a) They can be expensive to buy, particularly when interest rates are volatile.

(b) When interest rates are fairly stable, the scale of a borrower's or lender's exposure to interest rate risk will be much less than when interest rates are uncertain and volatile. Interest rate options, like other derivative instruments, are in greater demand when perceived risks are greater.

## 6 PROFITS OR LOSSES ON OPTION POSITIONS

6.1 Options are often used to hedge an exposure to the risk of an adverse price movement, and any gain on the option position will offset a loss on a position in the underlying instrument. For example, if a company buys a currency option as a hedge, and makes a profit on its

position, the profit on the option position will offset an adverse exchange rate movement affecting the underlying currency transaction. An option buyer is often willing to pay the premium on an option to obtain the benefit of insurance against the 'down side' risk.

6.2 Even so, it is useful to analyse an option position and calculate the profit or loss to the option holder and the option writer. You might find it easier to analyse profits and losses if you think of both the option writer and the option buyer as speculators who are trying to make a profit from the position.

6.3 Gains or losses on an option position will be illustrated with an example of a currency call option.

## 6.4 EXAMPLE: GAINS OR LOSSES ON CALL OPTION

A company buys a currency call option giving it the right to buy £31,250 in exchange for dollars, at a £/$ exchange rate of £1 = $1.3500. The cost of the premium is 3 cents per £1.

What will be the net gain or loss to the option holder and the option writer if, at expiry, the current sterling/dollar exchange rate is:

(a) 1.33
(b) 1.34
(c) 1.35
(d) 1.36
(e) 1.37
(f) 1.38
(g) 1.39
(h) 1.40
(i) 1.41
(j) 1.42

## 6.5 SOLUTION

The gain or loss on a call option position is the combined sum of:

(a) The cost of the premium. This is a cost to the option holder, and revenue to the option writer.

(b) The difference, **when the option is exercised**, between the current market rate for the underlying item and the strike rate for the option. In the case of a currency option, this is the difference between the spot exchange rate at expiry and the option strike rate. This is a benefit to the option holder and a cost (ie a loss) to the option writer.

6.6 In this example, the gain or loss to the option holder and the option writer is as follows.

| *Spot rate at expiry* | *Option exercised?* | *Premium* | *Market rate minus strike rate* | *Gain or loss to option holder* | *Gain or loss to option writer* |
|---|---|---|---|---|---|
| | | cents | cents | cents | cents |
| 1.33 | No | 3.0 | - | Loss 3.0 | Gain 3.0 |
| 1.34 | No | 3.0 | - | Loss 3.0 | Gain 3.0 |
| 1.35 | No | 3.0 | - | Loss 3.0 | Gain 3.0 |
| 1.36 | Yes | 3.0 | 1.0 | Loss 2.0 | Gain 2.0 |
| 1.37 | Yes | 3.0 | 2.0 | Loss 1.0 | Gain 1.0 |
| 1.38 | Yes | 3.0 | 3.0 | 0 | 0 |
| 1.39 | Yes | 3.0 | 4.0 | Gain 1.0 | Loss 1.0 |
| 1.40 | Yes | 3.0 | 5.0 | Gain 2.0 | Loss 2.0 |
| 1.41 | Yes | 3.0 | 6.0 | Gain 3.0 | Loss 3.0 |
| 1.42 | Yes | 3.0 | 7.0 | Gain 4.0 | Loss 4.0 |

The difference between the market rate (spot exchange rate) at expiry and the strike rate for the option is only relevant when the option is exercised.

The gain or loss for the option holder is offset by an equal loss or gain for the option writer. The combined profit for the option holder and the option writer is always zero.

### Activity 9.4

A company buys a lender's option on three-month sterling at a strike rate of 6%. The premium cost is equal to an effective interest rate of 0.5%. What is the gain or loss to the option holder and the option writer if the three-month LIBOR rate at expiry is:

(a) 3.5%
(b) 4.0%
(c) 4.5%
(d) 5.0%
(e) 5.5%
(f) 6.0%
(g) 6.5%
(h) 7.0%
(i) 7.5%
(j) 8.0%

## 7 OPTIONS TRADING STRATEGIES

7.1 Options, like other financial derivatives, are instruments for trading in risk. They can be used to hedge risks, but they can also be used to take on risks. Options traders in banks might be authorised to buy and sell options in order to make a profit on their trading, based on a strategy or view about future price movements or the future price volatility in the underlying item.

7.2 For a bank, risk management controls must ensure that options traders (and indeed, any of its derivatives traders) do not build up positions where the exposure to the risk of losses becomes unacceptable for the bank. Controls such as separation of responsibilities, close supervision, and regular exception reports should be in place to ensure that this does not happen.

## Key learning points

- **Options** give their holder the right but not the obligation to buy or sell an underlying item, such as a quantity of currency or a notional loan, at a price that is fixed in the option agreement (the strike price).
- The option may give a right to buy or sell the item on an expiry date (**European style option**) or at any time up to and including its expiry date (**American style option**).
- Most options are **over-the-counter** instruments, but some currency options and options on interest rate futures are **exchange-traded**.
- An option will only be exercised by its holder if it is in-the-money.
- **Options** protect the holder against adverse price movements in the underlying item while allowing the holder to take advantage of favourable price movements.
- Options can be bought to hedge currency risk or interest rate risk. Currency options are particularly useful in situations where the cash flow is not certain to occur (eg when tendering for overseas contracts).
- A **currency option** can be purchased to fix a maximum or a minimum exchange rate for the purchase or sale of a quantity of currency. A **borrower's option** can be purchased to guarantee a maximum borrowing cost for a single interest period, and a **lender's option** can be bought to secure a minimum lending rate.
- The **value of an option** depends on:
  - The current price of the underlying asset
  - The exercise price
  - The volatility of the asset value
  - The time period to expiry
  - The risk-free rate of interest

## Quick quiz

1 What is the 'intrinsic value' of an option?

2 What is a call option on a currency?

3 What is the difference between a European style option and an American style option?

4 State three important factors affecting the time value of an option.

5 Your company (a UK company) is tendering for a contract to sell goods to the Australian government, but will not know for four months whether your bid will be accepted. If you win the contract, you will be paid in Australian dollars (Aus$600,000) in six months' time. To minimise the exposure to currency risk, what should your company do?

## Answers to quick quiz

1 When an option is in-the-money, it is the difference between the market price of the underlying item and the strike price. When an option is at-the-money or out-of-the-money, the intrinsic value is nil.

2 A contract giving its buyer the right but not the obligation to buy a specified quantity of the currency, on or before a future expiry date, in exchange for a second specified currency, at a fixed rate of exchange (the strike rate for the option).

3 A European style option can only be exercised on its expiry date. An American style option can be exercised at any time up to and including its expiry date. When an American style option is exercised before expiry, the option holder is sacrificing its time value.

4 Remaining time to expiry of the option, volatility in the price of the underlying item, the time value of money (therefore the general level of interest rates)

5 If available, buy a put option on 600,000 Australian dollars with an expiry date in six months.

## Answers to activities

### Answer 9.1

(a) Exercise. You can sell the shares (put option) at 545p when the market price is just 510p. You will make a gain of 35p per share on the 6,000 shares.

(b) Allow the option to lapse. You can buy the shares in the market at 330p, and will not want to exercise the right to buy them at 378p, ie for 48p per share more.

(c) Exercise. You can buy €500,000 (call option) for $450,000 at 0.9000 by exercising the option, when it would cost you (× 0.9500) $475,000 to buy the euros in the spot currency market. Your gain will be $25,000.

(d) Exercise. You can sell the £250,000 for (× 1.4500) $362,500 by exercising the put option, when you would only receive (× 1.4100) $352,500 by selling them in the spot currency market. Your gain will be $10,000.

(e) Exercise. It is cheaper to exercise the option and borrow at 5% than to borrow at the current market rate of 5.6%.

### Answer 9.2

(a) The purchase price of an August put option at 0.8600 is €62,500 × $0.0193 = $1,206.25. The purchase price of a put option at a strike rate of 0.8400 is €62,500 × $0.0104 = $650.

(b) The intrinsic value of the option with a strike rate of 0.8600 is (0.8600 – 0.8540) which is 0.0060 or 0.6 cents per euro. The total intrinsic value per option is therefore $0.006 × 62,500 = $375. The time value is the remaining part of the premium, which is 1.93 cents minus 0.6 cents, or 1.33 cents per euro. The total time value per contract is $0.0133 x 62,500 = $831.25.

The intrinsic value of the put option with a strike price of 0.8400 is the greater of zero and (0.8400 – 0.8540). It is zero (because the option is out-of-the-money). The entire option premium consists of time value. This is 1.04 cents per euro and $650 per option.

### Answer 9.3

(a) With a forward contract, the cost of buying the goods will be (25,000,000/11.00) £2,272,727.

(b) The company needs to buy Hong Kong dollars to pay the supplier, so a call option would be required, at a premium of 7p per 100 HK dollars. The total premium would be 7p × 25,000,000/100 = £17,500.

The most the company will have to pay will be in the event that the option is exercised, ie the exchange rate in three months is below 11.0000. The option would be exercised at 11.0000, at a cost of £2,272,727. Adding the cost of the premium gives a total cost of £2,290,227. For the purchase of HK$25 million, the effective exchange rate would be (25,000,000/2,290,227) £1 = HK$10.9159.

(c) If the spot rate is £1 = HK11.10, the option will be allowed to lapse, and the company will purchase the HK$25,000,000 spot.

| | £ |
|---|---|
| Cost of HK$25,000,000 at 11.1000 | 2,252,252 |
| Cost of premium | 17,500 |
| Total cost | 2,269,752 |

## Answer 9.4

The option is a lender's option (put option on a notional loan)

| *Spot rate at expiry* | *Option exercised?* | *Premium* | *Strike rate minus Market rate* | *Gain or loss to option holder* | *Gain or loss to option writer* |
|---|---|---|---|---|---|
| | | % | % | % | % |
| 3.5% | Yes | 0.5 | 2.5 | Gain 2.0 | Loss 2.0 |
| 4.0% | Yes | 0.5 | 2.0 | Gain 1.5 | Loss 1.5 |
| 4.5% | Yes | 0.5 | 1.5 | Gain 1.0 | Loss 1.0 |
| 5.0% | Yes | 0.5 | 1.0 | Gain 0.5 | Loss 0.5 |
| 5.5% | Yes | 0.5 | 0.5 | 0 | 0 |
| 6.0% | No | 0.5 | - | Loss 0.5 | Gain 0.5 |
| 6.5% | No | 0.5 | - | Loss 0.5 | Gain 0.5 |
| 7.0% | No | 0.5 | - | Loss 0.5 | Gain 0.5 |
| 7.5% | No | 0.5 | - | Loss 0.5 | Gain 0.5 |
| 8.0% | No | 0.5 | - | Loss 0.5 | Gain 0.5 |

# Chapter 10 Forward rate agreements

## Chapter topic list

1 What is an FRA?
2 The purpose of an FRA
3 How an FRA works
4 Using an FRA to hedge interest rate risk
5 FRA prices
6 The compensation payment
7 Using FRAs

## Learning objective

On completion of this chapter you will be able to:

- identify and discuss the main forms of both financial and operating risk and describe the techniques that may be used to manage exposure to these types of risk

The detailed syllabus areas covered are:

*Managing financial risk*

- the main techniques to manage financial risk

## 1 WHAT IS AN FRA?

**KEY TERM**

A **forward rate agreement** (or FRA) is a forward contract on an interest rate for a short-term loan or deposit.

1.1 As a forward contract, it is similar in concept to a forward foreign exchange contract. It can be used to fix the rate of interest 'now' on a short-term loan or deposit starting at a date some time in the future.

1.2 The selected interest rate fixed by an FRA can be any benchmark rate of interest, but is usually the LIBOR rate for the term of the loan or deposit. For example, if a company wishes to fix a rate of interest on a four-month loan starting in two months' time, the FRA will fix the rate of interest for four-month LIBOR. 'LIBOR' has to be defined in the FRA agreement, but might be the British Bankers Association LIBOR rate, which is published daily.

1.3 The benchmark rate of interest is known as the **reference rate** or **settlement rate**. For convenience, this rate will be referred to in the remainder of this chapter as the LIBOR rate, although it should be stressed that the reference rate need not be LIBOR.

1.4 An FRA is not an actual short-term loan or deposit. It is an agreement about a rate of interest at a future date, but there is no undertaking by either party to the agreement to either borrow or lend actual money. The interest rate fixed by the FRA is on an agreed **notional amount of principal**, rather than an actual loan or deposit.

1.5 An FRA is an 'over the counter' transaction, which means that it is negotiated individually by a bank with a customer. Once purchased, it does not have a market value and cannot be traded.

1.6 FRAs are bought and sold, and banks that deal in FRAs quote prices for both buying and selling.

(a) The **buyer of an FRA** obtains a fixed rate of interest for payment, and can therefore use an FRA to **fix an interest rate on future borrowing**.

(b) The **seller of an FRA** obtains a fixed rate of interest to receive, and can therefore use an FRA to **fix an interest rate on a future deposit or future lending**.

## 2 THE PURPOSE OF AN FRA

2.1 An FRA is used to manage short-term interest rate risk. An organisation concerned about the risk of a rise or fall in short-term interest rates in the near future can buy or sell an FRA to hedge the risk.

2.2 Since an FRA locks in an interest rate 'today' for a future loan or deposit, it can be used:

(a) By a borrower who will be paying variable rate interest on a future loan, and who wants to fix the cost of the borrowing 'now' in order to hedge the risk of a rise in interest rates by the time the actual loan period begins

(b) By an investor who will be receiving variable rate interest on a future short-term deposit, and who wants to fix the rate of interest receivable 'now' in order to avoid the risk of a fall in interest rates before the actual deposit period begins

## 3 HOW AN FRA WORKS

3.1 An FRA is for an agreed notional amount of principal, and for an agreed loan or deposit period starting at a specified time in the future.

(a) The buyer of the FRA agrees to pay a fixed rate of interest on the notional loan. This fixed rate is specified in the agreement. In return, the buyer will receive interest at the current market rate prevailing at the start of the notional loan period. This is the reference or settlement rate of interest specified in the agreement, eg the BBA LIBOR rate.

(b) The seller of the FRA agrees to receive interest on the notional loan at the fixed FRA rate, and in return to pay interest at the current market rate prevailing at the start of the notional loan period.

3.2 An FRA therefore involves an exchange of interest payments, with the FRA buyer paying the fixed rate and the FRA seller paying the current market rate, whatever this happens to be when the settlement date for the contract arrives.

3.3 An FRA is settled at the start of the notional loan period. Since the buyer and seller have agreed to exchange interest payments on the notional principal, in practice there is simply a single net payment by one party to the other.

(a) If LIBOR (ie the reference rate) at the settlement date is higher than the fixed FRA rate, the seller of the FRA must make a net payment for the interest rate difference to the FRA buyer.

(b) Conversely, if LIBOR at the settlement date is lower than the fixed FRA rate, the seller of the FRA will receive a net payment for the interest rate difference from the FRA buyer.

3.4 This net payment, or **compensation payment**, is based on:

(a) The difference between the LIBOR rate and the fixed FRA rate, and
(b) The amount of the notional principal, and
(c) The length of the notional loan period

The calculation of the compensation payment is explained later.

### 3.5 EXAMPLE

A company expects to have to borrow £10 million in four months' time, for a period of three months. The company's treasurer is concerned about the current volatility in three-month LIBOR rates, and wishes to hedge the interest rate risk with an FRA.

The company wants to fix an interest rate for borrowing, and so should buy an FRA from a bank. The notional principal will be £10 million, and the notional loan term will be for three months, starting in four months' time, ie from the end of month 4 to the end of month 7. The FRA is therefore a '4 v 7' FRA. The reference rate of interest will be the three-month LIBOR rate.

Suppose the bank quotes an FRA rate of 5.85%.

(a) The reference rate may be higher than the FRA rate when the contract comes to settlement. Suppose three-month LIBOR at the 'fixing date' is 6.50%. The FRA bank, as seller of the FRA, will have to pay the company compensation for the difference of 0.65% in interest on a loan of £10 million for three months.

(b) On the other hand, the reference rate may be lower than the FRA rate when it comes to settlement. Suppose three-month LIBOR on the fixing date is 5.50%. The company, as buyer of the FRA, will have to pay the bank compensation for the difference of 0.35% in interest on a loan of £10 million for three months.

(Note: the 'fixing date' for the FRA is two working days before the contract is settled, to give the parties time to arrange the payment.)

**Who makes the payment?**

| | |
|---|---|
| LIBOR higher than fixed FRA rate | FRA seller pays the buyer |
| LIBOR lower than fixed FRA rate | FRA buyer pays the seller |

### A note on FRA terminology

3.6 Terminology for FRAs is not standardised, but the most common method of describing an FRA is to specify the starting date and the end date of the notional loan period. For example, a '2 v 5' FRA (or '2s v 5s' FRA) is an FRA for a notional loan period starting at the end of month 2 and finishing at the end of month 5. This is the way you should expect an FRA to be described in any examination question on the topic.

### Common FRA periods

3.7 FRAs are over-the-counter transactions, and so can be tailored to the specific requirements of a customer. However, common FRA periods include 2 v 5, 2 v 6, 3 v 6, 3 v 9, 3 v 12, 6 v 12, 6 v 18, 9 v 12, 9 v 15, 12 v 18 and 12 v 24.

## 4 USING AN FRA TO HEDGE INTEREST RATE RISK

4.1 An FRA can be used to hedge interest rate risk. This is because the compensation payment offsets the movement in LIBOR between the date of arranging the FRA and the settlement date.

(a) If market interest rates move adversely, there should be a compensation payment receivable from the FRA.

(b) If market interest rates move favourably, the benefit will be offset by having to make a compensation payment to the other party to the FRA.

**The net effect, whichever way LIBOR moves, is to fix the interest rate.**

### 4.2 EXAMPLE

A company expects to borrow £15 million for six months, starting in three months' time. It wants to fix the interest rate for this borrowing, and so buys a 3 v 9 FRA on a notional principal amount of £15 million. The reference interest rate is six-month LIBOR, and the bank that sells the FRA offers a fixed rate of 6.30%.

The company can borrow at 50 basis points (one half of one per cent) above LIBOR.

The FRA fixes the company's borrowing rate at 6.30% plus 50 basis points, ie at 6.80%.

(a) Suppose that at the fixing date, the actual six-month LIBOR rate is 7.50%. The company will borrow £15 million at LIBOR plus 50 basis points, ie at 8.00%. However, it will also receive a compensation payment from the FRA bank, equivalent to the difference between the fixed FRA rate (6.30%) and the six-month LIBOR rate at fixing date (7.50%).

| | % |
|---|---|
| Company borrows at LIBOR plus 50 b.p. | 8.00 |
| Compensation from FRA, equivalent to | (1.20) |
| Net borrowing cost fixed at | 6.80 |

(b) Suppose instead that at the fixing date, six-month LIBOR is 5.40%. The company will borrow £15 million at LIBOR plus 50 basis points, ie at 5.90%. However, it will have to make a compensation payment to the FRA bank, equivalent to the difference between the fixed FRA rate (6.30%) and LIBOR at the fixing date (5.40%).

| | % |
|---|---|
| Company borrows at LIBOR plus 50 b.p. | 5.90 |
| Payment to FRA, equivalent to | 0.90 |
| Net borrowing cost fixed at | 6.80 |

## 5 FRA PRICES

Banks dealing in FRAs quote two-way prices for the FRA rate, a bid rate and an offer rate, displaying their prices on information screens. There is a different bid and offer rate for each FRA period for the fixed rate for each notional loan/deposit term.

(a) The (higher) bid rate is the fixed FRA rate that the bank wants to receive, in exchange for paying out at the LIBOR rate. The buyer of an FRA will be quoted this rate.

(b) The (lower) offer rate is the fixed FRA rate that the bank will pay out, in exchange for receiving interest at the LIBOR rate. The seller of an FRA will be quoted this rate.

No premium or commission is payable for entering an FRA agreement. An FRA bank makes its profit from the difference between the bid and offer rates at which it deals.

### Activity 10.1

A bank is quoting the following rates for dealing in sterling FRAs.

| | *Bid* | | *Offer* |
|---|---|---|---|
| 2 v 5 | 6.73 | - | 6.69 |
| 2 v 6 | 6.75 | - | 6.71 |
| 3 v 5 | 6.77 | - | 6.73 |
| 3 v 6 | 6.80 | - | 6.75 |

A company can borrow at 75 basis points over LIBOR. It wants to fix the interest rate for a two-month loan, starting in three months' time. What will be the rate for the FRA, and what is the effective rate of interest that the company will fix for its loan?

## 6 THE COMPENSATION PAYMENT

6.1 The compensation payment to settle an FRA is based on the difference between the fixed FRA rate and LIBOR as at the fixing date, applied to the notional principal amount and the term of the notional loan.

6.2 For example, suppose that for an FRA on notional principal of £10 million, the FRA rate for a 3 v 6 FRA is 7.0% and three-month LIBOR at the fixing date is 6.50%. The compensation payment (from the FRA buyer to the seller in this case) will be based on interest of 0.50% on £10 million for the three-month period.

6.3 However, the payment will not be exactly this amount. This is because interest on a short-term loan accrues through the loan period and only becomes payable at the end of the period. In contrast, the settlement of an FRA takes place at the start of the notional loan period.

6.4 To allow for the fact that the compensation payment is made at the start of the period, and not at the end of it, the amount payable is adjusted downwards. It is discounted to a 'present value', from an end-of-period value to a start-of-period value.

**Exam focus point**

The examiner has indicated to BPP that you do not need to know how to calculate the compensation payment for an FRA.

## 7 USING FRAs

7.1 Most FRA transactions are between banks. This is because FRAs are instruments for hedging short-term interest rate risk, and banks have much greater exposures to this type of risk than other organisations. However, companies with large short-term interest rate exposures might also use FRAs.

7.2 FRAs have several possible uses.

(a) A company with variable rate borrowing can buy FRAs to hedge its exposures to the risk of a rise in interest rates. Buying FRAs locks in an effective borrowing cost.

(b) A company with variable rate investments can sell FRAs to hedge its exposures to the risk of a fall in interest rates. Selling FRAs locks in an effective investment yield.

(c) Conceivably, an organisation might use FRAs to speculate by buying or selling FRAs, hoping to make a profit from a favourable movement in interest rates.

**Advantages and disadvantages of FRAs**

| Advantages | Disadvantages |
|---|---|
| FRAs can be tailored to the specific requirements of a customer | Over-the-counter instruments cannot be re-sold in a secondary market |
| No front-end fee is payable | Unlike interest rate options (for the buyer of options) FRAs are binding agreements that must be settled at settlement date |
| Nothing is payable (or receivable) until settlement date | FRAs are normally more expensive than comparable interest rate futures contracts: futures might therefore be preferred when tailor-made agreements are not necessary |
| No borrowing or lending of capital is involved | |

7.3 The main advantage of FRAs over short-term interest rate futures is that they can be tailored to the customer's specific requirements, in particular with respect to the notional principal amount and currency.

7.4 A drawback to buying an FRA to hedge the exposure to a rise in borrowing costs is that the FRA fixes the borrowing cost. This means that if interest rates were to fall between contract date and settlement date, the organisation could not benefit from the lower borrowing costs available in the market.

## Strip of FRAs

7.5 A company might have a variable rate loan with regular rollover dates and it might be concerned about the risk of a rise in interest rates over the next one to two year period. It can hedge the exposure to the risk by purchasing a strip of FRAs. A strip of FRAs is a series of FRAs purchased (or sold) at the same contract date, for a succession of future interest periods.

7.6 Suppose for example that a company has a variable rate loan of €25 million, and the interest rate on the loan is re-set every three months. It might decide to use FRAs to fix its borrowing costs for the next 18 months. To do so, it would buy a strip of FRAs. The strip would consist of 5 FRAs, a 3 v 6, a 6 v 9, a 9 v 12, a 12 v 15 and a 15 v 18 FRA. Each FRA would lock in a different borrowing cost for each future interest period, depending on the FRA rates available at contract date.

## Cancelling an FRA

7.7 A company that has bought or sold an FRA might subsequently find, prior to settlement date, that it no longer needs or wants it. There are two ways of cancelling an FRA. Cancellation 'by reversal' means transacting an FRA in the opposite direction, ie selling an FRA to cancel a purchased FRA, or buying an FRA to cancel a sold FRA. The new FRA will be for the same interest period as the original agreement, and the rate will be the current rate obtainable in the market.

For example, suppose that a company buys a 3 v 6 FRA on £5 million on 1 April, but one month later, it finds that it has no requirement for the FRA after all. It can cancel the FRA by reversal. To do this on 1 May, it would arrange to sell a 2 v 5 FRA. The effect of this cancellation is to fix the net payment or receipt that the company must make at the settlement date.

**Exam alert**

There was a full 20 mark question on Forward Rate Agreements in the December 2002 exam.

## Key learning points

- A **forward rate agreement** is a contract that can be used to fix an interest rate for a future short-term loan or deposit. The buyer of an FRA can fix a rate for future short-term borrowing or for a future interest period for a variable rate loan. The seller of an FRA can fix an interest rate on a future short-term deposit.
- It is a contract in which the FRA buyer agrees to pay a fixed rate of interest and the seller agrees to pay a variable rate of interest on a notional loan for a loan period of an agreed term starting at an agreed date in the future. The contract is settled by a **net compensation payment** from one party to the other.
- The variable rate of interest is fixed two working days before the start of the notional loan period by reference to a benchmark interest rate such as LIBOR.
- If the reference rate is higher than the FRA contract rate, the compensation payment is from the seller to the buyer. If the reference rate is lower than the FRA contract rate, the compensation payment is from the buyer to the seller.
- The compensation payment is based on the amount of the notional loan principal, the length of the notional loan period and the difference at the fixing date between the reference rate (LIBOR) and the FRA contract rate. However, since interest is payable at the end of a loan period and an FRA is settled at the start of the notional loan period, the interest amount is discounted from an end-of-loan-period value to a start-of-loan-period value.
- Buying one or more FRAs is a method of hedging an exposure to the risk of an increase in short-term interest rates. If interest rates do rise, the borrower will have to pay the higher interest rates on its loan, but the higher interest cost will be offset by the receipt of compensation under the FRA agreement.
- Since buying an FRA fixes the future interest rate for borrowing, the buyer of the FRA cannot benefit from any subsequent fall in the interest rate.
- Similarly, selling an FRA is a method of hedging an exposure to the risk of a fall in short-term interest rates.

## Quick quiz

1 A company has a five-year loan on which it pays interest at LIBOR plus 125 basis points, with interest payable every six months. The next interest fixing for the loan is in six months. The company wants to fix the effective interest cost now for the next interest period. How can it use an FRA to do this?

2 If the FRA rates for the relevant interest period are quoted by the bank as 4.97% - 4.93%, what is the effective interest payment that the company in question 1 will be able to fix for the period?

3 Money market interest is payable on US dollar loans and deposits on an 'actual/360 day basis'. What interest is receivable on a three-month deposit of $5,000,000, when the interest period is 92 days and the interest rate is 5% per annum?

4 What is the discount factor in the formula for the FRA compensation payment?

5 What is a strip of FRAs?

## Answers to quick quiz

1 The company should buy a 6 v 12 FRA.

2 The bid rate of 4.97% applies. Since the company pays interest at LIBOR plus 125 basis points, its effective interest rate for the next interest period will be 4.97% + 1.25%, ie 6.22%.

3 \$5,000,000 × 92/360 × 5% = \$63,888.89.

4 $$\frac{1}{\left(1+\frac{(d\times L)}{365}\right)}$$

Where d is the number of days in the notional loan period and L is the reference interest rate at fixing, expressed as a proportion. This is the formula for sterling FRAs. For most currencies, including the US dollar and the euro, a figure of 360 should be used instead of 365.

5 A series of FRAs, all with the same contract date and each covering a different interest period in a sequence of future interest periods. A strip of FRAs can be used to fix the interest rates for a number of future interest periods for a variable rate loan, although the effective interest rate will be different for each period.

## Answer to activity

## Answer 10.1

The company wants to buy a 3 v 5 FRA and the FRA rate applicable is 6.77%. Since the company can borrow at 0.75% above LIBOR, it will fix its effective borrowing cost at 7.52%.

# Chapter 11 Swaps

## Chapter topic list

1 The nature of swaps

2 Interest rate swaps

3 Using interest rate swaps

4 Currency swaps

## Learning objective

On completion of this chapter you will be able to:

- identify and discuss the main forms of both financial and operating risk and describe the techniques that may be used to manage exposure to these types of risk

The detailed syllabus areas covered are:

*Managing financial risk*

- the main techniques to manage financial risk (swaps)

## 1 THE NATURE OF SWAPS

1.1 A swap is an exchange of payments between two parties. The term of a swap is usually several years, and there are usually several exchanges of payments over the term of the swap. It is therefore usual to refer to the exchange of a 'stream of payments'.

1.2 Swaps are over-the-counter instruments. Although most swaps are transactions between two banks, swaps have also become an important instrument for large companies to manage long-term interest rate risk and long-term currency risk.

1.3 There are different types of swap, including commodity swaps and equity swaps. However, you are required to know about interest rate swaps and currency swaps.

**KEY TERM**

A **swap** is a contract in which the two parties agree to exchange payments on different terms, for example one paying interest at a fixed rate and the other paying interest at a floating rate, or one paying interest in one currency and the other paying interest in a second currency.

**Exam alert**

An entire 20 mark question was devoted to swaps in the June 2002 exam, and interest rate swaps featured again in December 2003.

## 2 INTEREST RATE SWAPS

2.1 An interest rate swap is an agreement between two parties to exchange a stream of interest payments at agreed time intervals over an agreed period of time.

2.2 This text will focus on the simplest and most common type of interest rate swap, the so-called 'plain vanilla coupon swap' or 'generic' interest rate swap. In this type of swap:

(a) One party pays the other interest on a notional loan at a fixed rate of interest, and

(b) The other party pays interest on the same notional loan amount, but at a floating rate of interest

2.3 For example, one party might agree to pay interest on a notional loan of £10 million at a fixed rate of 7.5% per annum, and the other might agree to pay in exchange interest on a notional loan of £10 million at the six-month LIBOR rate. The LIBOR rate will change for each interest period.

2.4 Features of a generic interest rate swap are as follows.

(a) The notional loan principal is a constant amount for the full term of the swap.

(b) The swap involves an exchange of a fixed interest rate for a floating rate of interest. This type of swap is called a '**coupon swap**'.

(c) The fixed rate of interest remains the same for the full term of the swap.

(d) The floating rate is an agreed benchmark rate of interest, such as the three-month or six-month sterling LIBOR rate. The floating rate is the 'flat' benchmark rate, without

any added margin. For example, it would be the three-month LIBOR flat, rather than three-month LIBOR plus 100 basis points.

(e) The floating rate is set for each interest period. The reset date for floating rate interest is at the start of the interest period, but the payment of interest occurs at the end of the interest period.

(f) The payments of interest are at regular intervals over the full term of the swap, but need not occur on the same dates. For example, one party might pay fixed interest at 5.8% once each year, on a specified date, and the other party might pay floating interest twice each year, at the six-month LIBOR rate.

(g) Most interest rate swaps are for a term of three to seven years, but swaps prices are quoted by banks for terms as short as one year and as long as 20 to 30 years.

2.5 The two parties to a swap are often referred to as the 'swap counterparties'. When the interest payment dates for the counterparties coincide, there will just be a net payment of interest. For example, suppose one party is paying fixed interest at 6% and the other is paying interest at the LIBOR rate, on notional principal of £5 million.

(a) If the LIBOR rate for an interest period is 6.7%, there will be a net payment of interest from the payer of the floating rate to the payer of the fixed rate. The payment will be for interest at 0.7% per annum for the period (6.7% - 6%) on principal of £5 million.

(b) If the LIBOR rate for an interest period is 4.8%, there will be a net payment of interest from the payer of the fixed rate to the payer of the floating rate. The payment will be for interest at 1.2% per annum for the period (6% - 4.8%) on principal of £5 million.

2.6 An interest rate swap is on a notional loan, not an actual loan. It is a contract on interest rates, and the only payments exchanged are payments of interest.

## 2.7 EXAMPLE

A company arranges a two-year swap with a bank. The bank agrees to pay a fixed rate of 5.9% per annum on notional principal of £5 million in exchange for receiving interest at the six-month LIBOR rate. Interest payments are exchanged every six months.

Suppose the LIBOR rates for each six-month period are as follows:

(a) Months 1 – 6, Year 1: 5.5%
(b) Months 7 – 12, Year 1: 5.75%
(c) Months 1 – 6, Year 2: 6.1%
(d) Months 7 – 12, Year 2: 6.45%

2.8 The exchange of payments every six months will be as follows:

(a) End of month 6, Year 1: the bank pays interest of 0.4% per annum on £5 million to the company for the six-month period

(b) End of month 12, Year 1: the bank pays interest of 0.15% per annum on £5 million to the company for the six-month period

(c) End of month 6, Year 2: the company pays interest of 0.2% per annum on £5 million to the bank for the six-month period

(d) End of month 12, Year 2: the company pays interest of 0.55% per annum on £5 million to the bank for the six-month period

### Swap rates: bid and ask (offer) rates

2.9 Banks that specialise in swap transactions quote indicative fixed rates at which they will arrange a swap. It is usual in swaps terminology to refer to the 'payer of the fixed rate' and the 'receiver of the fixed rate' in a coupon swap.

(a) A bid rate is the fixed interest rate that a bank is prepared to pay in a swap arrangement.

(b) An ask rate or offer rate is the fixed rate that a bank would be willing to receive in a swap arrangement.

The bid rate is lower than the swap rate, but rates vary with the term of the swap.

2.10 The financial press reports banks' swap rates for swaps of different maturities in the major currencies such as US dollars, euros, sterling, yen and Swiss francs. A list of quoted fixed rates against the three-month LIBOR floating rate might look like this.

| *Maturity* | *Bid* | *Ask* |
|---|---|---|
| | % | % |
| 3 years | 5.64 | 5.68 |
| 4 years | 5.70 | 5.75 |
| 5 years | 5.73 | 5.78 |
| 6 years | 5.75 | 5.80 |
| 7 years | 5.77 | 5.82 |
| 8 years | 5.79 | 5.84 |

## 3 USING INTEREST RATE SWAPS

3.1 Interest rate swaps have several potential uses for a non-bank company

(a) To **manage the mix of fixed and floating rate interest** in the company's debt mix. They can be used to switch fixed rate borrowing to effective floating rate borrowing, or from floating rate borrowing to effective fixed rate borrowing.

(b) To **obtain fixed rate borrowing commitments** when the company cannot obtain debt finance at a fixed rate.

(c) Possibly, to borrow at a cheaper fixed rate than by borrowing directly at a fixed rate, or to borrow at a floating rate more cheaply than borrowing directly at a floating rate. Using swaps to reduce borrowing costs is known as **credit arbitrage**.

### Managing the mix of fixed and floating rate debt

3.2 It was explained in an earlier chapter that a company with debt finance will want to manage the mix or balance between its fixed rate and variable rate borrowing. If interest rates are expected to rise, a company might want to switch from borrowing at a floating rate to borrowing at today's fixed rates. If interest rates are expected to fall, a company might want to switch from fixed to floating rate borrowing. In practice, many large companies like to control the balance between their fixed and floating rate debts, and they can use swaps to do this, without having to re-negotiate their loans.

3.3 For example, suppose that a company has £30 million of floating rate debt (bank loans) and £50 million of fixed rate debt (bonds in issue). Its finance director would like to switch the balance to a 50:50 ratio between fixed and floating rate interest commitments over the next four years.

3.4 It can arrange this switch by negotiating a four-year swap agreement with a bank on notional loan principal of £10 million. In the swap arrangement, it would want to receive fixed interest and pay variable rate interest. By doing this it will reduce its fixed rate commitments by £10 million and increase its floating rate commitments by £10 million, to give a £40 million: £40 million balance between fixed and floating rate interest commitments.

| | £ | £ |
|---|---|---|
| **Debts** | | |
| Pay fixed interest on | 50,000,000 | |
| Pay floating rate interest on | | 30,000,000 |
| **Swap** | | |
| Receive fixed interest on | (10,000,000) | |
| Pay floating rate on | | 10,000,000 |
| Net fixed/floating rate interest on | 40,000,000 | 40,000,000 |

3.5 An interest rate swap can also be used to swap from a fixed rate to a floating rate, or vice versa, for a specific loan.

## 3.6 EXAMPLE: INTEREST RATE SWAP

Brew plc has issued £20 million of fixed rate bonds, on which the interest rate is 8%, and which have eight years remaining to maturity. It would like to switch from a fixed rate to a floating rate interest commitment and arranges a five-year coupon swap with a bank. The bank is prepared to pay fixed interest at 7.25% and receive six-month LIBOR in return.

By arranging the swap, the company changes its fixed interest payments of 8% per annum into a floating rate commitment of LIBOR plus 75 basis points, as follows.

| | % |
|---|---|
| *Bonds*: pay fixed interest | (8.00) |
| *Swap* | |
| Receive fixed interest | 7.25 |
| Pay floating rate | (LIBOR) |
| Overall cost | (LIBOR + 0.75) |

### Activity 11.1

A company has £30 million of 7.5% fixed rate bonds in issue and would like to switch this debt into floating rate interest commitments, using a swap. A bank quotes a fixed rate of 7.1% for a swap.

*Required*

(a) Show what the overall interest cost will become for the company, if it arranges a swap at this rate.

(b) What will be the cash flows (as a percentage of the bond principal) for an interest period if the rate for LIBOR is set at 6.2%?

### Obtaining fixed rate interest commitments

3.7 Many companies are too small to issue fixed rate bonds, and banks are generally unwilling to lend at fixed rates of interest for longer than one to two years. If a company wants to take on fixed interest commitments, rather than floating rate commitments, it can:

(a) Borrow at a floating rate, and
(b) Arrange a coupon swap to switch from floating rate to fixed rate borrowing

## 3.8 EXAMPLE

Cord plc is too small to issue bonds, but would like to take on fixed rate borrowing of £3 million. It therefore obtains a five-year loan of £3 million from its bank, on which interest is payable at LIBOR plus 125 basis points. It also arranges a five-year swap with a bank in which the company pays a fixed rate of 5.70% and receives LIBOR in return.

3.9 As a result of the swap, the overall borrowing cost is at a fixed rate of 6.95%, as follows.

| | % |
|---|---|
| *Bank loan*: pay floating rate interest | (LIBOR + 1.25) |
| *Swap* | |
| Receive floating rate interest | LIBOR |
| Pay fixed rate | (5.70) |
| Overall cost | (6.95) |

### Activity 11.2

A company wants to borrow £6 million at a fixed rate of interest for four years, but can only obtain a bank loan at LIBOR plus 80 basis points. A bank quotes bid and ask prices for a four year swap of 6.45% – 6.50%.

*Required*

(a) Show what the overall interest cost will become for the company, if it arranges a swap to switch from floating rate to fixed rate commitments.

(b) What will be the cash flows (as a percentage of the loan principal) for an interest period if the rate for LIBOR is set at 7%?

### Credit arbitrage

3.10 Occasionally, it might be possible to use swaps to reduce the overall cost of borrowing.

(a) A company might be able to pay a lower fixed rate by borrowing at a variable rate and swapping into fixed, compared to issuing fixed rate bonds.

(b) A company might be able to pay a lower floating rate by issuing fixed rate bonds and swapping into a floating rate, compared to borrowing directly at a floating rate.

3.11 At one time, growth in the swaps market was driven by such 'credit arbitrage' opportunities.

## 3.12 EXAMPLE: CREDIT ARBITRAGE

Goodcredit plc has been given a high credit rating. It can borrow at a fixed rate of 7%, or at a variable interest rate equal to LIBOR, which also happens to be 7% at the moment. It would like to borrow at a variable rate.

Secondtier plc is a company with a lower credit rating, which can borrow at a fixed rate of 9% or at a variable rate of LIBOR plus 1.20%. It would like to borrow at a fixed rate.

Without a swap, Goodcredit would borrow at LIBOR which is currently 7%, and Secondtier would borrow at 9% fixed.

3.13 However, a swaps bank might negotiate an arrangement whereby:

(a) Goodcredit would borrow at a fixed rate (7%)

(b) Secondtier would borrow at a variable rate (LIBOR plus 1.20%)

(c) They would each arrange a swap with the bank

(d) In the swap with Goodcredit, Goodcredit will receive a fixed rate of, say, 7.30% and pay the floating rate (LIBOR)

(e) In the swap with Secondtier, Secondtier will receive LIBOR and pay a fixed rate of, say, 7.50%.

3.14 The net result is as follows.

| *Goodcredit plc* | | *Secondtier plc* | |
|---|---|---|---|
| | % | | % |
| Borrow at | (7.00) | Borrow at | (LIBOR + 1.20) |
| Swap | | Swap | |
| Pay | (LIBOR) | Pay | (7.50) |
| Receive | 7.30 | Receive | LIBOR |
| Net interest cost | (LIBOR – 0.30) | Net interest cost | (8.70) |

3.15 The results of the swap are that Goodcredit ends up paying variable rate interest, but at 0.30% less than it could get from a bank, and Secondtier ends up paying fixed rate interest, also at 0.30% less cost than it could get from investors or a bank. The swaps bank arranging the transactions makes a profit of 0.20% from the difference between the fixed rate it receives from Secondtier (7.50%) and the fixed rate it pays to Goodcredit (7.30%).

3.16 The opportunity for credit arbitrage arises from the relative difference in borrowing costs at fixed and floating rate for the two companies. Goodcredit can borrow more cheaply than Secondtier, by 2% (9% - 7%) at a fixed rate and by only 1.20% at a floating rate. The difference of 0.8% between the comparative borrowing costs (2% - 1.20%) creates scope for arbitrage, with the two companies and the swaps bank sharing the total benefit of (0.3% + 0.3% + 0.2%) 0.8%.

## Other advantages of swaps

3.17 Interest rate swaps have several further attractions.

(a) They are easy to arrange
(b) They are flexible. They can be arranged in any size and, if required, reversed
(c) The transaction costs are low, limited to legal fees

As with all hedging instruments, interest rate swaps can alternatively be used as a means of financial speculation. Swaps can be arranged without any actual underlying loan for which it is providing a hedge.

3.18 Perhaps an obvious question to ask is: 'Why do companies bother with swaps to switch from fixed to floating rate interest or vice versa? Why don't they just terminate their original loan and take out a new one?' The answer is that transaction costs may be too high. Terminating an original loan early may involve a significant termination fee and taking out a new loan will involve issue costs. Arranging a swap can be significantly cheaper, even if a banker is used as an intermediary. Because the banker is simply acting as an agent on the swap arrangement and has to bear no default risk, the arrangement fee can be kept low.

### Activity 11.3

ABC plc wants to borrow £5 million for five years at a fixed rate, and would be able to issue fixed rate bonds at 6%. It could also borrow at a floating rate of LIBOR plus 50 basis points. XYZ plc also wants to borrow £5 million for five years, but at a floating rate of interest. It can borrow at LIBOR plus 100 basis points, but could also issue five-year bonds at 6.2%.

A swaps bank recognises an opportunity for credit arbitrage. Ignoring any profit or 'turn' for the swaps bank, show how the swaps arrangements would work to reduce borrowing costs, if the credit arbitrage benefits are shared equally between the two companies.

## 4 CURRENCY SWAPS

4.1 In a **currency swap**, the parties agree to swap equivalent amounts of currency for the period of the swap. The purpose is to switch from payment commitments in one currency to payment commitments in a second currency.

4.2 Swaps are flexible since they can be arranged in any size, and are reversible. Transaction costs are low, only amounting to legal fees, since there is no commission or premium to be paid.

(a) Currency swaps can provide a **hedge against exchange rate movements for longer periods than the forward market**. Forward contracts are available for periods up to about two years in liquid currencies, and less with other currencies. Currency swaps can also be useful when using a currency for which no forward market is available.

(b) With a currency swap, a company can obtain debt finance in another currency, and swap the liability into its own currency.

(c) Currency swaps can therefore be used by companies to restructure the currency base of their 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 therefore provide a means of reducing exchange rate exposure.

(d) At the same time as exchanging currency, the company might also 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 coupon swap in addition to achieving the other purposes of a currency swap. (These swaps are called 'fixed-floating currency swaps'.)

(e) 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.

## Key learning points

- An **interest rate swap** is an agreement to exchange interest payments on a notional loan, normally at regular intervals for the term of the swap. Swap terms are typically three to seven years, but can be as short as one year and as long as 20 to 30 years.
- In a **coupon swap**, one party agrees to pay a fixed rate of interest on the notional principal in exchange for receiving interest at a variable rate. The variable rate is an agreed benchmark rate, such as LIBOR. The other party pays the variable rate and receives the fixed.
- Fixed swap rates (bid and ask rates) are quoted by banks and reported in the financial press.
- An interest rate might be used (a) to manage the mix of fixed rate and floating rate interest commitments in a company's debt portfolio, (b) to achieve fixed rate borrowing when direct borrowing can only be arranged at a variable rate of interest and (c) occasionally, to obtain debt finance more cheaply.
- A **currency swap** is an agreement between two parties for an exchange of payments in two currencies. They agree to exchange a principal amount in one currency for an amount in the second currency: this exchange takes place at the end of the swap, and the exchange rate is typically the spot exchange rate at the start of the swap. The parties also agree to exchange interest payments on the notional principal amount of each currency.
- Currency swaps may be seen as a form of long-term forward exchange contract. They can be used to hedge long-term currency exposures.

## Quick quiz

1 What is a coupon swap?

2 When a bank agrees to be the payer of fixed interest in a coupon swap, will it quote its bid rate or its ask rate to the customer?

3 A company is the payer of the fixed interest in a swap and the fixed rate is 7.3%. For a given interest period, LIBOR is set at 7.0%. Will the company receive or pay the net difference in interest in this period?

4 What is a fixed-floating currency swap?

5 Suppose that in a currency swap, X agrees to pay Y a quantity of US dollars at the end of the swap in exchange for an agreed quantity of sterling. Which party will pay interest in dollars during the term of the swap, and who will pay interest in sterling?

6 If this same swap between X and Y also involves an exchange of principal at the start of the swap, who will pay the dollars and who will pay the sterling?

## Answers to quick quiz

1 An interest rate swap involving an exchange of a stream of interest payments at a fixed rate for a stream of interest payments at a floating rate.

2 Bid rate. This is lower than the ask rate. The bank will pay the lower of its quoted rates and receive the higher (ask) rate.

3 The company will pay interest for the difference of 0.3%.

4 A currency swap in which one party pays interest on one currency at a fixed rate, and the other party pays interest on the other currency at a floating rate.

5 X will pay interest on the dollars and Y will pay interest on the sterling.

6 If there is an exchange of principal at the near date for the swap, the payment is 'the other way'. X will pay sterling to Y and Y will pay dollars to X. Swaps involving an initial exchange of principal are relatively unusual.

## Answers to activities

### Answer 11.1

(a)

| | % |
|---|---|
| *Bonds*: pay fixed interest | (7.50) |
| *Swap* | |
| Receive fixed interest | 7.10 |
| Pay floating rate | (LIBOR) |
| Overall cost | (LIBOR + 0.40) |

(b)

| | % |
|---|---|
| *Bonds*: pay fixed interest | (7.50) |
| *Swap*: Net receipt (7.1 – 6.2)% | 0.90 |
| Overall cost | (6.60) |

An interest rate of 6.6% for the period is equal to the LIBOR rate plus 0.40%.

### Answer 11.2

| | % |
|---|---|
| *Bank loan*: pay floating rate interest | (LIBOR + 0.80) |
| *Swap* | |
| Receive floating rate interest | LIBOR |
| Pay fixed rate (higher, ask rate) | (6.50) |
| Overall cost | (7.30) |

| | | % |
|---|---|---|
| *Bank loan*: pay floating rate interest | (LIBOR + 0.80) | (7.80) |
| *Swap* | | |
| Receive floating rate interest | 7.00 | |
| Pay fixed rate | (6.50) | |
| Swap net receipt | | 0.50 |
| Overall cost | | (7.30) |

### Answer 11.3

ABC can borrow at a fixed rate 0.2% more cheaply than XYZ, and can borrow at a floating rate 0.5% more cheaply. The difference of 0.3% (0.5% - 0.2%) gives rise to a credit arbitrage opportunity, which the companies would split equally to gain a benefit of 0.15% each.

ABC will therefore use a swap to borrow at an overall fixed rate of (6% - 0.15%) 5.85%.

XYZ will use a swap to borrow at an overall floating rate of LIBOR plus (100 – 15) basis points, ie at LIBOR plus 0.85%.

| *ABC* | | *XYZ* | |
|---|---|---|---|
| | % | | % |
| Borrow at | (LIBOR + 0.50) | Borrow at | (6.20) |
| *Swap* | | Swap | |
| Pay (see note) | (5.35) | Pay | (LIBOR) |
| Receive | LIBOR | Receive (see note) | 5.35 |
| Net interest cost | (5.85) | Net interest cost | (LIBOR + 0.85) |

Note: The fixed pay rate and fixed receive rate are the balancing figures, since we know what the overall borrowing cost for each company should be. Since the 'turn' for the swaps bank, between its bid and ask rates, has been ignored in this example, the fixed pay rate for ABC and the fixed receive rate for XYZ are the same figure.

# *Part C*

# *Capital Structure and Dividend Policies*

# Chapter 12 Cost of capital

## Chapter topic list

1 Evaluation of the use of debt and equity: introduction
2 What is the cost of capital?
3 The pre-tax cost of debt capital
4 The after-tax cost of debt capital
5 The cost of equity capital: dividend valuation models
6 The capital asset pricing model (CAPM)
7 The weighted average cost of capital (WACC)
8 Project NPV and shareholder wealth

## Learning objective

On completion of this chapter you will be able to:

- explain the effect of capital structure on shareholder wealth and calculate the cost of capital of a business

The detailed syllabus areas covered are:

*Cost of capital and capital structure*

- costs of different elements of capital (including a basic understanding of CAPM)
- weighted average cost of capital and NPV analysis

## 1 EVALUATION OF THE USE OF DEBT AND EQUITY: INTRODUCTION

1.1 When a company needs to raise extra finance, its management must decide whether to try to obtain the money in the form of new debt finance or new equity. The choice between debt and equity has an impact on:

(a) Gearing risk
(b) The wealth of shareholders

As a general principle, the aim of choosing debt or equity as a source of new funds should be aimed at maximising the wealth of shareholders. The choice between debt and equity can affect shareholder wealth, as well as default risk.

1.2 In order to understand the implications of financial gearing for shareholder wealth, and in order to discuss whether there is an optimum level of gearing for a company, it is first of all necessary to understand:

(a) What is meant by the cost of equity and the cost of debt
(b) How to calculate the cost of debt
(c) How to calculate the cost of equity
(d) How to calculate the weighted average cost of capital for a company

1.3 These issues are the subject matter of this chapter. The contents of this chapter overlap with the syllabus for Financial Strategy, and so might be familiar to you already.

## 2 WHAT IS THE COST OF CAPITAL?

2.1 When a company evaluates a capital investment, and possibly decides how the investment should be financed if it goes ahead, it might carry out a discounted cash flow (DCF) analysis and estimate the net present value (NPV) of the capital project. Calculating an NPV involves discounting future cash flows at a cost of capital. To do this, the company must first of all establish what its cost of capital is.

**KEY TERM**

The **cost of capital** has two aspects to it.

(a) It is the **cost of funds** that a company raises and uses.

(b) It is also the return that investors expect to be paid for putting funds into the company. It is therefore the **minimum return** that a company should make on its own investments, to earn the cash flows out of which investors can be paid their return.

2.2 The cost of capital can therefore be measured by studying the returns required by investors, and then used to derive a discount rate for DCF analysis and investment appraisal.

2.3 A further aspect to the cost of capital is that the value of an investment will depend on the future cash returns that the investor expects to receive from the investment, and also the rate of return that the investor wishes to receive from the investment. In other words, the value of an investment, such as an equity share or a bond, depends on:

(a) Expected returns in cash, and
(b) The cost of capital

### The cost of capital and risk

2.4 The **cost of capital** has three elements. It consists of a premium over a risk-free rate to compensate the investor for the business risk and for the financial risk in the investment.

(a) The **risk-free rate of return** is the return that would be required from an investment if it were completely free from risk. Typically, a risk-free yield would be the yield on government securities.

(b) The **premium for business risk** is an increase in the required rate of return due to the existence of uncertainty about the future and about a firm's business prospects. It is a premium for uncertainty in earnings due to volatility in operating profits. Business risk is more relevant to the cost of equity than to the cost of debt capital.

(c) The **premium for financial risk** relates to the danger of high debt levels (high gearing). For ordinary shareholders, financial risk is evident in the variability of earnings after deducting payments to holders of debt capital. The higher the gearing of a company's **capital structure**, the greater will be the financial risk to ordinary shareholders, and this should be reflected in a higher risk premium and therefore a higher cost of capital. For providers of debt capital, financial risk consists of default risk, ie the risk that the borrower will be unable to meet its interest payment and capital repayment obligations.

2.5 Because different companies are in different types of business (varying business risk) and have different capital structures (varying financial risk) the cost of capital applied to one company may differ radically from the cost of capital of another.

### The costs of different sources of finance

2.6 Where a company uses a mix of equity and debt capital, its overall cost of capital might be taken to be the weighted average of the cost of each type of capital. The weighted average cost of capital is considered later. First of all, we must look separately at the cost of debt capital and the cost of equity.

## 3 THE PRE-TAX COST OF DEBT CAPITAL

3.1 The cost of debt capital is the return required by lenders to a company (eg banks) and by investors in the company's bonds. Each lender or group of bondholders might require a different return on their investment. For example:

(a) The return required by the lender or bondholder will vary according to the maturity of the loan or bond (ie required returns vary with the period of time before the debt will be repaid)

(b) The required return will also vary with the perceived financial risk; for example, a lender whose loan is secured against assets of the company might be willing to accept a lower yield in return for the reduction in risk that the security provides

3.2 For a company with several different interest-bearing debts, its cost of debt capital is calculated by first of all calculating the cost of each individual debt item in turn, and then computing a weighted average cost for all the debt taken together.

## Cost of irredeemable debt (or irredeemable preference shares)

3.3 Estimating the cost of fixed interest debt is much easier than estimating the cost of equity capital because the interest received by the holder of the security is fixed by contract and will not fluctuate.

3.4 We can deal with preference shares in exactly the same way as debt, as preference dividends are also fixed.

3.5 The cost of fixed interest debt capital, such as bonds and preference shares, is the rate of interest (the **internal rate of return**) that equates the current market price of the debt with the discounted future cash receipts receivable by an investor in the debt.

3.6 **Ignoring taxation** for the moment, in the case of **irredeemable debt,** the future cash flows are the interest payments in perpetuity so that:

$$P_0 = \frac{I}{K_d}$$

where $P_0$ is the current market price of debt capital after payment of the current interest (dividend in the case of irredeemable preference shares)

$I$ is the annual interest (dividend)

$K_d$ is the cost of debt (preference share) capital

This formula can be re-arranged:

$$K_d = \frac{I}{P_0}$$

### 3.7 EXAMPLE

A company has issued irredeemable bonds with a coupon of 6%. The current market value of these bonds is £97.00. What is the cost of these bonds, ignoring taxation?

The cost of the bonds is $6/97.00 \times 100 = 6.2\%$.

## Cost of floating rate debt

3.8 The cost of floating rate debt, such as variable rate bank loans, is the current interest rate. The debt is assumed to have a par value, so that every £100 of variable rate loans has a market value of £100. Thus, if a company has a variable rate loan of £20,000 on which the interest rate is 8%, the value of the loan will be £20,000 and the cost of the loan is 8%.

3.9 The cost of variable rate loans rises or falls with rises or falls in the benchmark interest rate to which the loan is tied, such as LIBOR.

## Cost of redeemable debt or redeemable preference shares

3.10 If the debt is **redeemable,** then in the year of redemption the interest payment will be received by the investor/lender as well as the amount payable on redemption. The market value of the debt can be calculated by discounting all the future cash flows on the debt at the debt holder's cost of capital.

$$P_0 = \frac{I}{(1+K_d)} + \frac{I}{(1+K_d)^2} + \ldots\ldots + \frac{I+P_n}{(1+K_d)^n}$$

where $P_n$ = the amount payable on redemption in year n.

3.11 The above equation cannot be simplified so '$K_d$' has to be calculated by trial and error, as an **internal rate of return (IRR)** for the cash flows.

3.12 Calculating an IRR is not explained in this text, and it is assumed that you are already familiar with this part of the Financial Strategy (subject area 3) syllabus.

3.13 The best trial and error figure to start with in calculating the cost of redeemable debt is to take the cost of debt capital as if it were irredeemable and then add the annualised capital profit that will be made from the present time to the time of redemption.

## 3.14 EXAMPLE: COST OF DEBT CAPITAL

Stan plc has 7% debentures in issue. The market price is £95.75 ex interest. Ignoring taxation, calculate the cost of this capital if the debenture is:

(a) Irredeemable
(b) Redeemable at par after 5 years

## 3.15 SOLUTION

(a) The cost of irredeemable debt capital is:

$$\frac{I}{P_0} = \frac{£7}{£95.75} \times 100\% = 7.3\%$$

(b) The cost of debt capital is 7.3% if irredeemable. The capital profit that will be made from now to the date of redemption is £4.25 (£100 – £95.75). This profit will be made over a period of five years which gives an annualised profit of £0.85 which is about 0.9% of current market value. The best trial and error figure to try first is, therefore, 7.3% + 0.9% = 8.2%, say 8%.

| *Year* | | *Cash flow* | *Discount factor 8%* | *PV* | *Discount factor 10%* | *PV* |
|---|---|---|---|---|---|---|
| | | £ | | £ | | £ |
| 0 | Market value | (95.75) | 1.000 | (95.75) | 1.000 | (95.75) |
| 1-5 | Interest | 7.00 | 3.993 | 27.95 | 3.791 | 26.54 |
| 5 | Capital repayment | 100.00 | 0.681 | 68.10 | 0.621 | 62.10 |
| | | | | 0.30 | | (7.11) |

The approximate cost of debt capital is therefore:

$$8 + \left[\frac{0.30}{(0.30 - -7.11)}\right] \times (10-8)\% = 8.08\%$$

3.16 The cost of debt capital estimated above represents the cost of continuing to use the finance rather than redeem the debt securities at their current market price. It would also represent the cost of raising additional fixed interest capital if we assume that the cost of the additional capital would be equal to the cost of that already issued. If a company has not already issued any fixed interest capital, it may estimate the cost of doing so by making a similar calculation for another company which is judged to be similar as regards risk.

## 4 THE AFTER-TAX COST OF DEBT CAPITAL

4.1 The interest paid on debt capital is an allowable deduction for purposes of corporate taxation and so the cost of debt capital and the cost of share capital are not properly comparable costs. The tax relief on debt interest should be recognised, because it reduces the effective cost of debt. The tax relief should be provided for in computing the cost of debt capital, to arrive at an 'after-tax' cost of debt. The **after-tax cost of irredeemable debt capital** is:

$$K_d = \frac{I}{P_0}(1 - t)$$

where $K_d$ is the cost of debt capital

$I$ is the annual interest payment

$P_0$ is the current market price of the debt capital ex interest (that is, after payment of the current interest)

$t$ is the rate of corporation tax.

4.2 Suppose that a company has £40,000 of irredeemable debt on which it pays interest of 9% per annum, and that the value of this debt capital is currently £48,000. If the rate of corporation tax is 30%, the cost of the debentures would be:

$$\frac{(9\% \times 40{,}000)}{£48{,}000} \times (1 - 0.30) \times 100\% = 5.25\%$$

4.3 The higher the rate of corporation tax, the greater the tax benefits in having debt finance will be compared with equity finance. In the example above, if the rate of tax had been 40%, the cost of debt would have been, after tax:

$$\frac{3{,}600}{48{,}000}(1 - 0.40) = 0.045 = 4.5\%$$

4.4 The relative attraction of debt over equity was enhanced in the UK by the abolition in 1997 of the tax credit on dividends which **pension funds** - a major category of investor - could previously reclaim.

4.5 In the case of **redeemable debentures**, the capital repayment is not allowable for tax. To calculate the cost of the debt capital to include in the weighted average cost of capital, it is necessary to calculate an internal rate of return that takes account of tax relief on the interest within the cash flow computation.

### 4.6 EXAMPLE: AFTER-TAX COST OF REDEEMABLE DEBT CAPITAL

(a) A company has £800,000 of 7% bonds on which the interest is payable annually. The bonds are due for redemption at par in four years' time. The market price of the bonds is £103.00 ex interest. Ignoring taxation, what do you estimate to be the current market rate of interest?

(b) If the effective rate of corporation tax is 30% what would be the cost to the company of the bonds in (a) above? Assume that tax relief on interest payments arises in the same year as the interest payment.

## 4.7 SOLUTION

(a) The current market rate of interest is found by calculating the pre-tax internal rate of return of the cash flows shown in the table below. A discount rate of 7% is chosen for a trial-and-error start to the calculation.

| | *Year* | *Cash flow* | *Discount factor 7%* | *Present value at 7%* | *Discount factor 6%* | *Present value at 6%* |
|---|---|---|---|---|---|---|
| | | £ | | £ | | £ |
| Market value (ex int) | 0 | (103) | 1.000 | (103.00) | 1.000 | (103.00) |
| Interest | 1-4 | 7 | 3.387 | 23.71 | 3.465 | 24.25 |
| Redemption | 4 | 100 | 0.763 | 76.30 | 0.792 | 79.20 |
| | | | NPV | (2.99) | | 0.45 |

The approximate cost of debt capital is therefore

$$6 + \left[\frac{0.45}{(0.45 - -2.99)}\right] \times (7 - 6)\% = 6.1\%$$

(b) To estimate the after-tax cost of the bonds, we can make our first estimate by deducting the tax rate from the pre-tax cost of the debt, ie by trying $6.1\% \times (1 - 0.30) = 4.27\%$, say 4%. It is assumed that the interest saving (30% of £7 or £2.10 per annum) is earned in the same year as the interest is paid, giving an after-tax cash flow for interest payments of £4.90.

| | *Year* | *Cash flow* | *Discount factor at 4%* | *PV 4%* | *Discount factor at 5%* | *PV 5%* |
|---|---|---|---|---|---|---|
| | | £ | | £ | | £ |
| Market value | 0 | (103.00) | 1.000 | (103.00) | 1.000 | (103.00) |
| Interest less tax saved | 1-4 | 4.90 | 3.63 | 17.79 | 3.546 | 17.37 |
| Redemption | 4 | 100.00 | 0.855 | 85.50 | 0.823 | 82.30 |
| NPV | | | | 0.29 | | (3.33) |

The estimated after-tax cost of the debt capital is:

$$4\% + \left[\frac{0.29}{(0.29 + 3.33)}\right] \times (5 - 4)\% = 4.1\% \text{ approx.}$$

### Activity 12.1

A company has 10% bonds in issue that are redeemable at par in three years' time. The current market value of the bonds is £106.00. What is the cost of capital for these bonds:

(a) Ignoring taxation?

(b) After tax, assuming that there is tax relief on interest of 30%, in the year the interest payment is made?

You may use the following discount rates for your calculations.

| *Year* | *Discount rate at 4%* | *Discount rate at 6%* | *Discount rate at 8%* |
|---|---|---|---|
| 1 | 0.962 | 0.943 | 0.926 |
| 2 | 0.925 | 0.890 | 0.857 |
| 3 | 0.889 | 0.840 | 0.794 |

# 5 THE COST OF EQUITY CAPITAL: DIVIDEND VALUATION MODELS

5.1 New funds from equity shareholders are obtained either from new issues of shares or from cash deriving from retained earnings. Both of these sources of funds have a cost. Shareholders will not be prepared to provide funds for a **new issue of shares** unless the return on their investment is sufficiently attractive. **Retained earnings** also have a cost. This is an opportunity cost, the dividend forgone by shareholders.

5.2 Shareholders put a value on their shares. In the case of shares traded on a stock market, this value is represented by the market price of the shares. The market price shows how much investors are currently willing to pay for the shares, in return for the future benefits they expect to obtain.

5.3 It is important to understand that the cost of equity capital is represented in the value that shareholders place on the shares. The value of a share lies in the future dividends and capital growth that the shareholder expects to receive. However, any rise in the market value of a share will be attributable to expectations of increasing dividends in the future. It is therefore possible to work on the assumption that the market value of a share is the value placed by shareholders on all the future earnings from the share ie 'in perpetuity'.

## The dividend valuation model

5.4 The cost of equity, both for new issues and retained earnings, could be estimated by means of a **dividend valuation model**, on the assumption that the market value of shares is directly related to expected future dividends on the shares. If the future annual dividend per share ($D_1$) is expected to be **constant** in amount 'in perpetuity', the share price ($P_o$) can be calculated by the following formula:

$$P_o = \frac{D_1}{r}$$

Where r is the cost of equity, expressed as a proportion (eg 8% = 0.08 and 15% = 0.15, etc).

The share price is 'ex dividend', which means that it excludes the value of any current dividend that has just been paid or is currently payable. The next annual dividend is receivable in one year's time.

5.5 The share price is the present value of a constant annual dividend forever, ie in perpetuity. The mathematical formula is quite simple because **the PV of a constant annual cash flow £C in perpetuity, discounted at a cost of capital r, is £C/r** (as for irredeemable debt).

5.6 Re-arranging this formula, we get a formula for the cost of equity.

$$r = \frac{D_1}{P_o}$$

where r is the shareholders' cost of capital

$D_1$ is the annual dividend per share, starting at year 1 and then continuing annually in perpetuity

5.7 The following assumptions are made in the dividend valuation model.

(a) The dividends from projects for which the funds are required will be of the same risk type or quality as dividends from existing operations.

(b) There would be no increase in the cost of capital, for any other reason besides (a) above, from a new issue of shares.

(c) All shareholders have perfect information about the company's future, there is no delay in obtaining this information and all shareholders interpret it in the same way.

(d) Taxation can be ignored.

(e) All shareholders have the same marginal cost of capital.

There would be no issue expenses for new shares.

5.8 Suppose that Kappa plc is a company with no dividend growth prospects, which has just paid an annual dividend of 25p per share. The share price is 400p. Applying the dividend valuation model, the cost of equity can be calculated as 25/400 = 0.0625, ie 6.25%.

## The dividend growth model

5.9 Shareholders will normally expect dividends to increase year by year and not to remain as a constant amount every year. The so-called 'fundamental theory of share values' states that the market price of a share is the present value of the expected future revenue cash flows from the share, discounted at the cost of equity capital. Given an expected **constant annual growth in dividends**, the share price formula would be:

$$P_0 = \frac{D_0(1+g)}{(r-g)}$$

where:

$D_0$ is the current year's annual dividend (ie the Year 0 dividend)
$P_0$ is the current ex-dividend share price
r is the cost of equity, expressed as a proportion
g is the annual growth rate in dividends, expressed as a proportion (eg 4% = 0.04)

5.10 This formula assumes a constant growth rate in dividends, but it can be adapted for uneven growth.

5.11 Re-arranging the formula, we get a formula for the ordinary shareholders' cost of capital.

$$r = \frac{D_0(1+g)}{P_0} + g$$

5.12 This is equivalent to the following equation

$$r = \frac{D_1}{P_0} + g$$

where $D_1$ is the dividend in year 1, so that $D_1 = D_0(1 + g)$.

5.13 This dividend growth model is sometimes called **Gordon's growth model**.

### Activity 12.2

A share has a current market value of 660p, and the last dividend was 33p. If the expected annual growth rate of dividends is 3%, calculate the cost of equity capital.

### Private companies and the cost of equity

5.14 The cost of capital cannot be calculated from market values for **private companies** in the way that has been described so far, because the shares in a private company do not have a quoted market price. Since private companies do not have a cost of equity that can be readily estimated, it follows that a big problem for private companies which want to use DCF for evaluating investment projects is how to select a cost of capital for a discount rate.

5.15 Suitable approaches might be: to estimate the cost of capital for similar public companies, but then add a further premium for additional business and financial risk; or to build up a cost of capital by adding estimated premiums for business risk and financial risk to the risk-free rate of return, eg using the CAPM (as follows).

## 6 THE CAPITAL ASSET PRICING MODEL (CAPM)

6.1 The capital asset pricing model is an alternative to the dividend valuation model and dividend growth model as a method of establishing the cost of equity. The uses of the capital asset pricing model (CAPM) include:

(a) Trying to establish the 'correct' equilibrium market value of a company's shares

(b) Trying to establish the cost of a company's equity, taking account of the risk characteristics of a company's investments, both business and financial risk

6.2 It is useful to try to understand the logic underlying the CAPM. A starting point is the difference between systematic risk and unsystematic risk (or **idiosyncratic risk**) in investments.

### Systematic risk and unsystematic risk

**KEY TERMS**

**Unsystematic risk** is that part of an investment's total risk that is attributable to factors particular to that investment's industry sector, location, management etc and which can be diversified away in a well-diversified portfolio.

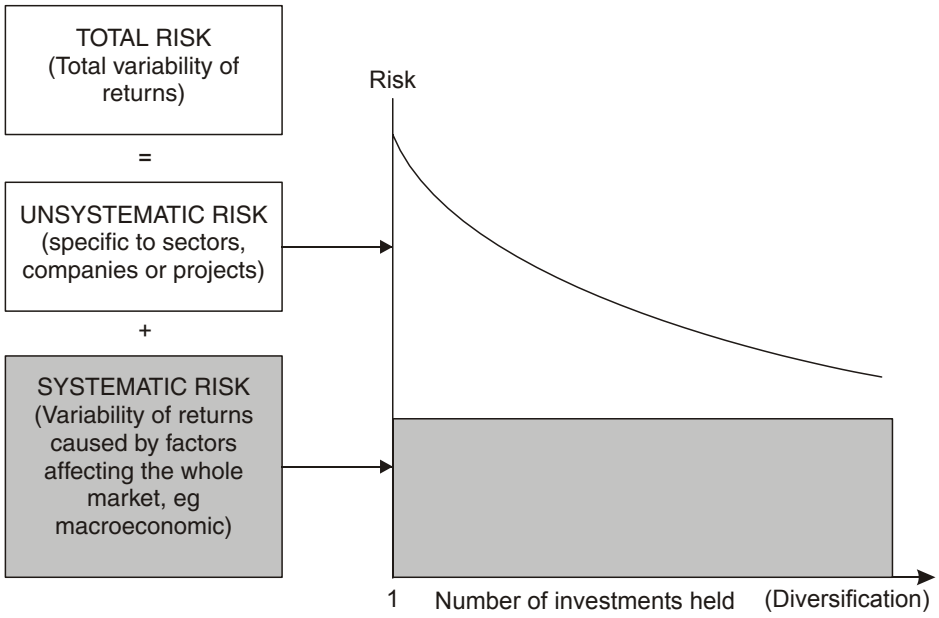
**Systematic risk** is the remaining risk after all unsystematic risk has been diversified away, attributable to market-wide factors.

6.3 Whenever an investor invests in some shares, or a company invests in a new project, there will be some risk involved. The actual return on the investment might be better or worse than that hoped for. To some extent, risk is unavoidable, unless the investor settles for risk-free securities such as gilts. Investors must take the rough with the smooth and for reasons outside their control, returns might be higher or lower than expected. **Provided that the investor diversifies his investments** in a suitably wide portfolio, the investments which perform well and those which perform badly should tend to cancel each other out, and much risk can be diversified away. In the same way, a company which invests in a number of projects will find that some do well and some do badly, but taking the whole portfolio of investments, average returns should turn out much as expected.

6.4 **Risks that can be diversified away** are referred to as **unsystematic risk**, or **idiosyncratic risk**. These are the risks that are particular to an individual company. Since an investor can eliminate unsystematic risk by investing in a wide portfolio of investments, there should be

no requirement (in theory at least) for a risk premium for unsystematic risk. In other words, the cost of equity, in theory, should not be affected at all by unsystematic risk.

6.5 Some investments are by their very nature more risky than others. This has nothing to do with chance variations up or down in actual returns compared with what an investor should expect. This inherent risk, known as the **systematic risk, cannot be diversified away**.




6.6 Systematic risk must be accepted by any investor, unless he invests entirely in risk-free investments. The equity investor chooses to bear systematic risk in return for the higher returns he hopes to receive, compared with investing in risk-free securities. In other words, in return for accepting systematic risk, an investor will expect to earn a return that is higher than the return on a risk-free investment. **The amount of systematic risk in an investment varies between different types of investment.**

(a) The systematic risk in the operating cash flows of a tourism company which will be highly sensitive to consumers' spending power might be greater than the systematic risk for a company which operates a chain of supermarkets.

(b) Some individual projects will be more risky than others and so the systematic risk involved in an investment to develop a new product would be greater than the systematic risk of investing in a replacement asset.

## Systematic risk and unsystematic risk: implications for investments

6.7 If an investor wants to avoid risk altogether, he must invest entirely in **risk-free securities**. If an investor holds shares in just a few companies, there will be some unsystematic risk as well as systematic risk in his portfolio, because he will not have spread his risk enough to diversify away the unsystematic risk. To eliminate unsystematic risk, he must build up a well-diversified portfolio of investments.

6.8 If an investor holds a **balanced portfolio** of all the stocks and shares on the stock market, he will incur systematic risk which is exactly equal to the average systematic risk in the stock market as a whole.

6.9 Shares in **individual companies will have systematic risk characteristics which are different from this market average**. Some shares will be less risky and some will be more risky than the stock market average.

## Systematic risk and the CAPM

6.10 The capital asset pricing model is mainly concerned with how systematic risk is measured (using **beta factors**) and with how systematic risk affects required returns and share prices.

6.11 **CAPM theory includes the following propositions**.

(a) Investors in shares require a return in excess of the risk-free rate, to compensate them for systematic risk.

(b) Investors should not require a premium for unsystematic risk, because this can be diversified away by holding a wide portfolio of investments.

(c) Because systematic risk varies between companies, investors will require a higher return from shares in those companies where the systematic risk is greater.

6.12 The same propositions can be applied to **capital investments by companies**.

(a) Companies will want a return on a project to exceed the risk-free rate, to compensate them for systematic risk.

(b) Unsystematic risk can be diversified away, and so a premium for unsystematic risk should not be required.

(c) Companies should want a bigger return on projects where systematic risk is greater.

## Market risk and returns

**KEY TERM**

**Market risk** (systematic risk) is the average systematic risk of the market as a whole.

6.13 The CAPM was first formulated for investments in stocks and shares on the market, rather than for companies' investments in capital projects. It is based on a comparison of the systematic risk of individual investments (shares in a particular company) and the risk of all shares in the market as a whole. Taking all the shares on a stock market together, the total expected returns from the market will vary because of systematic risk. The market as a whole might do well or it might do badly.

## Risk and returns from an individual security

6.14 In the same way, an individual security may offer prospects of a return of x%, but with some risk (business risk and financial risk) attached. The return (the x%) that investors will require from the individual security will be higher or lower than the market return, depending on whether the security's systematic risk is greater or less than the market average. A major assumption in CAPM is that there is a **linear relationship** between the return obtained from an individual security and the average return from all securities in the market.

## 6.15 EXAMPLE: CAPM

The following information is available about the performance of an individual company's shares and the stock market as a whole.

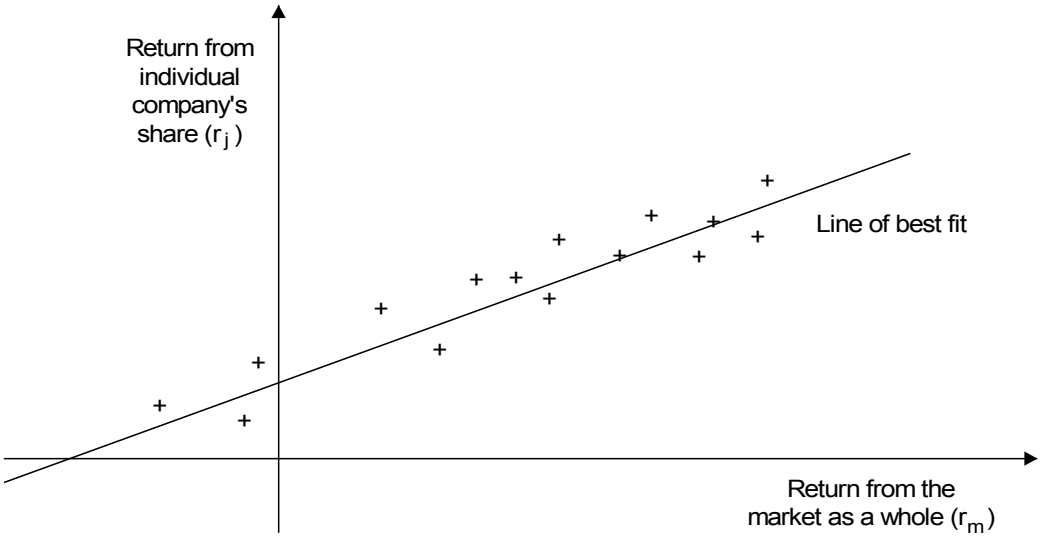
| | *Individual company* | *Stock market as a whole* |
|---|---|---|
| Price at start of period | 405.0 pence | 5,980.0 |
| Price at end of period | 439.5 pence | 6,470.0 |
| Dividend during period | 10.6 pence | 16.2 |

6.16 The return on the company's shares ($r_j$) and the return on the 'market portfolio' of shares ($r_m$) may be calculated as:

$$\frac{\text{Capital gain (or loss)} + \text{dividend}}{\text{Price at start of period}}$$

$$r_j = \frac{(439.5-405)+10.6}{405} = 0.11 \qquad r_m = \frac{(6470-5980)+16.2}{5980} = 0.08$$

6.17 A statistical analysis of 'historical' returns from a security and from the 'average' market may suggest that a linear relationship can be assumed to exist between them. A series of comparative figures could be prepared (month by month) of the return from a company's shares and the average return of the market as a whole. The results could be drawn on a scattergraph and a 'line of best fit' drawn (using linear regression techniques) as shown in the following diagram. (Note that returns can be negative. A share price fall represents a capital loss, which is a negative return.)




6.18 This analysis would show three things.

(a) The return from the security ($r_j$) and the return from the market as a whole ($r_m$) will tend to rise or fall together.

(b) The return from the security may be higher or lower than the market return. This is because the systematic risk of the individual security differs from that of the market as a whole.

(c) The scattergraph may not give a good line of best fit, unless a large number of data items are plotted, because actual returns are affected by unsystematic risk as well as by systematic risk.

6.19 The conclusion from this analysis is that individual securities will be either more or less risky than the market average in a fairly predictable way. The measure of this relationship between market returns and an individual security's returns, reflecting differences in systematic risk characteristics, can be developed into a **beta factor for the individual security**.

## The beta factor and the market risk premium

**KEY TERM**

A share's **beta factor** is the measure of its volatility relative to the market.

6.20 The beta factor of the **market as a whole** is **1.0**. Market risk makes market returns volatile and the beta factor is simply a basis or yardstick against which the risk of other investments can be measured.

6.21 For example, suppose that returns on shares in XYZ plc tend to vary twice as much as returns from the market as a whole, so that if market returns went up 3%, say, returns on XYZ plc shares would be expected to go up by 6% and if market returns fell by 3%, returns on XYZ plc shares would be expected to fall by 6%. The beta factor of XYZ plc shares would be 2.0.

6.22 Thus if the average market return rises by, say, 3%, the return from a share with a beta factor of 0.9 should rise by 2.7% in response to the **same conditions** which have caused the market return to change. The **actual** return from the share might rise by, say, 3.5%, or even fall by, say, 1%, but the difference between the actual change and a change of 2.7% due to general market factors would be attributed to unsystematic risk factors unique to the company or its industry.

6.23 It is an essential principle of CAPM theory that unsystematic risk can be cancelled out by diversification. In a well-balanced portfolio, an investor's gains and losses from the unsystematic risk of individual shares will tend to cancel each other out. In other words, if shares in X plc do worse than market returns and the beta factor of X's shares would predict, shares in Y plc will do better than predicted, and the net effect will be self-cancelling elimination of the specific (unsystematic) risk from the portfolio, leaving the average portfolio return dependent only on **changes in the average market return** and **the beta factors of shares in the portfolio**.

## Excess returns over returns on risk-free investments

6.24 The CAPM also makes use of the principle that returns on shares in the market as a whole are expected to be higher than the returns on risk-free investments. The difference between market returns and risk-free returns is called an **excess return**. For example, if the return on British Government stocks is 6% and market returns are 9%, the excess return on the market's shares as a whole is 3%.

6.25 The difference between the risk-free return and the expected return on an individual security can be measured as the excess return for the market as a whole multiplied by the security's beta factor. Thus, if shares in XYZ plc have a beta of 1.2 when the risk-free return is 8% and the expected market return is 10.5%, then the expected return on XYZ plc shares would exceed the risk-free return by $(10.5 - 8) \times 1.2 = 3\%$ and the total expected return on

XYZ shares would be (8 + 3)% = 11%. If the market returns fall by 1% to 9.5%, say, the expected return on XYZ plc shares would fall by 1.2 × 1% = 1.2% to 9.8%, being 8% + [(9.5 – 8) × 1.2] = 9.8%.

### The CAPM formula

6.26 The capital asset pricing model is a statement of the principles explained above. It can be stated as follows.

$$r_j = r_f + (r_m - r_f)\beta$$

where $r_j$ is the expected return from an individual security
$r_f$ is the risk-free rate of return
$r_m$ is the expected return from the market as a whole
$\beta_j$ is the beta factor of the individual security

$(r_m - r_f)$ is the difference between the expected market return and the risk-free rate of return (the excess return), and is often referred to as the **market risk premium**.

### 6.27 EXAMPLE: CAPM

Flower plc's shares have a beta value of 0.95. The market return is 12% and the risk-free rate of return is 7%.

The expected return on Flower's equity is:

7% + [(12 – 7) × 0.95] % = 11.75%.

### The CAPM and share prices

6.28 The CAPM can be used not only to estimate expected returns from securities with differing risk characteristics, but also to **predict the values of shares**, using the dividend valuation model.

### 6.29 EXAMPLE: CAPM AND SHARE VALUES

Company X and Company Y both pay an annual cash return to shareholders of 40 pence per share and this is expected to continue in perpetuity. The risk-free rate of return is 6% and the current average market rate of return is 10%. Company X's β coefficient is 1.1 and Company Y's is 0.8. What is the expected return from Companies X and Y respectively, and what would be the predicted market value of each company's shares?

### 6.30 SOLUTION

(a) The expected return for X is 6% + (10% – 6%) × 1.1 = 10.4%

(b) The expected return for Y is 6% + (10% – 6%) × 0.8 = 9.2%

The dividend valuation model can now be used to derive expected share prices.

(c) The predicted value of a share in X is $\frac{40p}{0.104}$ = 385 pence

(d) The predicted value of a share in Y is $\frac{40p}{0.092}$ = 435 pence

The actual share prices of X and Y might be higher or lower than 385p and 435p. If so, CAPM analysis would conclude that the shares are currently either overpriced or under-priced.

### Activity 12.3

The risk-free rate of return is 4.5%. The average market return is 7.9%.

(a) What will be the return expected from a share whose $\beta$ factor is 0.88?

(b) What would be the share's expected value if it is expected to earn an annual dividend of 36p, with no capital growth?

### How are beta values calculated?

6.31 Beta values can be calculated for public companies from data about actual market returns and returns on the individual share. Historical data on returns is analysed statistically, and a beta value established.

6.32 Beta values are not so easily calculated, however:

(a) For shares in a private company, or

(b) For shares in a company that is diversifying into a new industry. Diversification changes the systematic risk associated with the shares, and a completely different beta factor will apply.

## 7 THE WEIGHTED AVERAGE COST OF CAPITAL (WACC)

**KEY TERM**

The **weighted average cost of capital (WACC)** is the average cost of a company's different sources of finance.

7.1 The capital structure of a company consists of equity capital and various forms of debt capital, and each capital item has its own cost. These are combined in the WACC using market values as weightings, to give an average cost of the existing finance base.

7.2 If it is assumed that a company will continue to maintain roughly the same capital structure in the future, the weighted average cost of capital is also a reasonable estimate of the company's marginal cost of new funds. On the basis of this assumption, **a company should use its weighted average cost of capital as the discount rate for capital investment appraisal.**

7.3 The weighted average cost of capital (WACC) might be considered the most reliable guide to the marginal cost of capital, but only on the assumption that the company continues to invest in the future:

(a) In projects of a standard level of business risk, and

(b) By raising funds in the same equity/debt proportions as its existing capital structure

## General formula for the WACC

7.4 A general formula for the weighted average cost of capital is:

$$WACC=K_{eg}\left(\frac{E}{E+D}\right)+K_d\left(\frac{D}{E+D}\right)$$

where $K_{eg}$ is the cost of equity
$K_d$ is the cost of debt
E is the market value of equity in the firm
D is the market value of debt in the firm

7.5 The above formula ignores taxation. Bringing in corporation tax, we should calculate the cost of debt net of tax, where the tax rate is t, as follows.

$$WACC=K_{eg}\left(\frac{E}{E+D}\right)+K_d(1-t)\left(\frac{D}{E+D}\right)$$

If you need to calculate WACC where debt is redeemable, you should calculate the after-tax cost of debt using the techniques set out earlier in this chapter and substitute this into the formula in place of $K_d(1 - t)$.

## 7.6 EXAMPLE: WEIGHTED AVERAGE COST OF CAPITAL

Twelve plc is financed partly by equity and partly by bonds. The equity proportion is always kept at two-thirds of the total. The cost of equity is 14% and that of debt 8%. A new project is under consideration that will cost £200,000 and will yield a return before interest of £75,000 a year for four years. Should the project be accepted? Ignore taxation.

## 7.7 SOLUTION

Since the company will maintain its gearing ratio unchanged, it is reasonable to assume that its marginal cost of funds equals its WACC. The weighted average cost of capital is as follows.

| | *Proportion* | *Cost* | *Cost × proportion* |
|---|---|---|---|
| Equity | 2/3 | 14% | 9.33% |
| Debt | 1/3 | 8% | 2.67% |
| | | WACC | 12.00% |

| *Year* | *Cash flow* | *Discount factor at 12%* | *PV* |
|---|---|---|---|
| | £ | | £ |
| 0 | (200,000) | 1.000 | (200,000) |
| 1 | 75,000 | 0.893 | 66,975 |
| 2 | 75,000 | 0.797 | 59,775 |
| 3 | 75,000 | 0.712 | 53,400 |
| 4 | 75,000 | 0.636 | 47,700 |
| NPV | | | 27,850 |

The NPV of the investment is £27,850, and the project appears financially viable.

## Weighting

7.8 In the last example, we simplified the problem of **weighting the costs of debt and equity** by giving the proportions of capital. Two methods of weighting could be used.

(a) Weights could be based on the market values of the debt and equity.

(b) Weights could be based on balance sheet values ('book values'), in which case shareholders' reserves should be included in the valuation of equity.

7.9 Although balance sheet values are often easier to obtain, they are of doubtful economic significance. It is appropriate to use market values, because returns to investors are measured by market values, not balance sheet values. However, for unquoted companies estimates of market values are likely to be extremely subjective and consequently book values may be used.

## 7.10 EXAMPLE: WACC

Ruff plc has equity share capital of 300 million shares with a current market price of 400p each, and bonds with a current market value of £500 million. The company expects to maintain its current capital structure (the proportion of equity to bonds) into the foreseeable future. Expected market returns are 11% and the risk-free cost of capital is 6%. The equity of Ruff plc has an estimated beta value of 1.4. The after-tax cost of the bonds is 7%.

What is the company's weighted average cost of capital?

## 7.11 SOLUTION

The WACC can be calculated as follows.

Cost of equity = 6% + 1.4 (11 – 6)% = 13%

| | *Market value (MV)* | *Cost* | *MV × Cost* |
|---|---|---|---|
| | *£m* | | *£m* |
| Equity | 1,200 | 0.13 | 156 |
| Bonds | 500 | 0.07 | 35 |
| | 1,700 | | 191 |

$$\text{WACC} = \frac{191}{1{,}700} = 0.112, \text{ ie } 11.2\%$$

The company should use a cost of capital of 11.2% to evaluate capital investment decisions.

### Activity 12.4

The management of Stand plc are trying to decide on a cost of capital to apply to the evaluation of investment projects. The company has an issued share capital of 1,000,000 ordinary £1 shares, with a current market value of £4.80 per share. It has also issued £2,000,000 of 10% bonds with a current market value of £112.00. The cost of these bonds after tax is 6.4%.

Management consider the current capital structure of the company to be similar to their plans for its longer-term capital structure.

The expected market return is 10.1% and the risk-free cost of capital is 4.5%. The estimated beta of Stand plc equity is 1.25.

*Required*

Calculate the WACC.

## Arguments for using the WACC as a discount rate

7.12 The weighted average cost of capital can be used in investment appraisal if we make the following assumptions.

(a) The project is small relative to the overall size of the company.

(b) The weighted average cost of capital reflects the company's long-term future **capital structure**, and capital costs. If this were not so, the current weighted average cost would become irrelevant because eventually it would not relate to any actual cost of capital.

(c) The project has the same degree of **business risk** as the company has now. When a new project has a different business risk, a different approach to calculating a cost of capital is required.

(d) New investments must be financed by new **sources of funds**: retained earnings, new share issues, new loans and so on.

(e) The cost of capital to be applied to project evaluation reflects the **marginal cost of new capital** (see below).

## Arguments against using the WACC

7.13 The arguments against using the WACC as the cost of capital for investment appraisal (as follows) are based on criticisms of the assumptions that are used to justify use of the WACC.

(a) New investments undertaken by a company might have different **business risk** characteristics from the company's existing operations. As a consequence, the return required by investors might go up (or down) if the investments are undertaken, because their business risk is perceived to be higher (or lower).

(b) The finance that is raised to fund a new investment might substantially change the capital structure and the perceived **financial risk** of investing in the company. Depending on whether the project is financed by equity or by debt capital, the perceived financial risk of the entire company might change. This must be taken into account when appraising investments.

(c) Many companies raise **floating rate** debt capital as well as fixed interest debt capital. With floating rate debt capital, the interest rate is variable, and is altered every three or six months or so in line with changes in current market interest rates. The cost of debt capital will therefore fluctuate as market conditions vary. Floating rate debt is difficult to incorporate into a WACC computation, and the best that can be done is to substitute an 'equivalent' fixed interest debt capital cost in place of the floating rate debt cost.

## Calculating the cost of equity: dividend valuation model or CAPM?

7.14 You might be wondering which method of calculating the cost of equity is more appropriate, the dividend valuation model approach or the CAPM. Using the two methods for measuring the cost of equity will produce two different values, for the following reasons.

(a) The dividend valuation model uses expectations of actual dividends and current share values. Dividends may include extra or lower returns caused by unsystematic risk variations, as well as systematic risk. Share prices might not be in equilibrium.

(b) The CAPM considers systematic risk only, and assumes equilibrium in the stock market.

7.15 If dividends reflect systematic risk only, and if stock market prices are in equilibrium, the dividend valuation model and the CAPM should produce roughly the same estimates for the cost of a firm's equity and for its WACC.

7.16 In practice, either method of calculating a cost of equity might be used. Be prepared for either method in your examination.

**KEY TERM**

The **marginal cost of capital approach** involves calculating the cost to the company of raising the additional capital to finance the project.

7.17 It can be argued that the current weighted average cost of capital should be used to evaluate projects where a company's capital structure changes only very slowly over time. In such a situation, the **marginal cost of new capital** should be roughly equal to the weighted average cost of current capital. If this view is correct, then by undertaking investments that offer a return in excess of the WACC, a company will increase the market value of its ordinary shares in the long run. This is because the excess returns would provide surplus profits and dividends for the shareholders.

7.18 However, where gearing levels fluctuate significantly, or the finance for a new project carries a significantly different level of risks to that of the existing company, there is good reason to seek an alternative marginal cost of capital to establish the incremental financing costs of the new project.

**Exam alert**

The June 2003 exam contained a question on WACC which included both discursive and computational elements.

## 8 PROJECT NPV AND SHAREHOLDER WEALTH

8.1 When the net present value (NPV) method of discounted cash flow analysis is used to evaluate a capital expenditure project, and the company's long-term WACC is used as the discount rate, the project will only be undertaken if the NPV is expected to be positive. A positive net present value means that the net cash flows from the project are expected to exceed the company's cost of capital, which means that the returns will be higher than the returns required by the providers of the company's debt and equity capital.

8.2 The surplus returns in excess of the cost of capital represent added value for shareholders. If shareholders are aware of the expected net present value of a new project undertaken by the company, the value of their shares should increase by the project's net present value, provided that there is no change in the company's WACC. This is an important concept, and helps to explain why the NPV method of project appraisal is the most appropriate to use in cases where the financial objective of the organisation is to increase shareholder wealth.

8.3 We begin considering this argument for companies financed entirely by equity, so that the WACC and the cost of equity are the same.

Suppose that a company relying on equity as its only source of finance wishes to invest in a new project. The money will be raised by issuing new share capital to the existing shareholders. For simplicity, it will be assumed that the cash inflows generated by the new project will be used to increase dividends. The project will have to show a positive NPV at the shareholders' marginal cost of capital, because otherwise the shareholders would not agree to provide the new capital.

8.4 The gain to the shareholders after acceptance of the new project will be the difference between:

(a) The market value of the company before acceptance of the new project and

(b) The market value of the company after acceptance of the new project, less the amount of funds raised from the shareholders to finance the project

8.5 The market value of the shares will increase by the present value of the extra future dividends generated by the project. It is assumed that all the extra net cash flows earned by the project will be paid as dividends. In formula terms, this is:

$$\frac{A_1}{(1+K_e)} + \frac{A_2}{(1+K_e)^2} + \frac{A_3}{(1+K_e)^3} + \ldots\ldots - (\text{Cost of project})$$

where $A_1, A_2$ ..... are the additional dividends at years 1, 2 and so on
$K_e$ is the shareholders' marginal cost of capital

This is the NPV of the project. In other words, shareholder wealth will increase by the NPV of the project, provided all the extra cash flows are paid out as dividends. However, if some profits are retained (rather than paid out as dividends) and re-invested in other new projects with a positive NPV, the wealth of shareholders should increase still further.

### Investments financed by retained profits

8.6 A similar analysis applies if a project is financed by retained profits. To make the capital available for investment, current dividends would have to be reduced. However, even though in the short term dividends will be reduced, this will be more than compensated for in the long term by the fact that extra cash inflows generated by the investments will increase dividends in the future. (Indeed, it can be argued in theory that no dividends should be paid until all projects with positive net present values have been financed.)

### Conclusions for ungeared companies

8.7 If an all-equity company undertakes a project, and it is financed in such a way that its cost of capital remains unchanged, the total market value of ordinary shares will increase by the amount of the NPV of the project.

### Geared companies

8.8 Although the mathematics are more complex, a similar conclusion can be applied to companies with debt finance in their capital structure. Provided that the stock market is aware of the expected future cash flows from new investments, and shares management's expectations of what these will be, share prices should rise to reflect the expected NPV of new investments. In other words, shareholder wealth will increase by the NPV of new investments, possibly as soon as those investments are undertaken.

## Key learning points

- The **cost of capital** is the rate of return that a business must pay to satisfy the providers of funds, and it reflects the risk of the funding transaction.
- 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 div market value of the loan stock (or preference shares).
  - For **redeemable debt**, the cost is given by the internal rate of return of the cash flows involved. The same technique is used to calculate either the pre-tax or the post-tax cost of redeemable debt.
- The **dividend valuation model** can be used to estimate a cost of equity, on the assumption that the market value of shares is directly related to the expected future dividends on the shares.
- Expected **growth in dividends** can be allowed for in calculating a cost of equity, using Gordon's growth model.
- An alternative approach to measuring the cost of equity is the **capital asset pricing model (CAPM)**. This states that the cost of equity is at a premium above the risk-free rate. The size of this premium is the difference between the average stock market returns, and the risk-free rate of return, multiplied by a **beta factor**.
- Each company's equity has its own beta factor. A higher beta factor indicates higher (non-diversifiable) systematic risk. When a company has a beta factor in excess of 1.0, its expected returns are higher than the average returns for the market as a whole. A beta factor of less than 1.0 indicates systematic risk lower than the market average, and so expected returns are also lower than the market average.
- The **weighted average cost of capital** can be used to evaluate a company's investment projects if:
  - The project is small relative to the company
  - The existing capital structure will be maintained (same financial risk)
  - The project has the same business risk as the company
- New investments are financed by new sources of funds, and a **marginal cost of capital** approach is used.
- Applying the **fundamental theory of share values**, shareholder wealth should increase by the NPV of any new projects undertaken by the company, provided the NPV is calculated using the WACC and the WACC is expected to remain the company's long-run cost of capital.

## Quick quiz

1 Irredeemable debt issued by a company has a coupon of 6% and a market price of £97.50. The rate of taxation is 25%. What is the after-tax cost of this debt capital?

2 A company has just paid an annual dividend of 25p per share, and the share price is 468p. What is its cost of equity, using a dividend valuation formula, if it expects future annual dividends per share (a) to be constant for the foreseeable future or (b) to grow by 4% per annum for the foreseeable future?

3 What is the difference between systematic risk and unsystematic risk associated with a company's equity?

4 The risk free rate of return is 3.5% and the market risk premium is 8%. What is the cost of equity of a company if the equity beta factor is 0.95?

5 A company's cost of equity, as measured by the CAPM, is 12%. The company proposes to raise a large amount of debt capital, and so alter its capital structure by increasing its gearing. Will the cost of equity remain the same, will it rise or will it fall?

6 What portfolio of investments has a beta factor of zero?

7 What portfolio of investments has a beta factor of 1.0?

8 An investor has 40% of his investments in Security A, 30% in Security B and 30% in Security C. The beta factors for securities A, B and C are 1.18, 1.05 and 1.27 respectively. What is the beta factor for the investor's portfolio as a whole?

## Answers to quick quiz

1 $(6/97.50) \times (1 - 0.25) = 0.046$, ie 4.6%

2 (a) Cost of equity = 25/468 = 0.053, ie 5.3%
(b) Cost of equity =[ (25 x 1.04)/468] + 0.04 = 0.056 + 0.04 = 0.096, ie 9.6%

3 Unsystematic risk or idiosyncratic risk is risk that is particular to an individual company. Investors can eliminate this risk through diversification. Systematic risk is risk that cannot be diversified away, and explains why investors in equity expect a return in excess of the risk-free rate of return.

4 $3.5\% + 0.95 \times 8\% = 11.1\%$

5 The project will increase gearing, and so will increase the financial risk for equity shareholders. The cost of equity will rise.

6 A portfolio of risk-free securities, eg government bonds.

7 A portfolio of securities that is representative of the market as a whole.

8 $(0.40 \times 1.18) + (0.30 \times 1.05) + (0.30 \times 1.27) = 1.168$

## Answers to activities

## Answer 12.1

(a) ***Ignoring tax***

| | *Year* | *Cash flow* | *Discount factor 6%* | *Present value at 6%* | *Discount factor 8%* | *Present value at 8%* |
|---|---|---|---|---|---|---|
| | | £ | | £ | | £ |
| Market value | 0 | (106) | 1.000 | (106.00) | 1.000 | (106.00) |
| Interest | 1 | 10 | 0.943 | 9.43 | 0.926 | 9.26 |
| Interest | 2 | 10 | 0.890 | 8.90 | 0.857 | 8.57 |
| Interest | 3 | 10 | 0.840 | 8.40 | 0.794 | 7.94 |
| Redemption | 3 | 100 | 0.840 | 84.00 | 0.794 | 79.40 |
| | | | NPV | 4.73 | | (0.83) |

The approximate cost of debt capital is therefore

$$6 + \frac{4.73}{(4.73 - - 0.83)} \times (8 - 6)\% = 7.7\%$$

(b) ***After-tax cost***

To estimate the after-tax cost of the bonds, we can make a first estimate by deducting the tax rate from the pre-tax cost of the debt, ie by trying $7.7\% \times (1 - 0.30) = 5.39\%$. Using the discount figures in the question, we can start by trying 6%. It is assumed that the interest saving (30% of £10 or £3.00 per annum) is earned in the same year as the interest is paid, giving an after-tax cash flow for interest payments of £7.

*At a market value of £106.00*

| | *Year* | *Cash flow* | *Discount factor at 6%* | *PV 6%* | *Discount factor at 4%* | *PV 4%* |
|---|---|---|---|---|---|---|
| | | £ | | £ | | £ |
| Market value | 0 | (106.0) | 1.000 | (106.00) | 1.000 | (106.00) |
| Interest less tax saved | 1 | 7.0 | 0.943 | 6.60 | 0.962 | 6.73 |
| Interest less tax saved | 2 | 7.0 | 0.890 | 6.23 | 0.925 | 6.48 |
| Interest less tax saved | 3 | 7.0 | 0.840 | 5.88 | 0.889 | 6.22 |
| Redemption | 3 | 100.0 | 0.840 | 84.00 | 0.889 | 88.90 |
| NPV | | | | (3.29) | | 2.33 |

The estimated after-tax cost of the debt capital is:

$$4\% + \left(\frac{2.33}{(2.33--3.29)}\right) \times (6 - 4)\% = 4.8\% \text{ approx.}$$

## Answer 12.2

$$r = \frac{33(1.03)}{660} + 0.03 = 0.0815, \text{ ie } 8.15\%$$

## Answer 12.3

(a) Cost of equity = 4.5% + [(7.9% - 4.5%) 0.88] = 7.492%, say 7.5%

(b) Predicted share price = 36/0.075 = 480p

## Answer 12.4

Cost of equity = 4.5% + 1.25 (10.1 – 4.5)% = 11.5%

| | *Market value (MV)* | *Cost* | *MV x Cost* |
|---|---|---|---|
| | £ | | £ |
| Equity | 4,800,000 | 0.115 | 552,000 |
| Bonds | 2,240,000 | 0.064 | 143,360 |
| | 7,040,000 | | 695,360 |

$$\text{WACC} = \frac{695,360}{7,040,000} = 0.099, \text{ ie } 9.9\%$$

# Chapter 13 Gearing and beta factors

**Chapter topic list**

1 Estimating a beta factor

2 Ungeared and geared betas

3 Using ungeared and geared betas to establish a discount rate

**Learning objective**

On completion of this chapter you will be able to:

- explain the effect of capital structure on shareholder wealth and calculate the cost of capital of a business

The detailed syllabus areas covered are:

*Cost of capital and capital structure*

- gearing and evaluation of capital structure decisions
- factors affecting the level of gearing

# 1 ESTIMATING A BETA FACTOR

1.1 There are occasions when it might be necessary to calculate a beta factor for a company's equity, in order to calculate a cost for the company's equity, by basing the estimate on the beta factor of other companies in the same industry. This might be necessary when a statistical analysis of historical data about market returns and the company's equity returns is either inappropriate or not possible.

1.2 The reason for wanting to estimate a beta factor, basing the estimate on the betas of other companies in the same industry, might be that:

(a) A company is diversifying into a different industry, where the systematic risk characteristics are different

(b) The company is a private company, and so historical data about equity returns for the company does not exist

1.3 When a company diversifies into a different industry, the systematic risk characteristics of the new investment will be different to the systematic risk of previous investments. The returns required by equity shareholders from the new investment will also be different.

1.4 Beta factors for other companies in the industry provide a reasonable basis for estimating a new beta factor for a company's equity, on the assumption that the business risk characteristics are the same for all companies in the industry.

1.5 The task of calculating a beta factor in this way is made complicated, however, by the fact that systematic risk is also influenced by gearing (financial risk), and gearing levels differ between companies in the same industry.

# 2 UNGEARED AND GEARED BETAS

2.1 The **gearing** of a company affects the risk of its equity. If a company is geared, its financial risk is higher than the risk of a similar all-equity company. Higher gearing means higher financial risk.

2.2 This financial risk is an aspect of systematic risk and ought to be reflected in a company's beta factor. The $\beta$ value of a geared company's equity will therefore be higher than the $\beta$ value of a similar ungeared company's equity to allow for the additional risk.

## Beta values and the effect of gearing: geared betas and ungeared betas

2.3 The CAPM is consistent with a theory about gearing by Franco Modigliani and Merton Miller, which is explained in the next chapter. The connection between the Modigliani-Miller theory and the CAPM means that it is possible to establish a mathematical relationship between the $\beta$ value of an ungeared company and the $\beta$ value of the equity in a similar, but geared, company.

2.4 The equity $\beta$ value of a geared company will be higher than the equity $\beta$ value of a company identical in every respect except that it is all-equity financed. This is because of the extra financial risk. The mathematical relationship between the 'ungeared' and 'geared' betas is as follows.

$$\beta_a = \beta_e \frac{E}{E + D(1-t)} + \beta_d \frac{D(1-t)}{E + D(1-t)}$$

where $\beta_a$ is the beta factor of an ungeared company: the so-called asset or **ungeared beta**

$\beta_e$ is the beta factor of equity in a similar, but geared company: the equity or **geared beta**

$\beta_d$ is the beta factor of debt in the geared company

D is the market value of the debt capital in the geared company

E is the market value of the equity capital in the geared company

t is the rate of corporation tax

The formula above can be used to calculate the ungeared beta as a weighted average of a company's equity and debt beta factor.

2.5 **Debt is often assumed to be risk-free** and its beta ($\beta_d$) is then taken as zero, in which case the formula above reduces to the following form.

$$\beta_a = \beta_e \frac{E}{E + D(1-t)}$$

2.6 Debt should be assumed to be risk-free unless the question indicates otherwise. The simplified formula above is therefore the one that you are most likely to need in the examination.

2.7 Re-arranging the formula in the previous paragraph, we have:

$$\beta_e = \beta_a \times \frac{E + D(1-t)}{E} = \beta_a \left(1 + \frac{D(1-t)}{E}\right) = \beta_a + \beta_a \left(\frac{D(1-t)}{E}\right)$$

Note that the geared beta is equal to the ungeared beta plus a premium for financial risk which equals:

$$\beta_a \left(\frac{D(1-t)}{E}\right)$$

2.8 The significance of these formulae is that if we need to calculate a beta factor for the equity of company X from the beta factor of a similar company, company Y, or from the beta factor for industry taken as a whole, we can:

(a) Convert the beta factor of the company Y (or the market as a whole), which is a beta that reflects the gearing of the company Y (or the market average), into an ungeared beta

(b) Then convert the ungeared beta back to a geared beta, that reflects the gearing of company X

The geared beta for company X can then be used to establish a cost of equity for company X.

## 2.9 EXAMPLE

Two companies are identical in every respect except for their capital structure. Their market values are in equilibrium, as follows.

| | *Geared plc* | *Ungeared plc* |
|---|---|---|
| | £'000 | £'000 |
| Annual profit before interest and tax | 1,000 | 1,000 |
| Less interest (4,000 × 8%) | (320) | (0) |
| | 680 | 1,000 |
| Less tax at 30% | (204) | (300) |
| Profit after tax = dividends | 476 | 700 |
| | | |
| Market value of equity | 3,900 | 6,600 |
| Market value of debt | 4,180 | 0 |
| Total market value of company | 8,080 | 6,600 |

The beta value of Ungeared plc has been calculated as 1.1.

The debt capital of Geared plc is regarded as risk-free.

Calculate the beta value of Geared plc

## 2.10 SOLUTION

The beta of Geared plc can be calculated from the beta of Ungeared plc, by applying the appropriate formula.

$$\beta_e = \beta_a \times \frac{E + D(1-t)}{E}$$

$$= 1.1 \times \frac{3{,}900 + [4{,}180\,(1 - 0.30)]}{3{,}900} = 1.925$$

The beta of Geared plc, as we should expect, is higher than the beta of Ungeared plc.

### Using the geared and ungeared beta formula to estimate a beta factor for a company

2.11 In the previous example, the calculation was simplified by the fact that the company with the known beta factor was ungeared. In practice, the company or companies used as a benchmark for estimating a beta factor will be geared.

2.12 The estimate of a beta value estimated must be adjusted to allow for differences in gearing from the firms whose equity beta values are known. The formula for geared and ungeared beta values can be applied.

## 2.13 EXAMPLE

The management of Crispy plc wish to estimate their company's equity beta value. The company, which is an all-equity company, has only recently gone public and insufficient data is available at the moment about its own equity's performance to calculate the company's equity beta. Instead, it is thought possible to estimate Crispy's equity beta from the beta values of quoted companies operating in the same industry and with the same operating characteristics as Crispy.

Details of two similar companies are as follows. The tax rate is 30%.

(a) Snapp plc has an observed equity beta of 1.15. Its capital structure at market values is 70% equity and 30% debt. Snapp plc is very similar to Crispy plc except for its gearing.

(b) Crackle plc is an all-equity company. Its observed equity beta is 1.40. It has been estimated that 50% of the current market value of Crackle is caused by investment in projects which offer high growth, but which are more risky than normal operations and which therefore have a higher beta value. These investments have an estimated beta of 1.8, and are reflected in the company's overall beta value. Crackle's normal operations are identical to those of Crispy.

*Required*

(a) Assuming that all debt is virtually risk-free, calculate two estimates of the equity beta of Crispy, from the data available about Snapp and Crackle respectively.

(b) Now assume that Crispy plc is not an all-equity company, but instead is a geared company with a debt:equity ratio of 2:3 (based on market values). Estimate the equity beta of Crispy from the data available about Snapp.

## 2.14 SOLUTION

(a) (i) *Snapp plc - based estimate*

$$\beta_e = \beta_a \times \frac{E + D(1-t)}{E}$$

$$1.15 = \beta_a \times \frac{70 + 30(1-0.30)}{70}$$

$$1.15 = 1.3\beta_a$$

$$\beta_a = 0.88$$

(ii) *Crackle plc - based estimate*

If the beta value of normal operations of Crackle is $\beta_n$, and we know that the high-risk operations have a beta value of 1.8 and account for 40% of Crackle's value, we can estimate a value for $\beta_n$.

Overall beta = 0.5(high risk beta) + 0.5(normal operations beta)

$1.40 = 0.5(1.8) + 0.5\ \beta_n$

$\beta_n = 1.0$

Since Crackle is an all-equity company, this provides the estimate of Crispy's equity beta.

(b) If Crispy plc is a geared company with a market-value based gearing ratio of 2:3, we can use the geared and ungeared beta formula again. The ungeared beta value, based on data about Snapp, was 0.88. The geared beta of Crispy would be estimated as:

$$\beta_e = 0.88 + 0.88\left(\frac{2(1-0.30)}{3}\right) = 1.29$$

### Weaknesses in the formula

2.15 (a) It is difficult to identify other firms with identical operating characteristics.

(b) Estimates of beta values from share price information are not wholly accurate. They are based on statistical analysis of historical data and, as the previous example shows, estimates using one firm's data will differ from estimates using another firm's data. The beta values for Crispy estimated from Snapp and Crackle are different.

(c) There may be differences in beta values between firms caused by different cost structures (eg the ratio of fixed costs to variable costs), by size differences between firms and by debt capital not being risk-free.

(d) If the firm for which an equity beta is being estimated has opportunities for growth that are recognised by investors, and which will affect its equity beta, estimates of the equity beta based on other firms' data will be inaccurate, because the opportunities for growth will not be allowed for.

2.16 Perhaps the most significant simplifying assumption is that the cost of debt is a risk-free rate of return. This is obviously unrealistic. Companies may default on interest payments or capital repayments on their loans. It has been estimated that corporate debt has a beta value of 0.2 or 0.3.

2.17 The consequence of making the assumption that debt is risk-free is that the formulae tend to **overstate** the financial risk in a geared company and to **understate** the business risk in geared and ungeared companies by a compensating amount. In other words $\beta_a$ will be slightly higher and $\beta_e$ will be slightly lower than the formulae suggest.

## 3 USING UNGEARED AND GEARED BETAS TO ESTABLISH A DISCOUNT RATE

3.1 The process of calculating a discount rate for a company to use, when the company is planning to diversify into another industry, is as follows.

(a) ***Step 1***. Get an estimate of the systematic risk characteristics of the project's operating cash flows by obtaining published beta values for companies in the industry into which the company is planning to diversify.

(b) ***Step 2***. Adjust these beta values to allow for the company's capital gearing level. This adjustment is done in two stages.

(i) ***Step 2A***. Convert the beta values of other companies in the industry to ungeared betas, using the formula:

$$\beta_a = \frac{\beta_e}{\left(1+\frac{D(1-t)}{E}\right)} \qquad \left(\text{or } \beta_a = \beta_e \frac{E}{E+D(1-t)}\right)$$

(ii) ***Step 2B***. Having obtained an ungeared beta value $\beta_a$, convert it back to a geared beta $\beta_e$, which reflects the company's own gearing ratio, using the formula:

$$\beta_e = \beta_a + \beta_a\left(\frac{D(1-t)}{E}\right) \qquad \left(\text{or } \beta_e = \beta_a \times \frac{E+D(1\text{-}t)}{E}\right)$$

(c) ***Step 3***. Having estimated a project-specific geared beta, use the CAPM to estimate:

(i) A project-specific cost of equity, and

(ii) A project-specific cost of capital, based on a weighting of this cost of equity and the cost of the company's debt capital.

Study the following example carefully.

## 3.2 EXAMPLE

A company's debt:equity ratio, by market values, is 2:5. The corporate debt, which is assumed to be risk-free, yields 11% before tax. The beta value of the company's equity is currently 1.1. The average returns on stock market equity are 16%.

The company is now proposing to invest in a project which would involve diversification into a new industry, and the following information is available about this industry.

(a) Average beta coefficient of equity capital = 1.59
(b) Average debt:equity ratio in the industry = 1:2 (by market value).

The rate of corporation tax is 30%. What would be a suitable cost of capital to apply to the project?

## 3.3 SOLUTION

Convert the geared beta value for the industry to an ungeared beta for the industry.

$$\beta_a = \frac{1.59}{1+\frac{1(1-0.30)}{2}} = 1.18$$

Convert this ungeared industry beta back into a geared beta, which reflects the company's own gearing level of 2:5.

$$\beta_e = 1.18 + 1.18\left(\frac{2(1-0.30)}{5}\right) = 1.51$$

3.4 This is a project-specific beta for the firm's equity capital, and so using the CAPM, we can estimate the project-specific cost of equity as:

$$K_{eg} = 11\% + 1.51(16\% - 11\%) = 18.55\%$$

3.5 The project will presumably be financed in a gearing ratio of 2:5 debt to equity, and so the project-specific cost of capital ought to be:

$$\left(\frac{5}{7} \times 18.55\%\right) + \left(\frac{2}{7} \times 70\% \times 11\%\right) = 15.45\%$$

### Activity 13.1

Two companies are identical in every respect except for their capital structure. XY plc has a debt: equity ratio of 1:3, and its equity has a $\beta$ value of 1.20. PQ plc has a debt:equity ratio of 2:3. Corporation tax is at 30%. Estimate a $\beta$ value for PQ plc's equity.

### Activity 13.2

Wand plc is considering a plan to diversify into a new area of operations, and wants to establish an appropriate discount rate to use in its assessment of this proposal.

The risk-free rate of return is 4% and the company can borrow at 300 basis points above this risk-free rate. The market risk premium is 5% and the rate of corporation tax is 25%.

The following financial data relates to Wand plc and to three other companies in the same industry into which Wand might diversify.

| | *Wand plc* | *Sierra plc* | *Tango plc* | *Victor plc* |
|---|---|---|---|---|
| Number of shares | 1,000,000 | 1,500,000 | 3,000,000 | 1,200,000 |
| EPS | 20p | 16p | 8p | 12p |
| P/E ratio | 12.6 | 15.0 | 10.4 | 14.0 |
| Equity beta | 1.04 | 1.15 | 1.20 | 1.22 |
| Market value of debt | £800,000 | £2,000,000 | £250,000 | £1,300,000 |

*Required*

Estimate a discount rate that Wand plc should use to evaluate the proposal to diversify its operations.

Note: A beta factor for the industry as a whole should be taken as the simple average of the beta factors for the three companies in the industry.

## Key learning points

- When a company **diversifies** into another industry, or undertakes a major new project, its systematic risk characteristics will change. A problem is then to establish a cost of equity and a cost of capital for the project evaluation.
- A technique for calculating a new cost of equity and a new WACC is to take the **beta factor of another company in the industry**, or for several other companies in the industry together.
- This beta factor allows for the gearing risk of the other company, or other companies, in the market. It should therefore be converted to an **ungeared beta factor**.
- The ungeared beta factor should then be converted to a **geared beta** that allows for the company's own gearing structure. Use market values, not balance sheet values, for debt and equity.
- Having established a beta factor for the company's equity, given the new systematic risk characteristics, it is possible to use the CAPM to calculate a cost of equity. Having calculated a cost of equity, the final step is to calculate the **company's WACC** to obtain a discount rate for project evaluation.

## Quick quiz

1 Two companies, P and Q, are identical, except that P is an all-equity company and Q has a gearing ratio of 50%. Which company has the higher equity beta?

2 In what circumstances might it be appropriate to calculate a geared beta?

3 What are the main weaknesses in applying the geared and ungeared equity beta formulae?

## Answers to quick quiz

1 The equity beta is higher for the geared company, Q.

2 When a company cannot derive a beta factor from its own historical information about returns. This might apply when the company diversifies into a new area of business, with different systematic risk characteristics.

3 If a beta factor is estimated from the betas of similar public companies, the main problems are that (a) the estimates of the beta factors of the other companies might not be accurate (b) the other companies might not be sufficiently identical, for example if their cost structures are different (thereby affecting their returns) and (c) the more commonly-applied formulae assume that debt capital is risk-free, which is not the case.

## Answers to activities

### Answer 13.1

An ungeared beta is estimated from XY plc data as:

$$\beta_a = 1.20 \frac{3}{3 + 1(1 - 0.30)}$$

= 1.20 (0.8108)

= 0.973

A geared beta can be calculated for PQ plc from the ungeared beta.

$$\text{Geared beta} = 0.973 + 0.973 \left( \frac{2(1 - 0.30)}{3} \right)$$

= 1.427

### Answer 13.2

The market values of the three companies will be taken together, and combined figures for the three companies will be used to calculate an ungeared beta.

The beta factor for the industry is taken as the simple average of the beta factors for Sierra, Tango and Victor. This is (1.15 + 1.20 + 1.22)/3 = 1.19.

| | | *Value of equity* | *Value of debt* |
|---|---|---|---|
| | | £ | £ |
| Sierra | (1,500,000 × 16p × 15.0) | 3,600,000 | 2,000,000 |
| Tango | (3,000,000 × 8p × 10.4) | 2,496,000 | 250,000 |
| Victor | (1,200,000 × 12p × 14.0 | 2,016,000 | 1,300,000 |
| | | 8,112,000 | 3,550,000 |
| Wand | (1,000,000 × 20p × 12.6) | £2,520,000 | £800,000 |

An ungeared beta for the industry is estimated as:

$$\beta_a = 1.19 \frac{8,112,000}{8,112,000 + 3,550,000(1 - 0.25)}$$

= 1.19 (0.752889)

= 0.896, say 0.90

For Wand, a geared beta can be calculated from the ungeared beta.

$$\text{Geared beta} = 0.90 + 0.90 \left( \frac{800,000\ (1 - 0.25)}{2,520,000} \right)$$

= 0.90 + 0.21, ie 1.11.

A cost of equity for Wand can now be calculated using the CAPM.

Cost of equity = 4% + 1.11 (5%) = 9.55%

A WACC for Wand is now calculated as follows. This is the cost of capital to use for discounting in the project appraisal. The pre-tax cost of Wand's debt is 4% plus 300 basis points, ie 7%. The after-tax cost of the debt is 7% (1 – 0.25) = 5.25%

| | *Market value* | *Cost* | *MV x Cost* |
|---|---|---|---|
| | £ | | £ |
| Equity | 2,520,000 | 0.0955 | 240,660 |
| Debt | 800,000 | 0.0525 | 42,000 |
| Victor | 3,320,000 | | 282,660 |

WACC = 282,660/3,320,000 = 0.085, ie 8.5%.

In practice, the company might therefore use 9% as a discount rate, rounding the WACC up to the next whole number.

# Chapter 14 Optimal capital structure

## Chapter topic list

1 Introduction

2 Enterprise value and the WACC

3 Traditional and net operating income views of WACC

4 The traditional view of WACC

5 The net operating income view of WACC (MM theory)

6 Modigliani-Miller theory adjusted for taxation

## Learning objective

On completion of this chapter you will be able to:

- explain the effect of capital structure on shareholder wealth and calculate the cost of capital of a business

The detailed syllabus areas covered are:

*Cost of capital and capital structure*

- gearing and the evaluation of capital structure decisions
- factors affecting the level of gearing
- the capital structure debate

## 1 INTRODUCTION

1.1 Higher gearing increases the financial risk for equity shareholders, because there is a greater risk of volatile earnings and share prices. As gearing increases, there is also a greater risk of default by the borrower. An aspect of risk management should therefore be to prevent gearing risk from threatening the solvency of the company.

1.2 At the same time, debt capital is 'cheaper' than equity. Providers of debt expect a lower return than providers of equity, because there is less risk with their investment. In addition, interest payments by a company qualify for tax relief, whereas dividend payments do not. Tax relief reduces the cost of debt capital still further.

1.3 It might therefore seem that when a company needs extra funds, it should prefer raising debt to raising equity, because the cost of the new finance will be lower.

1.4 The purpose of this chapter is to consider the arguments about whether there is an optimal **capital structure** for a company, ie an optimum level of gearing.

## 2 ENTERPRISE VALUE AND THE WACC

2.1 The primary aim of management in a for-profit company should be to increase the wealth of the shareholders.

2.2 For a given portfolio of projects and business operations, a company will maximise the wealth of its shareholders by minimising the company's weighted average cost of capital. This is because it will maximise the NPV of all its project returns at a minimum cost of capital.

**KEY TERM**

The term '**enterprise value**' means the market value of a company's equity and debt capital taken together. If we ignore taxation, and assume constant annual earnings before interest, tax, depreciation and amortisation (EBITDA), the value of an enterprise can be calculated as follows:

$$\text{Enterprise value} = \frac{\text{Earnings}^{\star}}{\text{WACC}}$$

* Earnings here = EBITDA

2.3 If a company earns constant annual earnings before interest, tax, depreciation and amortisation of £2.4 million, and its WACC is 10%, the total value of the company (debt plus equity) will be £2.4 million/0.10 = £24 million. If the cost of capital were lower, say at 8%, the enterprise value would be higher, at £2.4 million/0.08 = £30 million.

2.4 The beneficiaries of the higher enterprise value would be the equity shareholders. A company will therefore increase the wealth of its shareholders, for a given level of annual profitability, by minimising the WACC.

## 3 TRADITIONAL AND NET OPERATING INCOME VIEWS OF WACC

3.1 There are two main theories about the effect of changes in gearing on the weighted average cost of capital (WACC) and share values. These are the '**traditional' view**, and the **net operating income approach**, for which a theoretical justification was provided by Modigliani and Miller.

3.2 Both theories are based on some simplifying assumptions.

(a) The company pays out all its earnings as dividends. (The theories ignore the impact of reinvesting profits to achieve profits and dividend growth in the future.)

(b) The gearing of the company can be changed immediately by issuing debt to repurchase shares, or by issuing shares to repurchase debt. There are no transaction costs for these debt and equity transactions.

(c) The earnings of the company are expected to remain constant in perpetuity and all investors share the same expectations about these future earnings.

(d) Business risk is also constant, regardless of how the company invests its funds.

(e) Taxation, for the time being, is ignored.

## 4 THE TRADITIONAL VIEW OF WACC

4.1 The **traditional view** is that the WACC changes as gearing rises. Initially, the WACC falls with higher gearing, but then it starts to rise at gearing levels above the optimal capital structure. A graph showing the WACC at different gearing levels is therefore saucer-shaped. The optimal gearing level is at the point where WACC is minimised.

4.2 The main points of the traditional theory of the optimal capital structure are therefore as follows.

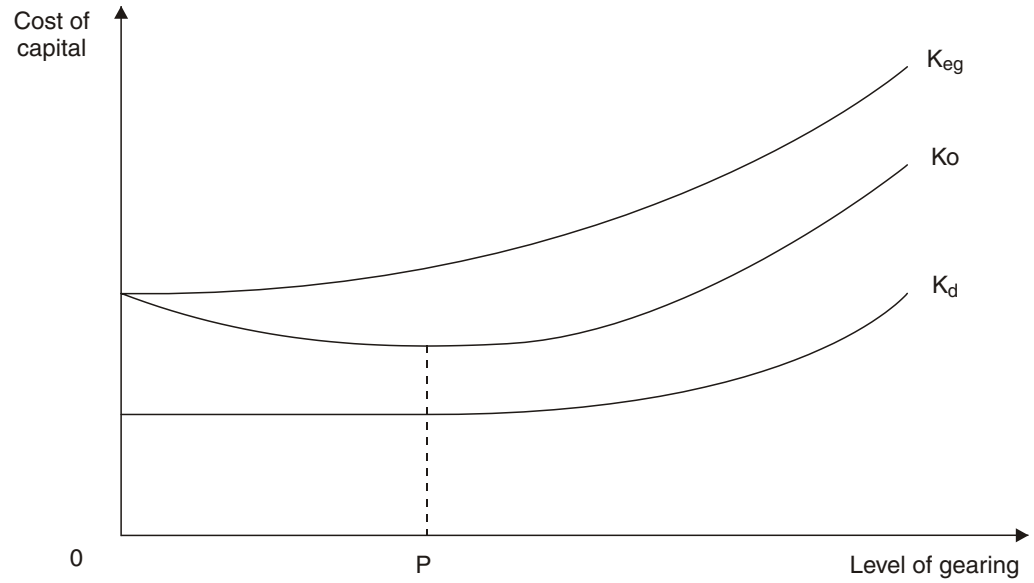
(a) As the level of gearing rises, the cost of debt remains unchanged, but only up to a certain gearing level. Beyond this level, the cost of debt will increase. The cost of debt increases at high gearing levels because the perceived default risk becomes more significant.

(b) The cost of equity rises as the level of gearing increases. This is to compensate equity shareholders for the additional financial risk.

(c) The weighted average cost of capital does not remain constant, but rather falls initially as the proportion of debt capital increases, and then begins to increase as the rising cost of equity (and possibly of debt) becomes more significant.

(d) The optimum level of gearing is where the company's weighted average cost of capital is minimised.

4.3 The traditional view about the cost of capital is illustrated in Figure 14.1. It shows that the weighted average cost of capital will be minimised at a particular level of gearing P.




$K_{eg}$ is the cost of equity in the geared company
$K_d$ is the cost of debt
$K_o$ is the weighted average cost of capital

*Figure 14.1*

4.4 When plotted against the level of gearing, the WACC is saucer-shaped. The optimum capital structure is where the weighted average cost of capital is lowest, at point P.

## 5 THE NET OPERATING INCOME VIEW OF WACC (MM THEORY)

5.1 The **net operating income** approach takes a different view of the effect of gearing on WACC. A theoretical argument in favour of this view of capital structure was put forward by Modigliani and Miller, and is often referred to as 'MM theory'. However, the theoretical justification is not given here, only the conclusions.

5.2 According to this theory of capital structure, if tax relief on debt interest is ignored, the WACC is the same at all levels of gearing. As a consequence, the total value of the enterprise is the same at all levels of gearing.

(a) The cost of debt remains unchanged as the level of gearing increases.

(b) The cost of equity rises in such a way as to keep the weighted average cost of capital constant.

This would be represented on a graph as shown in Figure 14.2.

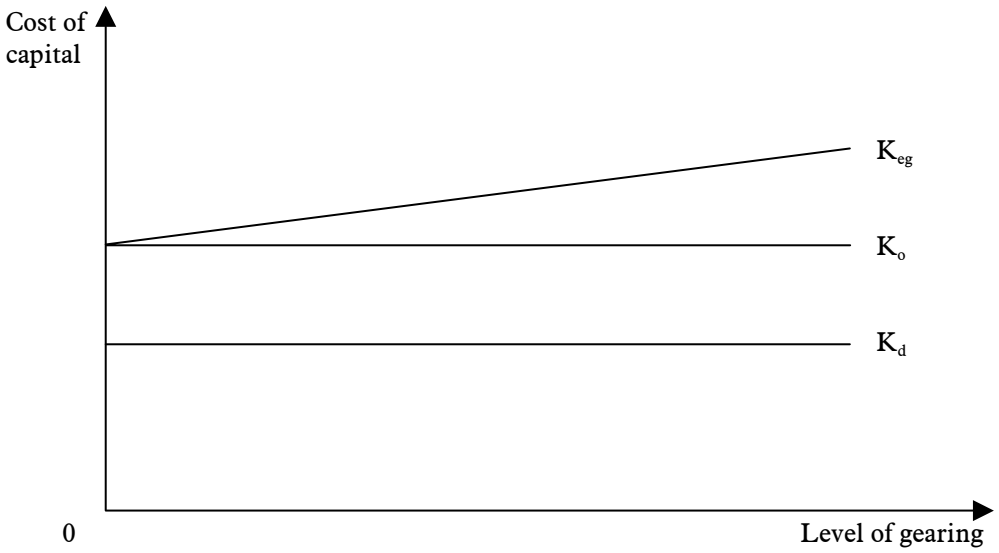



*Figure 14.2*

5.3 According to the net operating income view, a company is valued on the basis of its expected future earnings, regardless of how it is financed. The only matter of significance for gearing is how the 'cake' is shared between equity shareholders and providers of debt capital.

## 5.4 EXAMPLE: NET OPERATING INCOME APPROACH

A company has £500,000 of debt at 10% interest, and earns £500,000 a year before interest is paid. These earnings, which are all paid out in interest and dividends, may be regarded as a constant expected annual amount in perpetuity. There are 225,000 issued shares, and the weighted average cost of capital of the company is 20%. Taxation is ignored.

The market value of the company should be as follows.

| | | |
|---|---|---|
| Earnings before interest | £500,000 | |
| Weighted average cost of capital | 0.20 | |
| | | £ |
| Market value of the company (£500,000 ÷ 0.2) | | 2,500,000 |
| Less market value of debt | | (500,000) |
| Market value of equity | | 2,000,000 |

The earnings attributable to equity are earnings after interest, which are £500,000 – (10% of £500,000) = £450,000.

The cost of equity is therefore $(D/P_o)$ £450,000/2,000,000 = 22.5%.

The market value per share is £2,000,000/225,000 shares = £8.89.

5.5 Suppose that the level of gearing is increased by issuing £500,000 more of debt at 10% interest to repurchase 56,250 shares (at a market value of £8.89 per share) leaving 168,750 shares in issue.

The weighted average cost of capital will, according to the net operating income approach, remain unchanged at 20%. The market value of the company (the enterprise value) should still therefore be £2,500,000.

| | |
|---|---|
| Earnings | £500,000 |
| Weighted average cost of capital | 0.20 |
| | £ |
| Market value of the company | 2,500,000 |
| Less market value of debt | (1,000,000) |
| Market value of equity | 1,500,000 |

Annual dividends will now be £500,000 – £100,000 interest = £400,000.

The cost of equity has risen to ($D/P_o$) £400,000/£1,500,000 = 26.67% and the market value per share is still (£1,500,000/168,750 shares) £8.89.

5.6 The conclusion of the net operating income approach is that the level of gearing is a matter of indifference to an investor, because it does not affect the market value of the company, nor of an individual share. This is because as the level of gearing rises, so does the cost of equity in such a way as to keep both the weighted average cost of capital and the market value of the shares constant. Although, in our example, the dividend per share rises from £2 to £2.37, the increase in the cost of equity is such that the market value per share remains at £8.89.

### Activity 14.1

AB plc has a WACC of 16%. It is financed partly by equity (cost 18%) and partly by debt capital (cost 10%). The company is considering a new project which would cost £5,000,000 and would yield annual profits of £850,000 before interest charges. It would be financed by a loan at 10%. As a consequence of the higher gearing, the cost of equity would rise to 20%. The company pays out all profits as dividends, which are currently £2,250,000 a year.

(a) What would be the effect on the value of equity of undertaking the project?

(b) To what extent can you analyse the increase or decrease in equity value into two causes, the NPV of the project at the current WACC and the effect of the method of financing?

Ignore taxation. The **traditional view** of WACC and gearing is assumed in this exercise.

## The Modigliani-Miller propositions, ignoring taxes

5.7 We can now set out the propositions of Modigliani and Miller, ignoring tax relief on the interest charged on debt capital.

5.8 The following symbols will be used.

$V_u$ = the market value of an ungeared (all equity) company

D = the market value of the debt capital in a geared company which is similar in every respect to the ungeared company (same profits before interest and same business risk) except for its capital structure. The debt capital is assumed, for simplicity, to be irredeemable.

E = the market value of the equity in the geared company

$K_{eu}$ = the cost of equity in an ungeared company

$K_{eg}$ = the cost of equity in the geared company

$K_d$ = the cost of debt capital

The total market value of the geared company ($V_g$) is then equal to (E + D).

*Proposition 1 (ignoring taxation): the total market value of a company and the WACC*

5.9 MM suggested that the total market value of any company is independent of its capital structure, and is given by discounting its expected return at the appropriate rate. The value of a geared company is therefore as follows.

$$V_g = V_u$$

$$V_g = \frac{\text{Profit before interest}}{\text{WACC}}$$

$$V_u = V_g = \frac{\text{Earnings in an ungeared company}}{K_{eu}}$$

*Proposition 2 (ignoring taxation): the cost of equity in a geared company*

5.10 MM went on to argue that the expected cost of equity in a geared company equals the expected cost of equity in a similar but ungeared company, plus a premium related to financial risk.

5.11 The premium for financial risk can be calculated as the debt/equity ratio multiplied by the difference between the cost of equity for an ungeared company and the risk-free cost of debt capital.

$$K_{eg} = K_{eu} + \left[ (K_{eu} - K_d) \times \frac{D}{E} \right]$$

Note the following points.

(a) The part of the formula to the right of the plus sign is the value of the premium for financial risk.

(b) The formula requires the debt ratio (debt : equity) to be used rather than the more common debt : (debt + equity).

(c) Market values are used - not book values.

## 5.12 EXAMPLE: MM, IGNORING TAXATION

The cost of equity in Dunquin plc, an all-equity company, is 15%. The WACC is therefore also 15%. Another company, Bantry plc, is identical in every respect to the first, except that it is geared, with a debt:equity ratio of 1:4. The cost of debt capital is 5% and this is a risk-free cost of debt. What is Bantry plc's WACC?

## 5.13 SOLUTION

$$K_{eg} = 15\% + \left( (15 - 5)\% \times \frac{1}{4} \right) = 17.5\%$$

| | *Weighting* | *Cost* | | *Weighting × cost* |
|---|---|---|---|---|
| Equity | 80% | 17.5% | | 14% |
| Debt | 20% | 5.0% | | 1% |
| | | | WACC | 15% |

The WACC in the geared company is the same as in the ungeared company.

## 5.14 FURTHER EXAMPLE: MM, IGNORING TAXATION

E plc is an all equity company and its cost of equity is 12%. G plc is similar in all respects to E plc, except that it is a geared company, financed by £1,000,000 of 4.5% debentures (current market price £75 per cent) and 1,000,000 ordinary shares (current market price £1.50 ex div). What is G's cost of equity and weighted average cost of capital?

## 5.15 SOLUTION

$$K_d = 4.5\% \times \frac{100}{75} = 6\%$$

$$K_{eg} = 12\% + \left( (12\% - 6\%) \times \frac{750}{1{,}500} \right) = 15\%$$

| | *Market Value* | | *Cost* | | |
|---|---|---|---|---|---|
| | £'000 | | | | £'000 |
| Equity | 1,500 | × | 0.15 | = | 225 |
| Debt | 750 | × | 0.06 | = | 45 |
| | 2,250 | | | | 270 |

$$\text{WACC} = \frac{270}{2{,}250} = 0.12 = 12\%$$

This is the same as E plc's WACC. As gearing is introduced, the cost of equity rises, but in such a way that the WACC does not change.

### Weaknesses in MM theory

5.16 A major drawback to MM theory as described is that **it ignores the tax relief on debt interest**. MM theory was subsequently adapted for taxation, and the conclusions are different. They are described below.

5.17 However, there are other weaknesses in the theory.

(a) MM assumed that companies are able to raise extra debt capital at any level of gearing. In practice, this is not the case. Higher gearing adds to the financial risk for equity, but there is also default risk for providers of debt capital and consequent risk of insolvency for the company and its shareholders. Providers of debt are reluctant to lend to a company which they consider to be sufficiently geared already. They will also demand a higher rate of interest if they can be persuaded to lend. Since MM ignored the possibility of bankruptcy, their theory may not be valid at very high levels of gearing.

(b) Companies themselves are reluctant to take their borrowings above a certain level, because of the risk that they might be unable to have sufficient cash flow to meet their debt payment obligations.

(c) MM assume that shareholders are not concerned about the higher financial risk with higher gearing for an individual company, because they can adjust their investment portfolio to maintain their overall level of investment risk at the same level. In practice, this is not the case. Many individual shareholders do not hold a well-diversified investment portfolio, and the level of both systematic risk (including gearing risk) and unsystematic risk in the company is a matter of concern to them.

5.18 MM acknowledged that when the level of gearing gets high, the cost of debt will rise. They argued, however, that this does not affect the weighted average cost of capital because the cost of equity falls at the same time as risk-seeking investors are attracted to buying shares in the company.

## 6 MODIGLIANI-MILLER THEORY ADJUSTED FOR TAXATION

6.1 Allowing for **corporate taxation** reduces the cost of irredeemable debt capital by a factor (1 – t) where t is the rate of corporation tax. So far, our analysis of MM theory has ignored the tax relief on debt interest, which makes debt capital cheaper to a company, and therefore reduces the weighted average cost of capital where a company has debt in its capital structure.

6.2 MM modified their theory to admit that tax relief on interest payments does lower the weighted average cost of capital. They claimed that the weighted average cost of capital will continue to fall, up to very high levels of gearing.

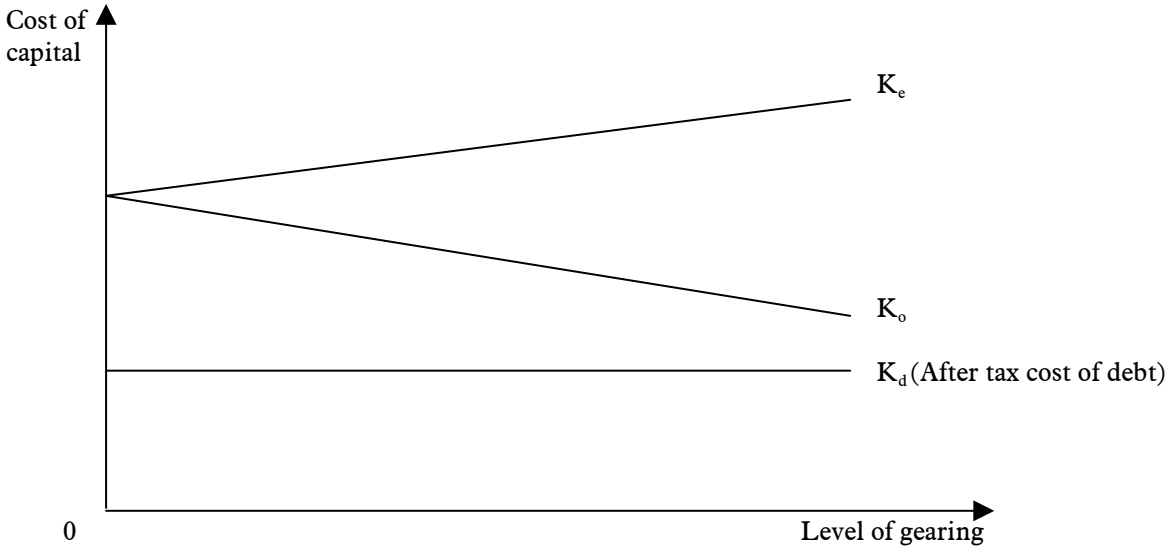



*Figure 14.3*

### The adjustment to the MM cost of equity formula to allow for taxes

6.3 The formula for the cost of equity in a geared company becomes:

$$K_{eg} = K_{eu} + (1-t)\left[(K_{eu} - K_d) \times \frac{D}{E}\right]$$

where t is the corporation tax rate and $K_d$ is the pre-tax (gross) cost of debt capital.

The financial risk premium is adjusted by a factor of (1 – t).

6.4 From this formula we can derive the following formula.

$$WACC_g = K_{eu}\left(1 - \frac{Dt}{E+D}\right)$$

where $WACC_g$ is the weighted average cost of capital of a geared company
$K_{eu}$ is the cost of equity and the WACC of a similar ungeared company

(You are not required to know the derivation, and so this is not given here.)

6.5 Thus assuming a corporation tax rate of 30%, Bantry plc's cost of equity in the example in Paragraphs 5.12 and 5.13 would be:

$$15\% + (1-0.30)\left[(15\% - 5\%) \times \frac{1}{4}\right] = 16.75\%$$

and its WACC would be:

$$15\% \left[1-\frac{1\times 0.30}{(1+4)}\right] = 15\% \times 0.94 = 14.1\%$$

6.6 This is below the ungeared company's WACC, which is 15%. So higher gearing reduces the WACC.

**Activity 14.2**

Find the cost of equity and the WACC for G plc, using the information given in Paragraph 5.14. The corporation tax rate is 30%.

6.7 The WACC in a geared company will be lower than the WACC in an ungeared company ($WACC_u = K_{eu}$) by a measurable amount. WACC will fall as gearing increases.

$$WACC_g = WACC_u \times \frac{V_u}{V_g}$$

where $V_g = E + D$

### MM theory with taxation: is there an optimum level of gearing?

6.8 We have now seen that MM modified their theory to say that when taxation is taken into account, the WACC will continue to fall as the level of gearing increases.

6.9 MM argued that since WACC falls as gearing rises, and the value of a company should rise as its WACC falls, the value of a geared company will always be greater than its ungeared counterpart. However, the difference in value is attributable entirely to the debt-associated tax saving of the geared company (the **tax shield**), assuming a permanent change in gearing.

$$V_g = V_u + Dt$$

where $V_g$ is the value of the similar geared company.

6.10 However, the positive tax effects of debt finance will be exhausted where there is insufficient tax liability to use the tax relief which is available. This is known as **tax shield exhaustion.**

## 6.11 EXAMPLE: MM, WITH TAXES

Notnil plc and Newbegin plc are companies in the same industry. They have the same business risk and operating characteristics, but Notnil is a geared company whereas Newbegin is all-equity financed. Notnil plc earns three times as much profit before interest as Newbegin plc. Both companies pursue a policy of paying out all their earnings each year as dividends.

The market value of each company is currently as follows.

| | | *Notnil plc* | | *Newbegin plc* |
|---|---|---|---|---|
| | | £m | | £m |
| Equity | (10m shares) | 36 | (20m shares) | 15 |
| Debt | (£12m of 12% loan stock) | 14 | | |
| | | 50 | | 15 |

The annual profit before interest of Notnil is £3,000,000 and that of Newbegin is £1,000,000. The rate of corporation tax is 30%. It is thought that the current market value per ordinary share in Newbegin plc is at the equilibrium level, and that the market value of Notnil's debt capital is also at its equilibrium level. There is some doubt, however, about whether the value of Notnil's shares is at its equilibrium level.

Apply the MM formula to establish the equilibrium price of Notnil's shares.

## 6.12 SOLUTION

$V_g = V_u + Dt$

$V_u$ = the market value of an ungeared company. Since Notnil's earnings (before interest) are three times the size of Newbegin's, $V_u$ is three times the value of Newbegin's equity:

$3 \times £15,000,000 = £45,000,000$

$Dt = £14,000,000 \times 30\% = £4,200,000$

$V_g = £45,000,000 + £4,200,000 = £49,200,000$

Since the market value of debt in Notnil plc is £14,000,000, it follows that the market value of Notnil's equity should be £49,200,000 – £14,000,000 = £35,200,000.

$$\text{Value per share} = \frac{£35,200,000}{10,000,000} = £3.52 \text{ per share}$$

Since the current share price is £3.60 per share, MM would argue that the shares in Notnil are currently over-valued by the market, but only by £800,000 in total or 8p per share.

### Empirical testing and conclusion

6.13 It might be imagined that empirical testing should have been carried out by now either to prove or to disprove MM theory. Given, however, that MM accept that the weighted average cost of capital declines after allowing for tax, and that traditional theorists argue in favour of a flattish bottom to the weighted average cost of capital curve, it is very difficult to prove that one theory is preferable to the other.

### Activity 14.3

The cost of equity in an ungeared company is 18%. The cost of risk free debt capital is 8%.

(a) What is the cost of equity in a similar geared company, according to MM, which is 75% equity financed and 25% debt financed, assuming corporation tax at a rate of 30%?

(b) What is the WACC of the geared company, allowing for taxation?

### Exam alert

The June 2002 exam included a question requiring calculations based on Modigliani and Miller's theory, both with and without taxes.

### Key learning points

- **Financial gearing** or **leverage risk for a shareholder** is the increased variability of earnings resulting from having debt in the capital structure.
- Both traditional and MM theories of optimal capital structure and WACC agree that:
  - The optimal level of financial gearing will be that at which the WACC is minimised
  - The cost of equity increases as financial gearing increases
- The **traditional theory** finds that there is a minimum WACC at a level somewhere between 0% and 100% gearing. **Modigliani and Miller** argue that, ignoring corporate tax, the rise in the cost of equity as gearing rises would offset exactly the benefits of an increasing proportion of low-cost debt capital, resulting in a constant WACC.
- **With taxation**, the tax relief available on debt will, according to MM, cause the WACC to fall, right up to a 100% level of gearing. This suggests that companies should gear to as high a level as possible.

## Quick quiz

1 What is the enterprise value of a company?

2 At what level of gearing is enterprise value and shareholder value maximised?

3 According to the traditional theory of gearing and the weighted average cost of capital, what is the optimum gearing level for a company?

4 According to the Modigliani-Miller theory of gearing and the weighted average cost of capital, ignoring taxation, what is the optimum gearing level for a company?

5 According to the Modigliani-Miller theory of gearing and the weighted average cost of capital, taking taxation into consideration, what is the theoretical optimum gearing level for a company?

## Answers to quick quiz

1 The total value of a company's equity and debt capital, taken together.

2 At the level of gearing where the weighted average cost of capital (WACC) is minimised.

3 At the level of gearing where the weighted average cost of capital (WACC) is minimised. This will be at a gearing level somewhere between 0% and 100%, because the WACC initially falls as gearing rises above 0%, but then starts to rise when gearing exceeds a certain level.

4 Gearing is irrelevant, because the WACC is the same at all levels of gearing.

5 In theory, the optimum gearing level is 100%, although in practice MM recognised that the WACC is likely to rise at very high levels of gearing.

## Answers to activities

## Answer 14.1

| (a) | £ |
|---|---|
| Current profits and dividends | 2,250,000 |
| Increase in profits and dividends (£850,000 less extra interest 10% x £5,000,000) | 350,000 |
| New dividends, if project is undertaken | 2,600,000 |
| New cost of equity | 20% |
| | £ |
| New MV of equity | 13,000,000 |
| Current MV of equity (£2,250,000 ÷ 0.18) | (12,500,000) |
| Increase in shareholder wealth from project | 500,000 |

(b) (i) NPV of project if financed at current WACC

$$= \frac{£850,000}{0.16} - £5,000,000 = £312,500$$

(ii) The effect of financing on share values must be to increase the MV of equity by the remaining £187,500, which indicates that the effect of financing the project in the manner proposed will be to increase the company's gearing, but to reduce its WACC. The reduction in WACC has resulted in an increase in shareholder wealth.

## Answer 14.2

G plc's cost of equity would be:

$$12\% + (1 - 0.30) \times \left[(12 - 6)\% \times \frac{750}{1,500}\right]$$

= 14.1%

and its WACC would be:

$$12\%\left(1 - \frac{750 \times 0.30}{1,500 + 750}\right) = 12\% \times 0.9 = 10.8\%$$

This is below E plc's WACC of 12%.

## Answer 14.3

(a) $K_{eg} = 18\% + (1 - 0.30)\left[(18 - 8)\% \times \frac{25}{75}\right] = 20.3\%$

(b) $WACC_g = 18\%\left[1 - \frac{0.30 \text{ x } 25}{25 + 75}\right]$

= 18% × 0.925 = 16.7%

# Chapter 15 Dividend policy

## Chapter topic list

1 Dividends, retentions and dividend growth

2 The effect of income tax

3 Theories of dividend policy

4 Dividend policy in practice

5 Scrip dividends and share repurchase

## Learning objective

On completion of this chapter you will be able to:

- explain the effect of dividend policy on shareholder wealth and discuss the factors influencing the dividend policy of a business

The detailed syllabus areas covered are:

*Dividend policy*

- dividend policy and shareholder wealth (MM v traditional school)
- alternatives to cash dividends
- dividend policy and management attitudes
- the importance of dividends in practice
- factors determining the level of dividends

# 1 DIVIDENDS, RETENTIONS AND DIVIDEND GROWTH

1.1 In theory the purpose of a dividend policy should be to **maximise shareholders' wealth,** which depends on both **current dividends** and **capital gains.**

1.2 Capital gains can be achieved by **retaining** some earnings for reinvestment leading to **dividend growth** in the future. An extreme example of this is Microsoft.

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### Case example: Microsoft

Until very recently a persistent investor complaint against Microsoft was its zero dividend policy. Microsoft did not pay dividends for 17 years on the grounds that it believed in ploughing money back into research and development. By early 2004, Microsoft's cash balance had crossed $50 billion. Such reserves give Microsoft the ability to make multibillion investments and acquisitions without batting an eye. In addition Bill Gates & Co. always want to ensure the company has enough cash to settle or pay off any judgments in the myriad of litigation against it. And since Microsoft's stock continued to outperform most of its rivals, it didn't really need the boost that a dividend will give.

In part due to increasing pressure from shareholders, in 2003 the company declared its first ever dividend for common stock. And more recently, Microsoft announced plans to pay back up to $75 billion of its cash to investors over a period of four years. This included a one-time special dividend of $30 billion.

So why the reversal? Mostly because the cash hoard simply got too big. Microsoft's twin monopolies – the Windows operating system and the Office application suite – fuel a business that kicks off $1 billion a month in free cash. Sounds like a problem most companies would die for. Yet, shrinking interest rates kept Microsoft's returns on all that cash tiny. "They have an extreme amount of cash that's dragging down the return on equity," says Robert Schwartz, an analyst with Thomas Weisel Partners.

What's more, as the litigation clouds have begun to lift, Microsoft's need for a massive stash has dissipated as well. "We felt we had better clarity" on the remaining legal issues, said Microsoft Chief Financial Officer John Connors. The company still faces many legal battles but it's becoming increasingly clear that those claims won't sap Microsoft's cash reserve.

The dividend also speaks volumes about how Microsoft views itself these days. One reason Gates and Ballmer resisted a payout for so long is that they've always had a hard time thinking of the company (even as it grew to 50,000 employees and $28 billion in annual sales) as anything but the feisty startup they created in 1975. And startups don't issue dividends. They reinvest the money into new projects.

In 2003, however, Ballmer worked hard to put management structure and business processes in place to help Microsoft mature. A dividend is another step in that process. "Paying a dividend speaks of the end of the growth and the beginning of maturity," says Banc of America Securities analyst Bob Austrian.

The shareholder who benefits most is, of course, Bill Gates. His first dividend cheque: nearly $100 million. Even for a multibillionaire, that's a nice return on investment!

Adapted from *Business Week*

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## Growth in dividends

1.3 There is a simple method of estimating the rate of dividend growth that should be achievable by retaining profits. This method is based on the assumptions that:

(a) It will be company policy to retain a regular percentage amount of its total earnings, and pay out the rest in dividends

(b) Retained earnings will be re-invested to obtain a given return

1.4 The estimated rate of growth in future dividends can be expressed, theoretically, as:

$g = rb$

where g is the annual growth rate in dividends
r is the rate of return on new investments
b is the proportion of profits that are retained

## 1.5 EXAMPLE: DIVIDEND GROWTH

(a) If a company has a **dividend pay-out ratio** of 40%, and retains the remaining 60% of its earnings for investing in projects which yield 15%, the annual rate of growth in future dividends could be estimated as $15\% \times 60\% = 9\%$.

(b) If a company pays out 80% of its profits as dividends, and retains the rest for reinvestment at 15%, the current dividend would be twice as big as in (a), but annual dividend growth would be only $15\% \times 20\% = 3\%$.

### A theoretical approach to dividend policy and share values

1.6 A theoretical approach to dividend and retentions policy can be based on the fundamental theory of share values and the dividend valuation models for share prices. This approach is based on the following assumptions.

(a) The market value of a company's shares depends on the **size of dividends paid**, the **rate of growth in dividends** and the **shareholders' required rate of return**.

(b) The rate of growth in dividends depends on how much money is reinvested in the company, and so on the rate of earnings retention.

(c) Shareholders will want their company to pursue a retentions policy that maximises the value of their shares.

1.7 The basic dividend-based formula for the market value of a share ( $P_o$ ) is:

$$P_o = \frac{D_1}{r}$$

where $D_1$ is a constant annual dividend, and r is the shareholders' required rate of return. This formula assumes a **constant annual dividend**, with no dividend growth at all.

1.8 Using the **dividend growth model**, we have:

$$P_o = \frac{D_0(1+g)}{(r-g)}$$

where $D_0$ is the current year's dividend (year 0) and g is the growth rate in earnings and dividends, so $D_0(1 + g)$ is the expected dividend in one year's time. $P_o$ is the market value excluding any dividend currently payable. The dividend growth rate can be estimated from the earnings retention ratio and the return on new investment (ie $g = rb$).

## 1.9 EXAMPLE: DIVIDEND GROWTH MODEL

Tantrum plc has achieved earnings of £800,000 this year. The company intends to pursue a policy of financing all its investment opportunities out of retained earnings. There are considerable investment opportunities, which are expected to be available indefinitely. However, if Tantrum plc does not exploit any of the available opportunities, its annual earnings will remain at £800,000 in perpetuity. The following figures are available.

| *Proportion of earnings retained* | *Growth rate in earnings* | *Required return on all investments by shareholders* |
|---|---|---|
| % | % | % |
| 0 | 0 | 14 |
| 25 | 5 | 15 |
| 40 | 7 | 16 |

The rate of return required by shareholders would rise if earnings are retained, because of the risk associated with the new investments.

What is the optimum retentions policy for Tantrum plc? The full dividend payment for this year will be paid in the near future in any case.

## 1.10 SOLUTION

$$P_o = \frac{D_0(1+g)}{(r-g)}$$

The share price in this formula assumes that the current year's dividend has just been paid, and the share price is 'ex dividend' or 'ex div'. In this example, the company has not yet paid out the current year dividend, and so the market price of the shares will include the current dividend (The share price is said to be 'cum dividend' or 'cum div'). The market value cum dividend is:

$$\text{MV cum div} = \frac{D_0(1+g)}{(r-g)} + D_0$$

We are trying to maximise the value of shareholder wealth, which is currently represented by the cum div market value, since a dividend will soon be paid.

(a) If retentions are 0%, the market value cum dividend is given by:

$$\text{MV cum div} = \frac{800{,}000}{0.14} + 800{,}000$$

$$= £6{,}514{,}286$$

(b) If retentions are 25%, the current dividend will be £600,000 and:

$$\text{MV cum div} = \frac{600{,}000(1.05)}{(0.15-0.05)} + 600{,}000$$

$$= £6{,}900{,}000$$

(c) If retentions are 40%, the current dividend will be £480,000 and:

$$\text{MV cum div} = \frac{480{,}000(1.07)}{(0.16-0.07)} + 480{,}000$$

$$= £6{,}186{,}667$$

The best policy (out of the three for which figures are provided) would be to retain 25% of earnings.

### Activity 15.1

Suppose that in the example above of Tantrum plc, shareholders were indifferent about whether earnings should be paid as dividends or retained for reinvestment, and the required return is 15% regardless of dividend policy of the company.

Suppose also that the company can reinvest to earn exactly 15%, the shareholders' cost of capital. Which of the following four dividend/retentions policies would maximise shareholder wealth?

| *Proportion of earnings retained* | *Growth rate in earnings (g = br)* | *Required return on all investments by shareholders* |
|---|---|---|
| % | % | % |
| 0 | 0 | 15 |
| 25 | 3.75 | 15 |
| 40 | 6 | 15 |
| 60 | 9 | 15 |

## 2 THE EFFECT OF INCOME TAX

2.1 Another factor in deciding on the balance between dividends and retaining profits might be the **tax position of the company's shareholders**.

2.2 In the UK, dividends are subject to **income tax**. Individual shareholders receive a tax credit in addition to the cash dividend. Total dividend income is the cash dividend from the company plus the tax credit from the government, and the shareholder is deemed to have paid income tax on this dividend income to the value of the tax credit.

2.3 If profits are retained and reinvested in the company, there should be more dividend growth and increases in the share price. A rising share price represents a **capital gain** for the shareholder, but this is not subject to tax until the shares are eventually sold.

2.4 If, because of taxation considerations, the shareholders of a company would rather make a capital profit (which will only be taxed when the shares are sold) than receive current income, then raising new finance by retaining earnings would be preferred to raising the money externally. Income tax considerations might be particularly significant for the dividend policy of small companies, with a small number of shareholders and owner-directors.

2.5 A company should limit the amount of self-financing through retained profits, because shareholders will want to be paid a reasonable dividend, in line with realistic expectations, even if the directors would rather keep the funds for re-investing. At the same time, investors and lenders (such as banks) will not expect a company that is looking for extra funds to pay generous dividends, nor over-generous salaries to owner-directors.

### Dividend policy and shareholders' personal taxation

2.6 The market value of a share has been defined as the sum of all future dividends, discounted at the shareholder's marginal cost of capital. When constant dividends are expected, we have:

$$P_o = \frac{D_0}{r}$$

2.7 The cost of capital is generally taken to be a **tax-free** rate, ignoring the actual rates of personal taxation paid on dividends by different shareholders. To each individual shareholder, however, the dividends are subject to income tax at a rate which depends on their own tax position, and it is possible to re-define their valuation of a share as:

$$P_o = \frac{D_g(1-t)}{r_t}$$

where $D_g$ is the gross dividend (assumed to be constant each year)
$t$ is the rate of personal tax on the dividend
$r_t$ is the shareholder's after-tax marginal cost of capital

## The clientele effect

2.8 Presumably, a company should choose between dividend payout and earnings retention so as to maximise the wealth of its shareholders. However, if not all shareholders have the same tax rates and after-tax cost of capital, there might not be an optimum policy which satisfies all shareholders. By what is referred to as the **clientele effect**, companies may attract particular types of shareholders seeking particular dividend policies.

**KEY TERM**

The term **clientele effect** describes the tendency of companies to attract particular types of shareholders because of their management organisation and policies, particularly dividend policies.

2.9 A further problem occurs when income from dividends might be taxed either more or less heavily than capital gains. Note that in the UK, individuals have an annual capital gains exemption which is not available for setting against income, and companies owning shares in other companies are taxed on capital gains but not on dividend income.

2.10 The purpose of a dividend policy should be to maximise the wealth of shareholders. As indicated earlier, it is therefore important to consider whether it would be better to pay a dividend now, subject to tax on income, or to retain earnings so as to increase the shareholders' capital gains (which will be subject to capital gains tax when the shareholders eventually sell their shares).

2.11 The **pension funds** are a major group of shareholders in UK listed companies. Up to 1997, these investors were able to claim back from the Inland Revenue tax credits on the dividends they received. Pension funds therefore received cash dividends from companies whose shares they owned and in addition a further payment from the government. Pension funds therefore obtained a high return from dividends. This situation ended in 1997, and pension funds are no longer entitled to claim a payment of tax credits from the government.

2.12 Changes like this have a significant effect on the way that a particular **clientele** views dividends. In this case dividend yield is now less important, and the pension funds no longer have the same reason to prefer dividends over retained profits and capital gains.

# 3 THEORIES OF DIVIDEND POLICY

## Residual theory

3.1 A '**residual' theory** of **dividend policy** can be summarised as follows.

(a) If a company can identify projects with positive NPVs it should invest in them.
(b) Only when these investment opportunities are exhausted should dividends be paid.

3.2 Suppose for example that a company achieves earnings of £10 million in a given year. It has new investment opportunities that would cost £7 million in total, and all have a positive NPV. According to residual theory, the company should invest £7 million in the new projects, because these will bring growth in earnings, dividends and the share price. The remaining £3,000,000, for which there are no investment opportunities with a positive NPV, should be paid out in dividends.

## Traditional view

3.3 The '**traditional' view** of dividend policy is to focus on the effects of dividend policy on share price. The price of a share depends upon the mix of current dividends and future dividend growth. There is a dividend retention policy that will maximise share values, given the dividend growth rate that could be achieved and the return required by shareholders. Accordingly, the rate at which dividends are paid does matter to shareholders.

3.4 The ideas underlying the traditional theory were illustrated in the example in paragraphs 1.9 and 1.10.

## Irrelevancy theory

3.5 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. Dividend policy is irrelevant to share values.

3.6 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. The consequent loss of value in the existing shares, as a result of obtaining outside finance instead of using retained earnings, is exactly equal to the amount of the dividend paid. A company should therefore be indifferent between paying a dividend (and obtaining new outside funds) and retaining earnings.

3.7 The dividend policy selected by the company should be of no consequence to the shareholder. If a shareholder wants cash, he does not have to get it from dividends. He can sell shares to obtain the money instead (referred to as 'manufacturing dividends').

3.8 In answer to criticisms that certain shareholders will show a preference either for high dividends or for capital gains, MM argued that if a company pursues a **consistent dividend policy**:

> 'each corporation would tend to attract to itself a clientele consisting of those preferring its particular payout ratio, but one clientele would be entirely as good as another in terms of the valuation it would imply for the firm'.

### The case in favour of the relevance of dividend policy (and against MM's views)

3.9 There are strong arguments against MM's view that dividend policy is irrelevant as a means of affecting shareholders' wealth.

(a) Differing rates of taxation on dividends and capital gains can create a preference for a high dividend or one for high earnings retention.

(b) Earnings retention should be preferred by companies in a period of capital rationing.

(c) Due to imperfect markets and the possible difficulties of selling shares easily at a fair price, shareholders might need high dividends in order to have funds to invest in opportunities outside the company.

(d) Markets are not perfect. Because of transaction costs on the sale of shares, investors who want some cash from their investments should prefer to receive dividends rather than to sell some of their shares to get the cash they want.

(e) Information available to shareholders is imperfect, and they are not aware of the future investment plans and expected profits of their company. Even if management were to provide them with profit forecasts, these forecasts would not necessarily be accurate or believable.

(i) As a consequence of imperfect information, companies are normally expected at least to maintain the same level of dividends from one year to the next. They are expected to pay a constant dividend or an increased dividend, but not a lower dividend than the year before. Failure to maintain the dividend level would undermine investors' confidence in the future.

(ii) In practice, undertaking a new investment project with a positive NPV will not immediately increase the market value of shares by the amount of the NPV because markets do not show perfect efficiency. It is only gradually, as the profits from the investment begin to show up in the profits and dividends in historical financial statements, that the market value of the shares will rise.

(f) Perhaps the strongest argument against the MM view is that shareholders will tend to prefer a current dividend to future capital gains (or deferred dividends) because the future is more uncertain.

## 4 DIVIDEND POLICY IN PRACTICE

4.1 So far, we have concentrated on theoretical approaches to establishing an optimal dividend and retentions policy but if you look at the financial press on the subject you are more likely to be presented with practical considerations relating to the nature of the business and its strategy and markets.

4.2 In the first place it must be recognised that funds generated from **retained earnings** are the single **most important source of finance** for UK companies. A company retains profits because it needs capital to finance **ongoing operations** and finance **new projects**.

4.3 There are major reasons for using retained earnings to finance new investments, rather than to pay higher dividends and then raise new equity funds for the new investments.

(a) The dividend policy of a company is in practice determined by the directors. From their standpoint, funds from retained earnings are an attractive source of finance because investment projects can be undertaken without involving either the shareholders or any outsiders.

(b) The use of retained earnings, as opposed to raising capital from the issue of new shares or bonds, avoids issue costs.

(c) It might seem unusual to pay out high dividends and at the same time ask shareholders to subscribe new funds in a rights issue. It would make more sense to pay lower dividends and obtain the funds from shareholders by retaining profits.

4.4 In 1956 John Lintner carried out an extensive study of **dividend policies actually adopted in practice** and his observations are still valid.

(a) Companies tend to set long-run target ratios of dividends to earnings, according to the amount of profitable (positive NPV) projects they have in the pipeline.

(b) Earnings increases are not always sustainable. As a result, dividend policy is not changed until managers can see that new earnings levels are sustainable.

## A practical illustration

4.5 The practical issues can be more clearly understood by considering a very simplified scenario.

### Year 1

Your friend Divvy asks you to give him £10 to set up a business. You agree so long as you are granted 10 £1 shares in the business and paid regular dividends.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 0 | Cash | 10 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 0 | | | 10 |
| Closing stock | 0 | | | |
| Cost of sales | | 0 | Equity | 10 |
| Profit (Loss) | | 0 | Retained earnings | 0 |
| Dividends | | 0 | | 10 |
| Retained earnings | | 0 | | |

Divvy buys a stock item using your £10.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 0 | Cash | 0 |
| Opening stock | 0 | | Stock | 10 |
| Purchases | 10 | | | 10 |
| Closing stock | 10 | | | |
| Cost of sales | | 0 | Equity | 10 |
| Profit (Loss) | | 0 | Retained earnings | 0 |
| Dividends | | 0 | | 10 |
| Retained earnings | | 0 | | |

Divvy sells the stock item for £20.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 20 | Cash | 20 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 10 | | | 20 |
| Closing stock | 0 | | | |
| Cost of sales | | 10 | Equity | 10 |
| Profit (Loss) | | 10 | Retained earnings | 10 |
| Dividends | | 0 | | 20 |
| Retained earnings | | 10 | | |

Divvy pays you a dividend of £1.50 per share.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 20 | Cash | 5 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 10 | | | 5 |
| Closing stock | 0 | | | |
| Cost of sales | | 10 | Equity | 10 |
| Profit (Loss) | | 10 | Retained earnings | -5 |
| Dividends | | 15 | | 5 |
| Retained earnings | | -5 | | |
| **EPS** | | 1.50 | | |

## Year 2

Divvy has realised that he cannot continue trading because of the dividend he paid you, but he manages to find another friend who agrees to buy a further 5 shares.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 0 | Cash | 10 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 0 | | | 10 |
| Closing stock | 0 | | | |
| Cost of sales | | 0 | Equity | 15 |
| Profit (Loss) | | 0 | Retained earnings | -5 |
| Dividends | | 0 | | 10 |
| Retained earnings | | 0 | | |

Divvy buys another stock item for £10 and this time manages to sell it for £25.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 25 | Cash | 25 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 10 | | | 25 |
| Closing stock | 0 | | | |
| Cost of sales | | 10 | Equity | 15 |
| Profit (Loss) | | 15 | Retained earnings | 10 |
| Dividends | | 0 | | 25 |
| Retained earnings | | 15 | | |
| Retained earnings b/f | | -5 | | |
| Retained earnings c/f | | 10 | | |

Divvy pays you and his other friend the same dividend as last year, because he knows that is what shareholders now **expect** to receive.

You are a bit annoyed that you have lost some **control** over the company and now only get 2/3 of the total dividends, but you decide to see what happens next.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 25 | Cash | 2.5 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 10 | | | 2.5 |
| Closing stock | 0 | | | |
| Cost of sales | | 10 | Equity | 15 |
| Profit (Loss) | | 15 | Retained earnings | -7.5 |
| Dividends | | 22.5 | | 2.5 |
| Retained earnings | | -2.5 | | |
| Retained earnings b/f | | -5 | | |
| Retained earnings c/f | | -7.5 | | |
| **EPS** | | £1.50 | | |

### Year 3

Once again Divvy cannot continue trading because of the dividends he paid and he has no other friends. Instead he goes to the bank who see the potential in his business and **loan** him £17.50, interest –free, repayable over five years. A **loan covenant** requires him to pay out no more in dividends than he can afford: in other words he must retain at least £10 per year so that he can continue trading.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 0 | Cash | 20 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 0 | | Loan | -17.5 |
| Closing stock | 0 | | | 2.5 |
| Cost of sales | | 0 | | |
| Profit (Loss) | | 0 | Equity | 15 |
| Dividends | | 0 | Retained earnings | -12.5 |
| Retained earnings | | 0 | | 2.5 |

Although Divvy could afford two stock items he only buys one, to be sure that he will have enough money left to make the loan repayment. He has learned to think about the future. This time he manages to sell the item for £30.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 30 | Cash | 40 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 10 | | Loan | -17.5 |
| Closing stock | 0 | | | 22.5 |
| Cost of sales | | 10 | | |
| Profit (Loss) | | 20 | Equity | 15 |
| Dividends | | 0 | Retained earnings | 7.5 |
| Retained earnings | | 20 | | 22.5 |
| Retained earnings b/f | | -12.5 | | |
| Retained earnings c/f | | 7.5 | | |

Divvy explains to you and the other shareholder that profits must be applied to paying off the loan first and that the loan covenant limits the amount of dividend he can pay. You are very **disappointed** to learn that your dividend will only be £0.67 per share this year. However Divvy promises you that the old dividend level will be at least restored in future years, and given his evident selling skills you decide **not to sell your shares** unless you get a very good offer.

(Cash = £40 – £3.50 (loan repayment) – £10 (dividend) = £26.50)

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 30 | Cash | 26.5 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 10 | | Loan | -14 |
| Closing stock | 0 | | | 12.5 |
| Cost of sales | | 10 | | |
| Profit (Loss) | | 20 | Equity | 15 |
| Dividends | | 10 | Retained earnings | -2.5 |
| Retained earnings | | 10 | | 12.5 |
| Retained earnings b/f | | -7.5 | | |
| Retained earnings c/f | | -2.5 | | |
| **EPS** | | £0.67 | | |

**Year 4**

This year Divvy buys two items but he still has spare cash if needed to make the next loan repayment (£3.50).

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 0 | Cash | 6.5 |
| Opening stock | 0 | | Stock | 20 |
| Purchases | 20 | | Loan | -14 |
| Closing stock | 20 | | | 12.5 |
| Cost of sales | | 0 | | |
| Profit (Loss) | | 0 | Equity | 15 |
| Dividends | | 0 | Retained earnings | -2.5 |
| Retained earnings | | 0 | | 12.5 |

Divvy puts all his effort into selling, now he is less worried about finance, and manages to sell both items for £35.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 70 | Cash | 76.5 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 20 | | Loan | -14 |
| Closing stock | 0 | | | 62.5 |
| Cost of sales | | 20 | | |
| Profit (Loss) | | 50 | Equity | 15.0 |
| Dividends | | 0 | Retained earnings | 47.5 |
| Retained earnings | | 50 | | 62.5 |
| Retained earnings b/f | | -2.5 | | |
| Retained earnings c/f | | 47.5 | | |

Divvy decides to retain enough cash to buy three items next year, but he still has enough cash left to pay off the loan in full and pay a dividend of £2 per share.

| | Profit and Loss | | Balance sheet | |
|---|---|---|---|---|
| Sales | | 70 | Cash | 32.5 |
| Opening stock | 0 | | Stock | 0 |
| Purchases | 20 | | Loan | 0 |
| Closing stock | 0 | | | 32.5 |
| Cost of sales | | 20 | | |
| Profit (Loss) | | 50 | Equity | 15.0 |
| Dividends | | 30 | Retained earnings | 17.5 |
| Retained earnings | | 20 | | 32.5 |
| Retained earnings b/f | | -2.5 | | |
| Retained earnings c/f | | 17.5 | | |
| **EPS** | | £2.00 | | |

4.6 Here are the lessons Divvy has learned.

(a) The importance of **retaining** enough money in the business at least to **continue trading** (the first two dividends are actually illegal).

(b) The importance of respecting **shareholders' income expectations**: you may be depending on your £1.50 per share in year 2, and if you are not paid that much you may sell some of your shares to make up the income you need.

(c) The issue of **control** of the company and the impact on existing shareholders.

(d) The influence of **other stakeholders,** for example the bank with its **loan covenant**. In this case, although the loan covenant damages shareholder's income in the short term it is actually the salvation of the business and the foundation for future success.

4.7 We could go on to illustrate that if the same pattern continues in Year 5 Divvy would be able to pay you a dividend of £5.33 per share. In fact he would probably decide against such a large increase (over 200%), retaining earnings partly in order to **expand the business** and partly to make sure that your future **expectations** of dividend growth were not **unsustainably** high.

4.8 On the other hand he will be doing so well that it is likely that he will become a takeover target: he may decide to increase the dividend substantially to persuade you to stay with the existing management.

4.9 We'll now run through these points again, in a more formal way.

**Activity 15.2**

Either on your own, or even better as a group exercise if you are studying at college, you may find it useful to set the above example up on a spreadsheet and experiment with various other scenarios.

## Control

4.10 If money is raised by issuing public equity this may lead to dilution of control. Financing from retained profits on the other hand does not lead to any dilution of control. Hence, if management and shareholders are averse to dilution of control, then firms prefer to rely more on retained earnings. Such companies may adopt a conservative dividend policy.

## Other sources of finance

4.11 The company's **gearing level** is an influence**.** If the company wants extra finance, the sources of funds used should strike a balance between equity and debt finance. Retained earnings are the most readily available source of growth in equity finance.

4.12 The ease with which the company can raise **extra finance** from sources other than retained earnings is influential. Small companies which find it hard to raise finance might have to rely more heavily on retained earnings than large companies. If so, they will pay out a fairly small proportion of earnings as dividends.

*Loan covenants*

4.13 A loan covenant is a condition that the borrower must comply with in order to adhere to the terms in the loan agreement. If the borrower does not act in accordance with the covenants, the loan can be considered in default and the lender has the right to demand payment (usually in full).

4.14 It is not uncommon, especially for smaller companies, for loan covenants to include dividend restraints**,** restricting the total dividends that a company can pay out, or not allowing dividends at all, until the loan is repaid.

## Market expectations and signalling

4.15 Investors usually expect a **consistent dividend policy** from the company, with stable dividends each year or, even better, steady dividend growth. A large rise or fall in dividends in any year can have a marked effect on the company's share price. Stable dividends or

steady dividend growth are usually needed for share price stability. A cut in dividends may be treated by investors as signalling that the future prospects of the company are weak. Thus, the dividend which is paid acts, possibly without justification, as a signal of the future prospects of the company.

**KEY TERM**

**Signalling**: the use of dividend policy to indicate the future prospects of an enterprise.

4.16 The market would like to value the shares of a company on the basis of underlying future cash flows and profits, but detailed information about future prospects is not readily available to investors. However, the directors do have this information. The dividend declared by a company can be interpreted as a **signal** from directors to shareholders about the strength of underlying project cash flows.

4.17 Directors can signal to the market in other ways too: the issue of debt, which commits the company to paying interest, can be interpreted as a signal of strong project cash flows, as compared with the issue of equity. Such signals are likely to be taken as more reliable than anything the directors might say, since they involve actual commitments and payments of cash.

### Threat of takeover

4.18 The signalling effect of dividend policy might also be used by management of a company which is facing a possible takeover. The dividend level might be increased as a defence against the takeover: investors might interpret the increased dividend as a signal of improved future prospects, thus driving the share price higher and making the company more expensive for a potential buyer.

### Payment of dividends

4.19 Dividends are usually paid by UK public companies twice a year. An **interim dividend** is paid after the publication of the interim results of the company for the first half year. A **final dividend** is paid after the annual accounts for the year have been published, and after the proposed dividend has been agreed by shareholders at the Annual General Meeting.

4.20 It is usual for shareholders to have the power to vote to **reduce** the size of the final (proposed) dividend at the AGM, but not the power to **increase** the dividend. The directors of the company are therefore in a strong position, with regard to shareholders, when it comes to determining dividend policy. For practical purposes, shareholders will usually be obliged to accept the dividend policy that has been decided on by the directors, or otherwise to sell their shares.

4.21 Dividend policy is of course constrained by the profits that a company earns, and by cash flow and liquidity.

4.22 Under UK law, a company cannot pay out dividends in excess of the amount of its total distributable profits. Distributable profits are virtually the same as the company's retained profits. Dividends in the current year can be paid out of retained profits of a previous year, which means that a loss-making company is able to pay a dividend, provided that it has retained profits from previous years.

4.23 Cash flow also helps to determine dividend policy. Regardless of the size of its profits, a company can afford a dividend only if it has enough cash to make the payment, leaving enough cash within the business to avoid excessive risk of running out of cash.

## 5 SCRIP DIVIDENDS AND SHARE REPURCHASE

### Scrip dividends

**KEY TERM**

A **scrip dividend** is a dividend payment which takes the form of new shares instead of cash.

5.1 Shares issued as scrip dividends are issued at no charge to the shareholder. A payment of dividend in shares is offered with a cash alternative. For example, a company might announce a scrip dividend of, say, one new share for every 30 shares held, or a cash alternative of 10p per share.

5.2 A scrip dividend is a way of retaining profits within the business, and at the same time paying a dividend. Effectively, the dividend converts profit reserves into issued share capital.

5.3 Another important feature of a scrip dividend is that it preserves the company's cash. When a company is short of cash, a scrip dividend is a way of paying a dividend without having to use up cash.

**Activity 15.3**

Ochre plc is a company that is still managed by the two individuals who set it up 12 years ago. In the current year, the company acquired plc status and was launched on the second tier Alternative Investment Market (AIM). Previously, all of the shares had been owned by its two founders and certain employees. Now, 40% of the shares are in the hands of the investing public. The company's profit growth and dividend policy are set out below. Will a continuation of the same dividend policy as in the past be suitable now that the company is quoted on the AIM?

| *Year* | *Profits* | *Dividend* | *Shares in issue* |
|---|---|---|---|
| | £'000 | £'000 | |
| 4 years ago | 176 | 88 | 800,000 |
| 3 years ago | 200 | 104 | 800,000 |
| 2 years ago | 240 | 120 | 1,000,000 |
| 1 year ago | 290 | 150 | 1,000,000 |
| Current year | 444 | 222 (proposed) | 1,500,000 |

### Share repurchase

5.4 An alternative way for a firm to return cash to its shareholders is to buy back its shares through a share repurchase, reducing the number of outstanding shares. The exercise increases share value because of less supply.

5.5 There are three ways of doing this.

(a) A **repurchase tender offer**: the firm specifies the price at which it will repurchase shares, the number of shares it intends to repurchase, and the period for which the offer remains open.

(b) An **open market repurchase**: the firm buys back shares through the market, by using a broker, at the current market price.

(c) A **private negotiated repurchase**: the firm buys back shares from a large stockholder through private negotiations.

5.6 There can be a variety of motives for a share repurchase including excess cash, an indication that the company's management thinks the shares are undervalued, a need to eliminate small shareholders and to consolidate shareholder control for large shareholders.

5.7 Because share repurchases are not viewed as a permanent policy, they provide greater flexibility for **temporarily high payouts**. As mentioned earlier investors tend to view an increase in dividends as a sign that earnings prospects have improved permanently. Hence, firms are reluctant to raise dividends in response to what may be merely transitory increases in earnings.

5.8 Another advantage of repurchases is that, unlike dividends, they are **exempt from personal income taxation**. Although they contribute to capital gains, which are eventually taxable, capital gains tax rates are lower than rates on personal dividends.

5.9 There are a variety of possible disadvantages.

(a) When firms pay a **premium** on share repurchased, there is a wealth transfer from remaining shareholders to those who are selling. When a takeover raider is paid a premium for relinquishing their shares (to thwart the takeover), the raider is in essence **expropriating wealth** from other shareholders.

(b) The repurchase may be viewed as a **negative signal** that the firm has poor investment opportunities. (When a company repurchases shares it will typically state 'we find no better investment than in our own company.')

(c) The firm may have to bid up the price to complete the purchase, thus **paying too much** for its own stock.

## Key learning points

- The share price might be affected by dividend policy. According to traditional theory, there might be an optimal dividend pay-out and retentions policy that maximises the share value.
- In contrast, Modigliani and Miller's theory suggests that dividend policy is irrelevant to shareholders because it does not affect their wealth. However, their theory assumes a perfect capital market. In practice, markets are not perfect and dividend policy is significant for many companies.
- A company needs to take account of different clienteles of shareholders in deciding what dividends to pay.
- Retained earnings remain the most important single source of finance for UK companies, and financial managers should take account of the proportion of earnings which are retained as opposed to being paid as dividends.
- Companies are likely to have a long-term target for a dividend pay-out ratio, and will try to avoid volatility in dividends from one year to the next.Companies therefore generally smooth out dividend payments by adjusting only gradually to changes in earnings: large fluctuations might undermine investors' confidence.
- Other factors that influence dividend policy include control issues, loan covenants, market expectations and signalling, and takeover threats.
- Payment of a scrip dividend is a means of declaring a dividend but avoiding the payment of cash.
- Share repurchase is an alternative to paying dividends and is useful in a variety of circumstances, especially for a temporarily high payout.

## Quick quiz

1 A UK company cannot pay out in dividends more than the amount of profits after taxation it has earned in the financial year. True or false?

2 What is a scrip dividend?

3 A company retains 40% of its earnings, which it invests to obtain a 10% return. If the same dividend pay-out ratio is maintained, what should be the long-term growth in dividends?

4 Why might a company's dividend policy give rise to cash flow risk?

5 What is meant by a policy of 'smoothing dividend payments'?

## Answers to quick quiz

1 False. A company may also pay dividends out of retained profits from previous years. Dividends cannot exceed the company's total distributable profits.

2 A payment of dividend in the form of new shares. One new share is issued for a given number of shares already held. It is usual to offer a cash alternative to a scrip dividend.

3 40% $\times$ 10% = 4%. Dividend growth over the long-term should be 4% per annum.

4 A cash dividend reduces the cash held by the company. Cash flow risk arises because the company might not have the cash required to pay the dividend and also to sustain its business operations.

5 Instead of maintaining a fixed dividend pay-out ratio, which could lead to sharp fluctuations in dividends from one year to the next, a company might decide to adopt a dividend smoothing policy. Dividends will then rise gradually over time in line with the longer-term growth trend in the company's profits.

## Answers to activities

### Answer 15.1

(a) If retentions are 0%, the market value cum dividend is given by:

$$\text{MV cum div} = \frac{800{,}000}{0.15} + 800{,}000$$

$$= £6{,}133{,}333$$

(b) If retentions are 25%, the current dividend will be £600,000 and:

$$\text{MV cum div} = \frac{600{,}000(1.0375)}{(0.15 - 0.0375)} + 600{,}000$$

$$= £6{,}133{,}333$$

(c) If retentions are 40%, the current dividend will be £480,000 and:

$$\text{MV cum div} = \frac{480{,}000(1.06)}{(0.15 - 0.06)} + 480{,}000$$

$$= £6{,}133{,}333$$

(d) If retentions are 60%, the current dividend will be £320,000 and:

$$\text{MV cum div} = \frac{320{,}000(1.09)}{(0.15 - 0.09)} + 320{,}000$$

$$= £6{,}133{,}333.$$

Since all dividend policies give the same total market value for the shares, shareholders will be indifferent as to which dividend policy is pursued. This is the 'mathematical' support for the theory that dividend policy is irrelevant to shareholder wealth, as suggested by Modigliani and Miller.

### Answer 15.2

There is no formal answer to this activity.

### Answer 15.3

| *Year* | *Dividend per share (pence)* | *Dividend as % of profit* |
|---|---|---|
| 4 years ago | 11.0 | 50% |
| 3 years ago | 13.0 | 52% |
| 2 years ago | 12.0 | 50% |
| 1 year ago | 15.0 | 52% |
| Current year | 14.8 | 50% |

The company appears to have pursued a dividend policy of paying out half of after-tax profits in dividend. This policy is only suitable when a company achieves a stable EPS or steady EPS growth. Investors do not like a fall in dividend from one year to the next, and the fall in dividend per share in the current year is likely to be unpopular, and to result in a fall in the share price.

The company would probably serve its shareholders better by paying a dividend of at least 15p per share, possibly more, in the current year, even though the dividend as a percentage of profit would then be higher.

# *Part D*

## *Corporate governance*

# Chapter 16 Corporate governance

## Chapter topic list

1 The development of corporate governance

2 The protagonists

3 Codes of corporate governance

## Learning objective

On completion of this chapter you will be able to:

- discuss the frameworks of corporate governance regulations and the key issues relating to these frameworks

The detailed areas of the syllabus covered are:

*The nature of corporate governance*

- the nature and scope of corporate governance
- concepts and theories of corporate governance
- models of corporate governance

*The board of directors*

- the role and composition of the board of directors

# 1 THE DEVELOPMENT OF CORPORATE GOVERNANCE

**KEY TERM**

**Corporate governance** is the system by which companies are directed and controlled.

## Introduction

1.1 The perennial problems associated with the **separation of ownership and control** – the fact that managers do not always own the business they are managing – set the backdrop for the development of the governance debate.

1.2 Transparency, accountability, corporate honesty and responsibility have become increasingly important to shareholders and other stakeholders alike over the last 30 years. Even where common and statutory company law have existed and been applied to commercial practices, widening of the shareholder base, the increasing role of **institutions**, especially pension funds, and the very public **collapses of high profile corporations** has led to the development and implementation of systematised codes of conduct for bodies corporate.

1.3 More recently, increasing concerns about **social responsibility** and the **environment** have led pressure groups and investors to question the actions of companies with regard to the way they operate, both in their home countries and in foreign jurisdiction.

## What is corporate governance?

1.4 With this increasingly large area of focus, it is sometimes difficult to define what is actually meant by the term corporate governance. To a large extent, the **focus will depend on the area under scrutiny.** Thus lawyers will be concerned with legislative issues, accountants with reporting and audit issues and special interest groups with the degree to which an organisation lives up to its responsibilities, real or perceived, towards environmental or even socio-cultural issues.

1.5 Despite this lack of an all encompassing definition, there are a number of **key factors** which can be seen to permeate the discussion:

(a) The **management and reduction of risk** is a fundamental issue in all definitions of good governance; whether explicitly stated or merely implied.

(b) Although mostly discussed in relation to large quoted companies, governance is **an issue for all bodies** corporate, commercial and not for profit (NFP).

(c) The notion that overall performance is enhanced by **good supervision and management** within set **best practice guidelines** underpins most definitions.

(d) Good governance provides a framework for an organisation to pursue its strategy in an **ethical and effective** way from the perspective of **all stakeholder groups** affected, and offers **safeguards against misuse** of resources, physical or intellectual.

(e) Good governance is not just about externally established codes, it also requires a willingness to apply the **spirit as well as the letter** of the law.

(f) **Accountability** is generally a major theme in all governance frameworks.

## The driving forces of governance development

1.6 Corporate governance issues came to prominence in the USA during the 1970s and in the UK and Europe from the late 1980s. The main, but not the only, drivers associated with the increasing demand for the development of governance were:

(a) **Increasing internationalisation and globalisation** meant that investors, and institutional investors in particular, began to invest outside of their home countries. This led to calls for companies to operate in an acceptable fashion and to report corporate performance in a way that was, if not directly comparable, then at least translatable. This trend has continued and systems to encourage minimum global standards of governance observance are on-going.

(b) The **differential treatment of domestic and foreign investors**, both in terms of reporting and associated rights/dividends caused many investors to call for parity of treatment. While this was widely accepted in the mature economies, differential treatment does still exist in some jurisdictions.

(c) Issues concerning **financial reporting** were raised by many investors and were the focus of much debate and litigation. Shareholder confidence in many instances was eroded and, while the focus at that time solely on accounting and reporting issues was later shown to be inadequate, the regulation of practices such as off-balance sheet financing led to greater transparency and a reduction in risks faced by investors.

(d) An increasing number of **high profile corporate scandals and collapses** occurred including Polly Peck International, BCCI, and Maxwell Communications Corporation. At this time the focus of the governance debate tended to be legislative, with demands to tighten company law and listing requirements for quoted companies. Despite the introduction of codes and frameworks, problems continued to occur; eg Barings, and the focus of the governance debate shifted to the quality and efficacy of auditing standards.

(e) In the **more recent past, major corporate scandals** such as Enron and WorldCom have again shifted the debate, with the emphasis becoming more holistic, questioning the relationships of companies with their professional service providers, eg accountants, consultants, brokers and banks. The affairs of Parmalat and Royal Dutch/Shell are still under investigation at the time of writing but will no doubt raise further issues: a key element of the Parmalat case is the outright forgery of a letter saying the dairy company had $4.9 billion on deposit at Bank of America; Royal Dutch/Shell confessed that its reserves — the measure of oil still in the earth that it controlled — were overstated by 20%.

(f) In the most recent discussions, concern over the relationships between **executive** and **non-executive** directors has also been highlighted as being of key importance.

## Ownership and management

1.7 A company is owned by its shareholders, the principal providers of risk or equity capital to the enterprise; however, the owners and the managers are likely to be different people. This can give rise to serious conflicts of interest, especially where remuneration of management is based on short term or inappropriate measures which do not enhance the overall performance of the company over time or increase shareholder wealth or value for the wider stakeholder community. As governance frameworks have developed, so a number of views as to both the relationship between management and owners and organisations in the wider context have developed:

- Stewardship theory
- Agency theory
- Stakeholder theory

## Stewardship theory

1.8 Some approaches to good governance view the management of an organisation as the stewards of its assets, charged with their employment and deployment in ways consistent with the overall strategy of the organisation. With this approach, **power** is seen to be vested in the **stewards**, with **other interest groups** taking little or no part in the running of the company and **receiving relevant information** via established reporting mechanisms such as audited accounts, annual reports etc. Technically, shareholders or member/owners have the right to dismiss their stewards if they are dissatisfied with their stewardship, via a vote at an AGM or EGM.

1.9 Many of the scandals in recent years have highlighted the **limitations** of this view and have thus suggested that this approach needs to be reviewed and more actively managed if it is to be effective. The **limitations of financial reporting**, especially with regard to historical views on high risk areas such as the use of derivatives and issues of concern to a wider range of interest groups, has been targeted by governance frameworks. So too has the issue of **independence of professional service providers**: auditors, management consultants, merchant banks and brokers. The argument goes that increasing the independence of advisors will raise the quality of information so that owners would be better able to exercise ultimate control over the stewards, i.e. the board.

1.10 This in itself falls down, however, where **shareholders do not take an active interest** in the organisation, and do not exercise their right to vote. This is a major concern and one that was highlighted in a joint ABI – NAPF statement issued in July 1999.

(a) These two bodies, which between them represent institutions whose investments represent over 60% of the shares quoted on the UK stock exchange highlight the need for an interactive approach to shareholding and involvement in overseeing the companies in which they invest.

(b) They are also against compulsory voting by shareholders concluding, 'a simple box-ticking approach to corporate governance does not lead to considered and responsible voting.'

1.11 Governance can therefore be seen to necessitate **active participation on the part of owners**; an abrogation of responsibility under a stewardship approach is not acceptable practice.

## Agency theory

1.12 Another approach to governance is enshrined in agency theory. This takes the stance that, rather than acting as stewards, **management will act in an agency capacity**, seeking to service their own **self-interest** and looking after the performance of the company only where its **goals are co-incident** with their own.

1.13 This approach takes a very negative, 'theory X' type, short term/tactical stance, but is one that has found a home in some elements of the frameworks. The development of **performance related remuneration and incentive schemes**, such as Long Term Incentive Plans (LTIPs) and executive share option schemes, and the associated elements of frameworks (such as the Combined Code and ABI guideline principles) in their limitation

and management, are rooted in an agency theory approach. The focus of agency theory is therefore contractual, although the regulatory elements noted above indicate the acceptance of its **limitations** and **short-termism**.

## Stakeholder theory

1.14 The stakeholder approach takes a much more 'organic' view of the organisation, imbuing it with a 'life' of its own, in keeping with the notion of a separate legal personage. Effectively stakeholder theory is a development of the notion of stewardship, stating that management has a duty of care, **not just to the owners** of the company in terms of maximising shareholder value, **but also to the wider community** of interest, or stakeholders.

1.15 This approach has much to commend it and once again its impact on the development of governance systems can be seen. For those directly involved in the company's day to day operation, eg the employees, the theory can be seen especially in some of the **European frameworks**, eg Germany where employees are represented on the supervisory board of the company, and through specific mention in the OECD (Organisation for Economic Cooperation and Development) guidelines. In the German case, the supervisory board is a powerful non-executive body established to oversee the activities of the company executives. Similarly, concern for wider groups and society in general can be seen in the reporting in relation to environmental issues.

1.16 Notwithstanding this, the approach also has a number of **drawbacks**. The most obvious of these is perhaps the apparently insurmountable problem of producing either a **definitive list** or a rank order of importance of stakeholders and their interests. **Culture**, too, presents a major potential drawback regarding the applicability of the theory, not only in terms of those included in the list but also in terms of the best mechanisms for addressing their needs.

1.17 A number of authors considering governance from the UK and US perspectives argue that **market forces** will ultimately be the arbiter of successful governance through a reduction in the cost of capital, an increase in the availability of capital and improved profitability for well governed organisations.

### Activity 16.1

Define the main stakeholders in a large locally based company manufacturing plastic bottles.

## Dynamism and accountability

1.18 Just as it is difficult to make a definitive statement on what corporate governance is, it is similarly difficult to give one simple definition as to the **role** of the various codes, guidelines and frameworks. This too depends on a number of factors; e.g. from whose perspective they are viewed as well as the business and national culture of the jurisdictions involved.

1.19 Assuming that the economy under consideration is market based, a number of key roles appear to be relevant:

(a) To **minimise risk**, especially financial, legal and reputational risks, by requiring compliance with accepted good practice in the jurisdiction in question.

(b) To ensure adherence to and satisfaction of the **strategic objectives** of the organisation, thus aiding effective management.

(c) To **minimise potential conflicts of interest** between the owners, managers and wider stakeholder community, however defined.

(d) To establish **clear accountability** at senior levels within an organisation.

(e) To provide **accurate and timely reporting** of trustworthy/independent financial and operational data to both the management and owners/members of the organisation.

(f) To encourage **more proactive involvement of owners/members** in the effective management of the organisation through recognising their responsibilities of oversight and input to decision making processes via voting or other mechanisms.

1.20 Some authors have attempted to bracket these under twin concept headings: **Dynamism**, the degree to which the system addresses the regulatory issues but still assists the organisation in growing and developing and **Accountability**: the degree to which, given dynamism, the management is still fully accountable for its actions.

## 2 THE PROTAGONISTS

### Executive directors

2.1 In the UK, the distinction between the board of directors and senior executives has not always been clear. Traditionally, the board of directors has been seen as a top position for executives to aspire to, with board positions for executives, such as the chief executive officer (or managing director), finance director, sales and marketing director, operations director and so on.

2.2 The board of directors is **collectively responsible** for promoting the success of the company by **directing and supervising** the company's affairs. The board's role is to provide entrepreneurial leadership of the company within a framework of prudent and effective **controls** which enable risks to be assessed and managed.

2.3 The board should set the company's strategic aims, ensure that the necessary financial and human resources are in place for the company to meet its objectives, and review management performance. The board should set the company's values and standards and ensure that its obligations to shareholders and other s are understood.

2.4 The board therefore has the responsibility for the **direction and control** of the company and the executive directors on the board can bring their executive, detailed knowledge of the business to bear here.

2.5 The role of the executive director carries responsibilities to the Companies Registry, creditors, to the public at large and also to the shareholders. In exercising his powers a director is in a **fiduciary position** towards the company. This means that he must act in good faith at all times and in the interests of the company. He should avoid putting himself in a position where his own personal interests are pursued at the expense of, or in **conflict** with, the business interests of the company.

2.6 The directors must look after the assets of the company and ensure that they are not dissipated or disposed of for less than their proper value. Their role is one of **stewardship** of the assets of the company.

2.7 Codes on corporate governance have changed perceptions about the role of the board. The board does not take many executive decisions itself. It should retain the responsibility for major capital expenditure, acquisitions and disposals, and should take the strategic decisions on corporate objectives, approval of budgets and business plans and risk management strategy. Most executive decisions, however, are taken by the **management**, who report to the chief executive officer (or managing director). Managers are then accountable to the board, and are rewarded by the board for their achievements.

2.8 The **continental model of the two-tier board**, with a supervisory board and a management board, provides a clearer distinction between the functions of senior management and the functions of the board.

**KEY TERM**

**Executive directors** are the managers of a business, with first-hand knowledge and experience of how the business is run. Some of them might hold shares in their company, but in a listed company, they are not the major shareholders.

2.9 Their first-hand knowledge of the business is vital for planning and decision-making, for implementing plans and for monitoring and controlling performance at an operational level. It is generally accepted that the success of a company in achieving its objectives is largely attributable to successful executive management.

2.10 Not all top executives are appointed as directors. However, executives who are appointed as directors are seen as the top level of executive management. As directors, they have a **service contract** (with a maximum recommended notice period of one year) and their remuneration usually includes some performance-related incentive scheme. A basic salary is topped up by the award of a cash bonus or share options if certain agreed **targets** for achievement are met or exceeded.

2.11 Executive directors, as directors, have responsibilities to their shareholders and to other stakeholders in the company. As individual managers, however, their personal interests might conflict with those of shareholders.

### Non-executive directors

**KEY TERM**

**Non-executive directors** have no executive (managerial) responsibilities.

2.12 **Non-executive directors** should not be regarded as 'second class citizens' on the grounds that, unlike the executives, they only spend a limited amount of time working for the company. They should provide a balancing influence, and bring the benefits of their experience outside the company, which some executives might not have.

2.13 In principle, non-executives should play a key role in **reducing conflicts of interest** between management (including executive directors) and shareholders. They should provide reassurance to shareholders, particularly institutional shareholders, that management is acting in the interests of the company.

2.14 In practice, the system of non-executive directors in the UK has been criticised at times. Historically there have been two problems in particular.

(a) Many non-executives are also executive directors (eg CEOs or finance directors) on the board of other public companies, and many of them know each other personally. It has been suggested that they do not ask the difficult questions that effective non-executives should, nor bring their influence to bear on the board in the best interests of the shareholders, which may entail challenging the chairman or CEO. There could well be an unspoken view that if an individual does not stir up trouble as a non-executive, the non-executives on the board where he or she is an executive director will likewise avoid causing trouble. Many non-executives, it is therefore argued, are **members of a cosy 'club'** in which they pay each other large annual fees to act as friendly but ineffective non-executives.

(b) Some individuals **hold a large number of non-executive positions**. In 2002, it was reported that one particular individual held 16 positions as non-executive director or member of a public committee. The realistic view is that the time of even the most efficient and dedicated individual is limited, and that no-one can realistically perform effectively as non-executive on more than a limited number of companies. It has been suggested that a limit (possibly three) should be placed on the number of non-executive positions that any individual should hold at any one time. A drawback to this suggestion is that there might not be enough individuals with the experience and qualities to act effectively as non-executives.

### Exam alert

There is **invariably** a question on corporate governance in the exam. A question in the June 2003 exam required a discussion of the role of non-executive directors and the problems associated with that role. In December 2003 the question was on the role of audit committees and the quality of their members and in June 2004 it was on the relationship between external audit and internal audit.

## External auditors

2.15 The **external auditors** are independent, with responsibilities fixed by statute. They report to the shareholders, and express an opinion on the **truth and fairness** of the annual accounts. The external auditors are required:

(a) By law, to give an opinion as to whether the annual accounts of the company give a **true and fair view** of the state of affairs of the company and of the profit or loss for the period, and that the accounts have been **prepared in accordance with the Companies Act 1985**.

(b) To report if the **directors' report** is not consistent with the accounts, or if the company has not kept **proper accounting records**, or if the auditors have not been given all the **information and explanations** needed to carry out the audit, or if the company has not disclosed the information required by the Companies Act and the Listing Rules (Combined Code) about **directors' remuneration**.

(c) To review whether the statement of the directors on **corporate governance** reflects the company's compliance with the requirements of the Combined Code.

2.16 The external auditors are **not currently required** to consider whether the board's statements on internal control cover all risks and controls, nor do the auditors form an opinion on the effectiveness of the company's corporate governance procedures or its risk and control procedures.

2.17 It is easy to overlook the fact that the publication of an annual report and accounts by a company is an element of corporate governance. The board of directors is responsible to the shareholders for their stewardship of the company and its assets. The annual report and financial statements gives an account of their stewardship.

2.18 The shareholders receive an opinion from the independent external auditors about whether the accounts, in their opinion, give a true and fair view of the performance of the company during the reporting period and its financial position as at the end of the period (the balance sheet date).

*Independence*

2.19 In the US, public confidence in the **independence** of external auditors was undermined by the collapse of Enron, the energy corporation, in 2001 (we first saw Enron back in chapter 1). It emerged that the company had 'hidden' huge liabilities by taking them 'off balance sheet', and the company collapsed with virtually no warning because of the hidden losses it had built up. Questions were raised about the auditors, Andersen, who had given their opinion that the accounts gave a true and fair view. The misgivings grew larger when it was reported that Andersen had shredded large quantities of audit papers that the authorities were trying to recover for investigation.

2.20 The debate extended from the specific Enron affair to more general questions about the role of external auditors and their independence from the companies (and more specifically, the boards of directors) that hire them. Suggestions put forward were that auditors should not be allowed to do **non-audit work** for the companies they audit, and that companies should be required to **change auditors** regularly. The purpose of these suggestions was to restore confidence in the independence of the external auditors and their audit opinion. In the UK it is still proposed that there are limits on the amount of non-audit work that auditors can provide and that there is frequent **rotation** of auditors.

## Internal audit

2.21 **Internal auditors** are appointed and employed by management, with responsibilities decided by management, and reporting to management. Their function is to look at whatever operational, financial and compliance areas management want to check. The responsibilities of the internal audit team could cover:

(a) A review of the accounting and internal control systems
(b) An examination of financial and operating information
(c) A review of economy, efficiency and effectiveness
(d) A review of compliance with laws and regulations
(e) A review of risk, risk controls and risk management
(f) Special investigations

2.22 Where an internal audit function exists, there should be co-operation between the **external auditors** and the **internal audit team** for the purpose of carrying out the external audit. Although the extent of the work of the external auditor may be reduced by placing reliance on the work of the internal auditor (thus reducing fees), the full responsibility for reporting on the financial statements remains with the external auditor. Factors that the external auditor looks at before placing reliance on the work done by the internal auditor include the internal auditors' technical competence, level of resources available, quality of work done, independence, and the original objectives of the work.

2.23 The objectives of an internal audit should go further, however, and an internal audit function can help management to ensure that the **internal control system** is functioning effectively.

**KEY TERM**

An **internal control system** consists of the control environment and control procedures within an organisation.

2.24 (a) The control **environment** is the overall attitude, awareness and actions of directors and managers with regard to internal controls and their importance to the organisation. The control environment therefore reflects management style and the organisation culture.

(b) The control **procedures** in a company mean all the policies and procedures ('internal controls') which management has established for ensuring, as far as practicable:

(i) The orderly and efficient conduct of its business, adhering to internal policies
(ii) The safeguarding of assets
(iii) The prevention and detection of fraud and error
(iv) The accuracy and completeness of accounting records
(v) The timely preparation of reliable financial information

Examples of control procedures are the preparation of regular reconciliations between accounts, and approving documents before they are processed. However, the internal control system extends beyond matters relating to the accounting system, and includes operational controls and controls to ensure compliance with relevant laws and regulations.

**Exam alert**

A question in the June 2004 exam asked for a description of the external and internal audit processes and a discussion of the relationship between the two types of audit.

## Institutional shareholders

2.25 As already indicated the main driver behind developments in corporate governance in the UK has been the influence of **institutional investors**. Stung by high-profile company collapses in the 1980s and 1990s, by the unreliability of published accounts and by the excessive rewards paid to themselves by executive directors, institutional investors have pressed, with great success, for improvements in, and formalisation of, corporate governance systems.

2.26 Institutional investors have been supported by other institutions, notably the **London Stock Exchange**, who recognise that investor confidence is essential to the continued growth and success of the capital markets and stock exchanges.

## Other stakeholders

2.27 The expectations of other stakeholders have also influenced changes in corporate governance.

(a) Employee rights have been extended, and employees expect companies to ensure that these rights are enforced and protected. Many public companies established employee share option schemes, giving employees a more direct interest in the performance of the company.

(b) Creditors, notably banks, expect companies to produce reliable financial information that can be used to assess the creditworthiness of a company.

## 3 CODES OF CORPORATE GOVERNANCE

### Voluntary versus statutory governance frameworks

3.1 Many codes relating to the implementation of governance exist around the world. These various frameworks range from the OECD principles of corporate governance (see Chapter 15), through the UK's **Combined Code** to the requirements set by the Securities and Exchange Commission in the USA under the Sarbanes-Oxley Act 2002.

3.2 The **implementation** and status of these codes also vary. In the OECD case, the reason for developing the principles was to give a non binding background to the key elements which it felt its 30 member countries and 70 associated countries and NGOs should be considering. In the case of the UK, there is a Stock Exchange requirement for quoted companies to comply with the Combined Code, or to identify and explain reasons for non-compliance. There is however, no statutory sanction for non-compliance. The US scenario, is on the other hand, heavily regulated with clear statutory requirements.

3.3 This situation then begs the question, which is the better system in ensuring the effective fulfilment of the role of governance systems? Again, perhaps frustratingly, there is no clear answer.

(a) Arguments for **statutory** codes are easily made, but their efficacy is questionable, eg the recent high profile cases in the USA and recent legislation requiring senior company executives to swear on oath to the accuracy of their financial statements. There is also the danger that statutorily set standards of compliance come to be viewed as the maximum required rather than the minimum necessary standard.

(b) **Voluntary** codes have other issues and beg the question 'what is the point of a guard dog without teeth?' However, the arguments surrounding the role of the market in taking into account the stability and riskiness of a company that admits to non-compliance are reasonably robust.

3.4 Ultimately however there is no single global answer, 'one size does not fit all'. The appropriateness of the code or system adopted is dependent on the culture, custom and practice of the markets to which it relates.

3.5 As noted above, international differences do exist in form and application of the relevant frameworks, and there is a debate as to the degree to which this is an issue of concern. The OECD and World Bank have both attempted to assist in this by issuing principles and tying aid and development packages to the implementation of specific governance practices respectively. Exploratory work has also been undertaken on standardisation of governance rules, although, given the complexities noted above, it appears unlikely that this will happen in the foreseeable future, even between the developed economies of the EU member states, let alone, say, the USA and any one of the emerging markets.

**Activity 16.2**

List five or more issues that could be reasonably addressed by a system of corporate governance.

## A brief history of corporate governance in the UK: the Combined Code

3.6 Your syllabus is principally concerned with corporate governance regulations in the UK which are encapsulated in the July 2003 *Combined Code*. This is covered fully in the next chapter.

3.7 However, we will conclude this chapter with a brief history to set the material in the next chapter in perspective.

*The Cadbury Committee: best practice*

3.8 The first major development in corporate governance in the UK was the report of the Committee on the Financial Aspects of Corporate Governance, known as the Cadbury Committee, in 1992. The committee was set up as a result of concerns about the quality of **financial reporting** and the ability of **external auditors** to provide the assurances about the financial condition of a company that users of financial statements wanted.

3.9 The report went beyond purely financial matters, and made recommendations about **corporate governance** more generally. In particular, recommendations were made about the functions and responsibilities of the **board of directors**, the composition of the board, the role of **non-executive directors** and the need to prevent a board being dominated by one all-powerful individual. Many of the recommendations were regarded as 'best practice' already, but were not universally applied by listed companies. The recommendations were set out in a **Code of Best Practice**.

3.10 The Code of Best Practice was aimed primarily at the directors of all UK plcs, but the directors of all companies were encouraged to use the Code for guidance. An innovative recommendation in the report was that **all quoted companies** should comply with the Code. The Code should be **voluntary**, but quoted companies should explain in their annual report and accounts the extent to which they have complied with the Code in the year under review, and the **reasons for any non-compliance**. It was also suggested that this statement of compliance should be reviewed by the external auditors before being published.

3.11 The London Stock Exchange accepted this recommendation, and included in its **Listing Rules** a requirement for a statement of compliance (or non-compliance) with the Code in listed companies' annual report and accounts. In practice, many companies quickly adopted all or most of the Code, under pressure from their institutional shareholders.

*The Greenbury Committee: directors' remuneration*

3.12 The Greenbury committee was established to consider **directors' remuneration**, and it reported in 1995. Like the Cadbury committee, the Greenbury committee issued a code of best practice on directors' remuneration, and recommended that UK listed companies should comply with it, and:

(a) include a statement in the annual report and accounts detailing the extent of their compliance with the recommendations on remuneration committees, and

(b) justify any non-compliance

3.13 The two main elements of the Greenbury recommendations were on **remuneration committees** and on **disclosures** about directors' remuneration. The focus of the report was therefore exclusively on remuneration issues. The public had voiced concern about 'fat cat' salaries and bonuses, but the main concern of the Greenbury Committee was the fact that

directors' remuneration was not linked closely enough with company performance for the benefit of the shareholders.

3.14 The requirements recommended by Greenbury have since been extended by company law and are now reflected in *The Directors' Remuneration Report Regulations 2002* which are covered in the next chapter.

*The Hampel Committee*

3.15 The Hampel committee was set up in 1996 to:

(a) Conduct a review of the Cadbury Code and its implementation, to ensure that its purpose was being achieved, and to propose amendments to the Code as necessary

(b) Review the role of directors, both executive and non-executive, recognising the need for board cohesion and the common legal responsibility of all directors

(c) Pursue any relevant matters arising from the Greenbury report

(d) Consider the role of shareholders and auditors in corporate governance issues

3.16 The Hampel committee produced its final report in 1998. The committee followed up matters raised in the **Cadbury and Greenbury** reports, aiming to restrict the regulatory burden on companies and substituting principles for detail whenever possible. The introduction to the report also stated that whilst the Cadbury and Greenbury reports concentrated on the prevention of abuses, Hampel was equally concerned with **the positive contribution that good corporate governance can make**.

3.17 The introduction to the report pointed out that the primary duty of directors was to shareholders, and to enhance the value of the shareholders' investment over time. Relationships with other stakeholders were important, but making the directors responsible to other stakeholders would mean there was no clear yardstick for judging directors' performance.

**Exam alert**

In December 2002, a question asked for a description of the factors influencing the introduction of frameworks, and how the successive frameworks have contributed to the development of corporate governance.

*The 1998 Combined Code*

3.18 The Hampel committee recommended that the recommendations of the Cadbury, Greenbury and Hampel committees should be combined into a single set of recommendations. After consultations and a few amendments, the London Stock Exchange produced the first version of the Combined Code (the *Principles of Good Governance and Code of Best Practice*) in June 1998.

*The Turnbull Committee: internal control and risk-based management*

3.19 Meanwhile a working party of the Institute of Chartered Accountants in England and Wales (the Turnbull committee) was set up to prepare guidelines for the directors of listed companies on how to implement the internal control aspects of the Combined Code. The committee produced its report in 1999. The report provided guidelines for directors for

ensuring that **internal controls** and **risk management systems** were in place and functioning effectively. The report describes, in broad detail, a risk-based approach to management. The Turnbull guidance is included in the revised Combined Code and so more detail is given in the next chapter.

*The Myners Review of Institutional Investment*

3.20 In mid-2000 Paul Myners had been asked by the Treasury to look at a related problem: whether the long-term good of the markets was being served by institutional investors. Myners reported in March 2001 and made a number of recommendations mainly aimed at pension fund trustees.

*The Company Law Review*

3.21 Before the 1998 Combined Code was published the government had in March 1998 established a steering group to take forward a fundamental review of company law (the Company Law Steering Group). Over the next several years several consultation documents and reports were published, culminating in the Final Report of the Company Law Review in June 2001 (the Company Law Review).

3.22 One result of this has been *The Directors' Remuneration Report Regulations 2002* (see the next chapter) which meant that the provisions regarding this topic in the first version of the Combined Code could be removed. Another is the draft *Operating and Financial Review and Directors' Report Regulations 2004*.

*The Higgs Report (non-executives) and the Smith Report (audit committees)*

3.23 Also arising out of the work of the Company Law Steering Group Derek Higgs was invited by the DTI and the Treasury to conduct a review of the role and effectiveness of **non-executive directors**. This arose out of a statement in the Company Law Review that there was 'a growing body of evidence from the US suggesting that companies with a strong contingent of non-executives produce superior performance'. Higgs published a controversial consultation paper in June 2002. This was an open-ended document seeking answers to a number of wide-ranging questions about board structures, development, procedures and relationships.

3.24 Meanwhile in July 2002 the DTI asked the FRC to put in hand development of the existing Combined Code guidance on **audit committees,** originally deriving from Cadbury. The FRC set up a group under the chairmanship of Sir Robert Smith to do this. Sir Robert Smith's group was instructed to liaise with Derek Higgs. This liaison took place right through to the publication of the two final reports on the same date in January 2003: Higgs' *Review of the role and effectiveness of non-executive directors* and Smith's *Audit Committees Combined Code Guidance*.

3.25 The Smith guidance and suggestions from the Higgs report are included in the revised Combined Code and so more detail is given in the next chapter.

*The July 2003 Combined Code*

3.26 What was proposed was an expanded Combined Code. Given the controversial nature of some of the recommendations the FRC commenced a consultation exercise and established a review body which listened to all the arguments and took a large number on board. This culminated in the July 2003 edition of the Combined Code.

*The future*

3.27 Other consultations and reforms are still in progress. The government has stated its intention to move ahead with certain aspects of the reform of company law including reforms arising out of the work of the Co-ordinating Group on Audit and Accounting Issues and the Review of the Regulatory Regime of the Accounting Profession.

## Key learning points

- The problems associated with the **separation of ownership and control** can give rise to serious conflicts of interest, especially where **remuneration** of management is based on short term or inappropriate measures which do not enhance the overall performance of the company or increase shareholder wealth or value for the wider stakeholder community.
- Besides 'fat cat' salaries, the main drivers associated with the demand for the development of regimes of corporate governance have been: increasing internationalisation and globalisation; the differential treatment of domestic and foreign investors; issues concerning financial reporting; a number of high profile corporate scandals and collapses; and the debate over the relationship between executive and non-executive directors.
- Broadly speaking, views of the relationship between managers and shareholders can be split into stewardship theory, agency theory and stakeholder theory.
- The roles of corporate governance are to **minimise risk,** to satisfy **strategic objectives,** to minimise **conflicts of interest,** to establish clear **accountability**, to provide accurate and timely **reporting,** and to encourage more proactive **involvement** of owners/members.
- The chief protagonists in corporate governance issues are executive directors, non-executive directors, external auditors and their responsibilities under company law, internal auditors, institutional shareholders, and other stakeholders such as employees and environmental groups.
- A '**voluntary**' system of corporate governance for listed companies has been introduced in the UK, dating from the early 1990s.
- The rules on corporate governance for UK listed companies are contained in the **Combined Code** (which is included in the Listing Rules of the FSA, as an appendix). This combines guidance from the Cadbury report, the Greenbury report (remuneration), the Hampel report, the Turnbull report (internal control), the Higgs report (non-executives) and the Smith report (audit committees).

## Quick quiz

1 Define corporate governance.
2 Why is internationalisation and globalisation relevant to corporate governance?
3 Distinguish between stewardship theory, agency theory and stakeholder theory.
4 What is meant by dynamism and accountability?
5 Why might an external auditor's independence be compromised?
6 What does a system of internal control consist of?
7 What is the relevance of the Listing Rules to corporate governance?

## Answers to quick quiz

1 Corporate governance is the system by which companies are directed and controlled.

2 Because investors, and institutional investors in particular, now invest significant amounts outside of their home countries, and this means that it is important for companies to report corporate performance in ways that are, if not directly comparable, then at least translatable.

3 Stewardship theory views the management of an organisation as the stewards of its assets, with other interest groups taking little or no part in the running of the company and receiving relevant information via established reporting mechanisms such as audited accounts, annual reports etc. Agency theory takes the stance that management will act in an agency capacity, seeking to service their own self-interest and looking after the performance of the company only where its goals are co-incident with their own. Stakeholder theory is a development of the notion of stewardship, stating that management has a duty of care, not just to the owners of the company in terms of maximising shareholder value, but also to the wider community of interest, or stakeholders.

4 Dynamism is the degree to which the corporate governance system addresses the regulatory issues but still assists the organisation in growing and developing. Accountability is the degree to which, given dynamism, the management is still fully accountable for its actions.

5 Independence might be compromised if the external auditor is not changed regularly, because relationships may get too close and if the external auditor also takes on non-audit work for the same company, which could lead to conflicts of interest.

6 An internal control system in a company comprises the control environment and the control procedures. It includes all the policies and procedures ('internal controls') for ensuring, as far as practicable:

(a) the orderly and efficient conduct of its business, adhering to internal policies
(b) the safeguarding of assets
(c) the prevention and detection of fraud and error
(d) the accuracy and completeness of accounting records
(e) the timely preparation of reliable financial information.

The internal control system extends beyond matters relating to the accounting system, and includes operational controls and controls to ensure compliance with relevant laws and regulations.

7 The system of corporate governance in the UK is primarily restricted to listed companies, and is largely **'voluntary'**. However, under the Listing Rules **compliance** with the Combined Code (or, at least, compliance with most of the Code and a requirement to explain any non-compliance) is **a condition of obtaining a listing** for shares and for admission of the shares to trading on the London Stock Exchange. Although voluntary, the system therefore **has strong elements of compulsion**.

## Answers to activities

## Answer 16.1

There is no definitive list of stakeholders, as they are defined as individuals or groups with a specific self-interest in the operation or performance of an organisation. This will be situationally dependent in each case examined, however, the following may be included.

(a) Shareholders: equity and non-equity shareholders will obviously have an interest in the company's operations and performance generally. As Corporate Governance is a tool not only for assisting wealth creation, but also for wider risk management, shareholders will also potentially be interested in managing the company's, and their own, reputational risk, too.

(b) The board and management: executive and non-executive board members and the wider management team.

(c) Employees: with an obvious interest in the wellbeing of the company, employees may have some influence on the governance of the company, either through representation on management or board committees, as in the German model of management, or through trade unions or employee investor groups and pension trustees.

(d) Creditors: again an obvious financial interest in the operation of the company.

(e) Local government and community, if this company is a major local employer, local politicians and associated businesses will be interested in its continued success and good management.

(f) Environmental groups: could potentially be interested in the governance of the company with regard to the ethical, or otherwise, disposal of chemical waste given it is a plastics company.

(g) National government, at the high level, is a stakeholder in all enterprises at least to the extent that it wishes to see compliance with company law and taxation issues.

## Answer 16.2

This is an open-ended question, and you might choose to answer it in broad terms, or more specifically.

In broad terms, a system of corporate governance should enhance shareholder value by:

(a) Protecting the rights of shareholders

(b) Giving fair treatment to shareholders

(c) Recognising the rights of all stakeholders and trying to minimise conflicts of interest

(d) Improving the disclosure of information about company performance to shareholders and other stakeholders

(e) Defining the responsibilities of the board of directors, for which the directors should be accountable to the ordinary shareholders

More specific areas of corporate governance are standards of financial reporting, standards of audit and risk management, directors' remuneration, the use of non-executive directors, preventing any individual or interest group from dominating decision-making by the board, the extent of information disclosures to shareholders, and legal responsibilities for companies and their directors.

# Chapter 17 The Combined Code

## Chapter topic list

1 The Combined Code on Corporate Governance
2 Directors
3 Remuneration
4 Accountability and audit
5 Relations with shareholders
6 Institutional shareholders
7 Relationships between the parties
8 The Turnbull report: internal control
9 The Smith guidance on audit committees
10 Higgs' suggestions for good practice
11 Reporting of corporate governance
12 Appraising the performance of the board
13 Operating and Financial Review

## Learning objectives

On completion of this chapter you will be able to:

- discuss the frameworks of corporate governance regulations and the key issues relating to these frameworks.
- explain the role of the board of directors and discuss the main issues relating to its composition, responsibilities and functioning

The detailed areas of the syllabus covered are:

*The framework of corporate governance regulations*

- the role and nature of the regulatory framework
- voluntary codes
- financial reporting requirements
- auditing and statutory requirements
- issues relating to the regulatory framework

*The board of directors*

- the role and composition of the board of directors
- theories of boards
- appraising the performance of the board of directors
- the role of non-executive directors
- nomination, appointment and remuneration issues
- the nature and role of board committees
- issues relating to the role, responsibilities and functioning of the board

# 1 THE COMBINED CODE ON CORPORATE GOVERNANCE

## Outline

1.1 The latest version of *The Combined Code on Corporate Governance* was issued in July 2003. It applies for reporting years beginning on or after 1 November 2003 – i.e. listed UK companies with **year ends from 31 October 2004** onwards must reflect the new Code in their annual reports, and many with earlier year-ends have already done so, voluntarily.

1.2 The Code is organised as follows.

(a) **Section 1** sets out principles of good governance for **companies**. There are **four** sub-headings, each of which has a number of **main principles**, and each of these in turn has a number of **supporting principles** and **provisions**. Here are the four sub-headings.

(i) Directors
(ii) Remuneration
(iii) Accountability and audit
(iv) Relations with shareholders

(b) **Section 2** is much briefer. It sets out **three** main principles for **institutional shareholders** each with one supporting principle.

1.3 In addition there are three schedules.

(a) **Schedule A**: Provisions on the design of performance related remuneration
(b) **Schedule B:** Guidance on liability of non-executive directors: care, skill and diligence
(c) **Schedule C:** Disclosure of corporate governance arrangements

1.4 Not part of the Code, but included within the latest version, is **guidance** on how to comply with the parts of the Code

(a) **Internal Control** (**Turnbull** Committee)
(b) **Audit Committees** (**Smith** Group)
(c) **Suggestions for Good Practice** by various parties from the **Higgs** report.

1.5 The revised Code does **not** include material in the previous Code on the **disclosure of directors' remuneration**. This is because *The Directors' Remuneration Report Regulations 2002* are now in force and supersede the earlier Code provisions. These are covered later.

## Implementation: the Listing Rules and the Combined Code

1.6 The **Listing Rules** include the Combined Code and paragraph 12.43A of the Listing Rules **requires** a listed company incorporated in the UK to **make disclosure statements** in its annual report and accounts about **compliance** with the Combined Code.

(a) A narrative statement of **how** it has **applied** the **principles** set out in Section 1 of the Combined Code, providing explanation which enables its shareholders to evaluate how the principles have been applied;

(b) A statement as to **whether or not** it has **complied** throughout the accounting period with the Code **provisions** set out in Section 1 of the Combined Code. A company that has not complied with the Code provisions, or complied with only some of the Code provisions or complied for only part of an accounting period, must specify the Code provisions with which it has not complied, and for what part of the period such non-compliance continued, and **give reasons for any non-compliance**.

## At a glance

1.7 The **main principles** of the Combined Code are as follows.

| SECTION 1 COMPANIES | |
|---|---|
| **Directors** | |
| *The board* | Every company should be headed by an effective board, which is collectively responsible for the success of the company. |
| *Chairman and chief executive* | There should be a clear division of responsibilities at the head of the company between the running of the board and the executive responsibility for the running of the company's business. No one individual should have unfettered powers of decision. |
| *Board balance and independence* | The board should include a balance of executive and non-executive directors (and in particular independent non-executive directors) such that no individual or small group of individuals can dominate the board's decision taking. |
| *Appointments to the board* | There should be a formal, rigorous and transparent procedure for the appointment of new directors to the board. |
| *Information and professional development* | The board should be supplied in a timely manner with information in a form and of a quality appropriate to enable it to discharge its duties. All directors should receive induction on joining the board and should regularly update and refresh their skills and knowledge. |
| *Performance evaluation* | The board should undertake a formal and rigorous annual evaluation of its own performance and that of its committees and individual directors. |
| *Re-election* | All directors should be submitted for re-election at regular intervals, subject to continued satisfactory performance. The board should ensure planned and progressive refreshing of the board. |
| **Remuneration** | |
| *The level and make-up of remuneration* | Levels of remuneration should be sufficient to attract, retain and motivate directors of the quality required to run the company successfully, but a company should avoid paying more than is necessary for this purpose. A significant proportion of executive directors' remuneration should be structured so as to link rewards to corporate and individual performance. |
| *Procedure* | There should be a formal and transparent procedure for developing policy on executive remuneration and for fixing the remuneration packages of individual directors. No director should be involved in deciding his or her own remuneration. |
| **Accountability and audit** | |
| *Financial reporting* | The board should present a balanced and understandable assessment of the company's position and prospects. |
| *Internal control* | The board should maintain a sound system of internal control to safeguard shareholders' investment and the company's assets. |
| *Audit Committee and Auditors* | The board should establish formal and transparent arrangements for considering how they should apply the financial reporting and internal control principles and for maintaining an appropriate relationship with the company's auditors. |
| **Relations with shareholders** | |
| *Dialogue with institutional shareholders* | There should be a dialogue with shareholders based on the mutual understanding of objectives. The board as a whole has responsibility for ensuring that a satisfactory dialogue with shareholders takes place. |
| *Constructive use of the AGM* | The board should use the AGM to communicate with investors and to encourage their participation. |
| **SECTION 2 INSTITUTIONAL SHAREHOLDERS** | |
| *Dialogue with companies* | Institutional shareholders should enter into a dialogue with companies based on the mutual understanding of objectives. |
| *Evaluation of governance disclosures* | When evaluating companies' governance arrangements, particularly those relating to board structure and composition, institutional shareholders should give due weight to all relevant factors drawn to their attention. |
| *Shareholder voting* | Institutional shareholders have a responsibility to make considered use of their votes. |

### Activity 17.1

You should try to obtain recent reports and accounts of listed companies, in order to look at the corporate governance disclosures. This will help you to appreciate the extent to which listed companies are now required to comply with the Combined Code.

You can view many UK annual reports online or have them posted to you **free** using the *Financial Times* Annual Reports Service (http://ftcom.ar.wilink.com) or you can get an even wider variety (Europe and US) from **WILink plc** (http://www.wilink.com). If a company that you are interested in is not included you may well be able to obtain the latest report from the company's own website.

## 2 DIRECTORS

### The board

2.1 The main principle is that:

'Every company should be headed by an effective board, which is collectively responsible for the success of the company.'

This may sound rather vague, but the Code goes on to explain what is meant in some detail and provides a useful summary of the functions of a board.

- Provide entrepreneurial leadership of the company within a framework of prudent and effective controls which enables risk to be assessed and managed
- Set the company's strategic aims
- Ensure that the necessary financial and human resources are in place for the company to meet its objectives
- Review management performance
- Set the company's values and standards
- Ensure that the company's obligations to its shareholders and others are understood and met
- Take decisions objectively in the interests of the company.

2.2 The functions of **non-executive directors** are also set out.

- Constructively challenge and help develop proposals on strategy
- Scrutinise the performance of management in meeting agreed goals and objectives
- Monitor the reporting of performance
- Satisfy themselves on the integrity of financial information and that financial controls and systems of risk management are robust and defensible
- Determine appropriate levels of remuneration of executive directors
- Take a prime role in appointing, and where necessary removing, executive directors
- Take a prime role in succession planning

2.3 The supporting principles address matters such as the frequency and conduct of meetings, who should attend, annual reporting about this, what to do if a director's concerns cannot be resolved, and the need for insurance.

(a) The board should **meet sufficiently regularly** to discharge its duties effectively. There should be a formal schedule of matters specifically reserved for its decision. The

**annual report** should include a statement of how the board operates, including a high level statement of which types of decisions are to be taken by the board and which are to be delegated to management.

(b) The **annual report** should identify the chairman, the deputy chairman (where there is one), the chief executive, the senior independent director and the chairmen and members of the nomination, audit and remuneration committees. It should also set out the number of meetings of the board and those committees and individual attendance by directors.

(c) The chairman should hold meetings with the non-executive directors without the executives present. Led by the senior independent director, the non-executive directors should meet without the chairman present at least annually to appraise the chairman's performance and on such other occasions as are deemed appropriate.

(d) Where directors have **concerns** which cannot be resolved about the running of the company or a proposed action, they should ensure that their concerns are recorded in the board minutes. On resignation, a non-executive director should provide a written statement to the chairman, for circulation to the board, if they have any such concerns.

(e) The company should arrange appropriate **insurance** cover in respect of legal action against its directors.

## Chairman and Chief Executive

2.4 As we saw in the previous chapter, the **Chief Executive** is responsible for the management of the **business**, whatever that may entail. The **Chairman's** responsibilities are to lead and manage the **board** in the following ways.

- Ensure its effectiveness and set its agenda
- Ensure that the directors receive accurate, timely and clear information
- Ensure effective communication with shareholders
- Facilitate the effective contribution of non-executive directors
- Ensure constructive relations between executive and non-executive directors.

2.5 The main principle is that:

'There should be a clear division of responsibilities at the head of the company between the running of the board and the executive responsibility for the running of the company's business. No one individual should have unfettered powers of decision.'

2.6 The supporting principles reinforce this point.

(a) The roles of Chairman and Chief Executive should **not be exercised by the same individual**. The division of responsibilities between the chairman and chief executive should be clearly established, set out in writing and agreed by the board.

(b) The **Chairman** should meet the **independence** criteria set out later in the Code (see below). A **Chief Executive should not go on to be Chairman** of the same company. If exceptionally a board decides that a Chief Executive should become Chairman, the board should consult major shareholders in advance and should set out its reasons to shareholders at the time of the appointment and in the next annual report.

## Board balance and independence

2.7 The main principle is that:

> 'The board should include a balance of executive and non-executive directors (and in particular independent non-executive directors) such that **no individual or small group of individuals can dominate** the board's decision taking.'

2.8 The Combined Code says that at least **half** the board, excluding the chairman, should be **independent non-executive directors**. 'Balance' also implies that, although the board should not be so large that it is unwieldy, it should be large enough to ensure that its collective skills and experience are appropriate for the requirements of the business.

2.9 The supporting principles define **independence** (or rather non-independence) more clearly.

(a) The board should identify in the **annual report** each non-executive director it considers to be **independent**. The board should state its reasons if it determines that a director **is** independent in spite of things that may appear to suggest otherwise, including if the director:

(i) has been an **employee** of the company or group within the last five years;

(ii) has, or has had within the last three years, a **material business relationship** with the company either directly, or as a partner, shareholder, director or senior employee of a body that has such a relationship with the company;

(iii) has received or receives additional **remuneration** from the company apart from a director's fee, participates in the company's share option or a performance-related pay scheme, or is a member of the company's pension scheme;

(iv) has **close family ties** with any of the company's advisers, directors or senior employees;

(v) holds **cross-directorships** or has significant links with other directors through involvement in other companies or bodies;

(vi) represents a **significant shareholder**; or

(vii) has served on the board for **more than nine years** from the date of first election.

(b) As mentioned above, except for smaller companies, at least **half** the board, excluding the chairman, should comprise **non-executive directors** determined by the board to be **independent**.

A **smaller** company should have **at least two** independent non-executive directors. (A smaller company is one that is below the FTSE 350 throughout the year immediately prior to the reporting year.)

(c) The board should appoint one of the independent non-executive directors to be the **senior independent director,** who has various responsibilities including facilitating communication with shareholders if normal channels break down or are inappropriate.

### Activity 17.2

A large listed company has a board of five directors. What do you think the composition of the board will be if the company complies with the requirements of the Combined Code?

## Appointments to the board

2.10 The main principle is that:

> 'There should be a formal, rigorous and transparent procedure for the appointment of new directors to the board.'

2.11 The Code envisages that this will be achieved via a **nomination committee,** and the supporting principles set out the membership of such a committee and emphasise, amongst other things, how important it is that directors have **enough time** to do the job properly.

(a) The nomination committee should lead the process for board appointments and make recommendations to the board. A **majority** of members of the nomination committee should be **independent non-executive directors**. The chairman or an independent non-executive director should chair the committee, but the chairman should not chair the nomination committee when it is dealing with the appointment of a successor to the chairmanship.

(b) The nomination committee should **evaluate** the balance of **skills, knowledge and experience** on the board and, in the light of this evaluation, prepare a **description** of the role and capabilities required for a particular appointment.

(c) For the appointment of a chairman, the nomination committee should prepare a **job specification,** including an assessment of the **time commitment** expected, recognising the need for availability in the event of crises. A chairman's **other significant commitments** should be disclosed to the board before appointment and included in the **annual report**. An individual should **not be appointed to a second chairmanship** of a **FTSE 100** company.

(d) The terms and conditions of appointment of non-executive directors should be made available for inspection. The letter of appointment should set out the expected **time commitment**. Non-executive directors should undertake that they will have sufficient time to meet what is expected of them. Their other significant commitments should be disclosed to the board before appointment, with a broad indication of the time involved and the board should be informed of subsequent changes.

(e) The board should **not** agree to a full time executive director taking on **more than one** non-executive directorship in a FTSE 100 company nor the chairmanship of such a company.

(f) A separate section of the **annual report** should describe the work of the nomination committee, including the process it has used in relation to board appointments. An explanation should be given if neither an external search consultancy nor open advertising has been used in the appointment of a chairman or a non-executive director.

## Information and professional development

2.12 The main principle is that:

> 'The board should be supplied in a timely manner with information in a form and of a quality appropriate to enable it to discharge its duties. All directors should receive induction on joining the board and should regularly update and refresh their skills and knowledge.'

2.13 The Code sees it as the **company secretary's** responsibility, under the direction of the chairman, to ensure good information flows within the board and its committees and between senior management and non-executive directors, to facilitate induction and assist

with professional development, and to advise the board through the chairman on all governance matters.

2.14 The supporting principles are as follows.

(a) The chairman should ensure that new directors receive a full, formal and tailored **induction** on joining the board. As part of this, the company should offer to major shareholders the opportunity to meet a new non-executive director.

(b) The board should ensure that directors, especially non-executive directors, have access to **independent professional advice** at the company's expense where they judge it necessary to discharge their responsibilities as directors. Committees should be provided with **sufficient resources** to undertake their duties.

(c) All directors should have access to the advice and services of the **company secretary**, who is responsible to the board for ensuring that board procedures are complied with. Both the appointment and removal of the company secretary should be a matter for the board as a whole.

## Performance evaluation

2.15 The main principle is that:

'The board should undertake a formal and rigorous annual evaluation of its **own performance** and that of its **committees** and **individual directors**.'

2.16 The supporting principle explains that the **chairman** should be evaluated by the **non-executive directors**. The **annual report** should state how performance evaluation of the board, its committees and its individual directors has been conducted.

## Re-election

2.17 The main principle is that:

'All directors should be submitted for re-election at regular intervals, subject to continued satisfactory performance. The board should ensure planned and progressive refreshing of the board.'

2.18 The supporting principles explain what is meant by regular intervals and discourage very long terms because of the need for progressive refreshing of the board and, in the case of non-executives, the need for independence.

(a) All directors should be subject to election by shareholders at the **first annual general meeting after their appointment**, and to re-election thereafter at intervals of **no more than three years**. The names of directors submitted for election or re-election should be accompanied by sufficient **biographical details** and any other relevant information to enable shareholders to take an informed decision on their election.

(b) **Non-executive directors** should be **appointed for specified terms** subject to re-election and to Companies Acts provisions relating to the removal of a director. Shareholders should be told **why** the board believe an individual should be elected, and should be re-assured when re-election is proposed that the individual's performance **continues to be effective**. Terms **beyond six years** for a non-executive director should be subject to particularly **rigorous review**. If non-executive directors serve **longer than nine years** they should be subject to **annual re-election**. However serving more than nine years could be relevant to the determination of a non-executive director's **independence**).

## 3 REMUNERATION

### The level and make-up of remuneration

3.1 The main principle is that:

> 'Levels of remuneration should be sufficient to attract, retain and motivate directors of the quality required to run the company successfully, but a company should avoid paying more than is necessary for this purpose. A significant proportion of executive directors' remuneration should be structured so as to link rewards to corporate and individual performance.'

3.2 The supporting principles deal with remuneration policy and with service contracts and compensation.

(a) The **performance-related elements** of remuneration should form a **significant proportion** of the total remuneration package of **executive directors** and should be designed to align their interests with those of shareholders and to give these directors keen incentives to perform at the highest levels. In designing schemes of performance-related remuneration, the remuneration committee should follow the provisions in Schedule A of the Code.

(b) Executive **share options** should **not be offered at a discount** save as permitted by the relevant provisions of the Listing Rules.

(c) Levels of remuneration for **non-executive directors** should reflect the time commitment and responsibilities of the role. Remuneration for non-executive directors should **not include share options**. If, exceptionally, options are granted, **shareholder approval** should be sought in advance and any shares acquired by exercise of the options should be **held until at least one year after** the non-executive director leaves the board. Holding of share options could be relevant to the determination of a non-executive director's **independence**.

(d) Where a company releases an executive director to serve as a non-executive director elsewhere, the **remuneration report** should include a statement as to **whether or not the director will retain such earnings** and, if so, what the remuneration is.

(e) The remuneration committee should carefully consider what **compensation** commitments (including pension contributions and all other elements) their directors' terms of appointment would entail in the event of early termination. The aim should be to **avoid rewarding poor performance**. They should take a robust line on reducing compensation to reflect departing directors' obligations to mitigate loss.

(f) **Notice** or **contract periods** should be set at **one year or less**. If it is necessary to offer longer notice or contract periods to new directors recruited from outside, such periods should reduce to one year or less after the initial period.

### Procedure

3.3 The main principle is that:

> 'There should be a formal and transparent procedure for developing policy on executive remuneration and for fixing the remuneration packages of individual directors. **No director** should be involved in deciding **his or her own remuneration**.'

3.4 The supporting principles explain who should decide what.

(a) The board should establish a **remuneration committee** of **at least three**, or in the case of smaller companies two, members, who should all be **independent non-executive directors**.

(b) The **remuneration committee** should have delegated responsibility for setting remuneration for **all executive directors** and the **chairman**, including pension rights and any compensation payments. The committee should also recommend and monitor the level and structure of remuneration for **senior management**. The definition of 'senior management' for this purpose should be determined by the board but should normally include the first layer of management below board level.

(c) The **board** itself or, where required by the Articles of Association, the **shareholders** should determine the remuneration of the **non-executive directors** within the limits set in the Articles of Association. Where permitted by the Articles, the board may however delegate this responsibility to a committee, which might include the chief executive.

(d) **Shareholders** should be invited specifically to approve all new **long-term incentive schemes** and significant changes to existing schemes.

## EXAMPLE

**SAINSBURY RETREATS ON BONUS**

Supermarket group J Sainsbury has made a U-turn and decided not to back its earlier decision to award **ex-chairman** Sir Peter Davis a **bonus** of £2.4m. The move comes after **shareholder anger** at the award, particularly as Sir Peter, who resigned on 1 July, presided over a **fall in profit and market share**.

The group's **pay committee** said it was now unable to support recommending an award of 864,000 shares to Sir Peter.

The firm's **remuneration report**, which includes the proposed award to Sir Peter, will still be put to shareholders at the **annual meeting** on Monday, with the **board's recommendation**.

In a statement Sainsbury's said lawyers had advised it against an earlier consideration to put an amended resolution before the meeting, one which would have excluded the details of the award to Sir Peter. The company said the original remuneration report would now go to the annual meeting, but "**the board will not implement these recommendations** in relation to Sir Peter Davis".

Sir Peter's resignation is believed to have followed an emergency board meeting on 30 June, after shareholder anger that he had been awarded the £2.4m bonus.

At the time Sainsbury's thanked Sir Peter for "all his hard work on behalf of the company". But it said it had not been possible to reach agreement in talks with Sir Peter over changes to his bonus package. "It was mutually decided that this matter would be referred to legal representatives of both parties as part of his **termination arrangements**," the company said.

Some **pension and investment groups** plan to **vote against** the remuneration report at the annual meeting.

*Source:* Adapted from *www.bbc.co.uk* (July 2004)

### Provisions on the design of performance related remuneration

3.5 **Schedule A** of the Combined Code contains more detailed guidance on performance-related remuneration. Here are some of the key points.

- Performance conditions should be **relevant, stretching** and designed to **enhance shareholder value**.
- **Upper limits** should be set and disclosed.
- Shares granted or other forms of deferred remuneration should not vest, and options should **not be exercisable, in less than three years**, and directors should be encouraged to hold their shares for a further period.
- The total rewards potentially available should **not be excessive**.
- In general, **only basic salary** should be **pensionable**.

## The Directors' Remuneration Report Regulations 2002

3.6 We will shift away from the Combined Code briefly, since it is logical that this section also covers the recent company law on directors' remuneration.

3.7 The regulations amend the Companies Act 1985 and apply for financial years ending on or after 31st December 2002. They require UK listed companies to prepare a **detailed directors' remuneration report** and seek **shareholder approval** for it via an ordinary resolution at the general meeting at which the annual accounts are presented (usually the AGM).

*Items NOT subject to audit*

3.8 The following items are **not subject to audit** – in other words they must be included in the report but the auditors do not have to express an opinion on them. Items should be disclosed for **each director,** in tabular form.

(a) The **names** of the **remuneration committee**

(b) Details of anyone who has **advised** the committee, and how they were appointed if they are external consultants.

(c) Details of any **performance conditions** attaching to share options or awards under long-term incentive schemes including why the conditions were chosen. If a director's entitlement is not subject to performance conditions an explanation should be given.

(d) A summary of the **methods used to assess performance** and why these methods were chosen.

(e) Details of any **external factors** used to assess performance.

(f) Details of any **significant amendment** that is proposed to be made to share option entitlements or awards under long-term incentive schemes.

(g) An explanation of the **relative importance** of remuneration elements which are and are not performance-related.

(h) An explanation of the company's policy on directors' **service contracts, notice periods** and **termination payments**. For each director the date, the unexpired term and details of the notice period must be given, together with any provisions for compensation payable on early termination, and details of any compensation payments made during the year.

(i) A **line graph** providing details of the company's performance for the **last five financial years** by reference to the company's **total shareholder return**, plus details of the index chosen and why. Total shareholder return is explained later in this chapter.

*Items subject to audit*

3.9 The following items are **subject to audit** and must be disclosed for **each director**. Auditors have to state whether these parts of the report have been properly prepared in accordance with the regulations.

(a) Total **salary and fees** paid or payable.

(b) Total **bonuses** paid or payable.

(c) Total **expense allowances**.

(d) Total amount of any **compensation** for loss of office paid or payable.

(e) The estimated value of **benefits** received **other than in cash** (e.g. share options or awards under long-term incentive schemes).

(f) The **total of the above** items and the total for the preceding year.

(g) The number of **shares under option** and the **interests in long-term incentive schemes** at the beginning and end of the year.

(h) Options that have been **exercised**, have **lapsed** or have **been varied** in the year. Similar information for interests in long-term incentive schemes.

(i) For outstanding options, details of any price paid on grant, the exercise price and lapse dates. Similar information for interests in long-term incentive schemes.

(j) Any **amendment** made to options or long-term incentive schemes in the year.

(k) Any **performance targets** attaching to options or long-term incentive schemes.

(l) For options exercised the **market value** of shares at the time. Similar information for interests in long-term incentive schemes.

(m) For options outstanding the market value of shares at the year end and the high and low values during the year.

(n) Details of **pensions** and **retirement benefits**.

(o) Details of any **significant award** made in the year to any person who was **not a director** of the company at the time the award was made **but had previously been a director** of the company, including (in particular) **compensation** in respect of loss of office and pensions. This is excluding any amount disclosed elsewhere in the report.

(p) Sums paid to **third parties** in respect of a director's services.

## 4 ACCOUNTABILITY AND AUDIT

4.1 Now we can return to the Combined Code and its provisions regarding accountability and audit.

### Financial reporting

4.2 The main principle applies to interim and other price-sensitive public reports and reports to regulators as well as to information required to be presented by statutory requirements.

'The board should present a balanced and understandable assessment of the company's position and prospects.'

The directors will satisfy this main principle in the annual report by presenting an Operating and Financial Review (OFR), as discussed earlier in this text.

4.3 The supporting principles are as follows.

(a) The **directors** should explain in the annual report their **responsibility for preparing** the accounts and there should be a statement by the **auditors** about their **reporting responsibilities**.

(b) The directors should report that the business is a **going concern**, with supporting assumptions or qualifications as necessary.

### Internal control

4.4 The main principle is that:

'The board should maintain a sound system of internal control to safeguard shareholders' investment and the company's assets.'

4.5 The board should, at least **annually, conduct a review** of the effectiveness of the group's system of internal controls and should **report** to shareholders that they have done so. The review should cover all material controls, including financial, operational and compliance controls and risk management systems.

4.6 The Combined Code includes the **Turnbull** guidance, explaining how to apply this part of the Code. This is dealt with later in this chapter.

## Audit committee and auditors

4.7 The main principle is that:

> 'The board should establish formal and transparent arrangements for considering how they should apply the financial reporting and internal control principles and for maintaining an appropriate relationship with the company's auditors.'

4.8 The supporting principles cover membership of the audit committee, the matters it should look into, and the arrangements for dealing with whistle blowing.

(a) The board should establish an **audit committee** of at least **three**, or in the case of smaller companies two, members, who should all be **independent non-executive directors**. The board should satisfy itself that **at least one** member of the audit committee has **recent and relevant financial experience**.

(b) The main **role and responsibilities** of the audit committee should be set out in written terms of reference and should include:

(i) to monitor the **integrity of the financial statements** of the company, and any formal **announcements** relating to the company's financial performance;

(ii) to **review the company's internal financial controls,** and internal control and **risk management** systems;

(iii) to monitor and review the effectiveness of the company's **internal audit** function;

(iv) to make **recommendations** to the board, for it to put to the shareholders for their approval in general meeting, in relation to the appointment, re-**appointment** and **removal** of the **external auditor** and to approve the **remuneration** and **terms** of engagement of the external auditor;

(v) to review and monitor the **external auditor's independence and objectivity** and the effectiveness of the **audit process**, taking into consideration relevant UK professional and regulatory requirements;

(vi) to develop and implement **policy** on the engagement of the external auditor to supply **non-audit services**, and to report to the board, identifying any matters in respect of which it considers that **action or improvement** is needed and making recommendations as to the steps to be taken.

(c) The terms of reference of the audit committee, including its role and the authority delegated to it by the board, should be made available. A separate section of the **annual report** should **describe the work** of the committee in discharging those responsibilities.

(d) The audit committee should review **arrangements by which staff** of the company may, in confidence, **raise concerns about possible improprieties** in matters of financial reporting or other matters. The audit committee's objective should be to ensure that arrangements are in place for the **proportionate and independent investigation** of such matters and for **appropriate follow-up** action.

(e) The audit committee should monitor and review the effectiveness of the **internal audit** activities. Where there is no internal audit function, the audit committee should **consider annually** whether there is a **need for an internal audit** function and make a recommendation to the board, and the **reasons for the absence** of such a function should be explained in the relevant section of the **annual report**.

(f) If the **board does not accept** the **audit committee's recommendations** on the appointment, reappointment and removal of the **external auditors,** it should include in the **annual report** and in any other relevant papers a statement from the audit committee explaining the recommendation and it should set out **reasons why the board has taken a different position**.

(g) The **annual report** should explain to shareholders how, if the auditor provides **non-audit services,** auditor **objectivity and independence** is safeguarded.

4.9 The Combined Code includes the **Smith** guidance, explaining how to apply this part of the Code. This is dealt with later in this chapter.

**Exam alert**

A question in the December 2003 exam required a report to a non-executive director setting out the role and responsibilities of the audit committee and the qualities that a member of such a committee should possess (see also Smith guidance and Higgs suggestions, later in this chapter).

## 5 RELATIONS WITH SHAREHOLDERS

### Dialogue with shareholders

5.1 The main principle is that:

'There should be a **dialogue with shareholders** based on the mutual understanding of objectives. The board as a whole has responsibility for ensuring that a satisfactory dialogue with shareholders takes place.'

5.2 The supporting principles explain the nature of the dialogue and what disclosures should be made.

(a) The **chairman** should ensure that the **views of shareholders** are **communicated** to the **board** as a whole. The chairman should **discuss governance and strategy** with major shareholders. **Non-executive directors** should be offered the opportunity to attend meetings with major shareholders and should expect to attend them if requested by major shareholders. The **senior independent director** should attend sufficient meetings with a range of major shareholders to listen to their views in order to help **develop a balanced understanding** of the issues and concerns of major shareholders.

(b) The board should state in the **annual report** the steps they have taken to ensure that the members of the board, and in particular the non-executive directors, develop an **understanding of the views of major shareholders** about their company, for example through direct face-to-face contact, analysts' or brokers' briefings and surveys of shareholder opinion.

### Constructive use of the AGM

5.3 The main principle is that:

'The board should use the AGM to communicate with investors and to encourage their participation.'

5.4 The supporting principles deal with the conduct of voting, make sure that important items are not all lumped together into a single resolution, cover who should attend and the need for adequate notice.

(a) The company should **count all proxy votes** and, except where a poll is called, should indicate the level of proxies lodged on each resolution, and the balance for and against the resolution and the number of abstentions, after it has been dealt with on a show of hands. The company should ensure that votes cast are properly received and recorded.

(b) The company should propose a **separate resolution** at the AGM on each **substantially separate issue** and should in particular propose a resolution at the AGM relating to the report and accounts.

(c) The chairman should arrange for the chairmen of the **audit, remuneration** and **nomination** committees to be **available to answer questions** at the AGM and for **all directors** to attend.

(d) The company should arrange for the **Notice** of the AGM and **related papers** to be sent to shareholders **at least 20 working days before** the meeting.

## 6 INSTITUTIONAL SHAREHOLDERS

### Dialogue with companies

6.1 The main principle is that:

'Institutional shareholders should enter into a dialogue with companies based on the mutual understanding of objectives.'

6.2 The supporting principle refers to the principles set out in the Institutional Shareholders' Committee's 'The Responsibilities of Institutional Shareholders and Agents – Statement of Principles'.

### Evaluation of governance disclosures

6.3 The main principle is that:

'When evaluating companies' governance arrangements, particularly those relating to board structure and composition, institutional shareholders should give due weight to all relevant factors drawn to their attention.'

6.4 This principle is especially concerned with shareholders' response to **explanations given for departures** from the Combined Code and encourages them to make reasoned judgements in each case, bearing in mind the size and complexity of the particular company and the nature of the risks and challenges it faces. If they **do not accept** the company's position they should give an explanation to the company and be prepared to **enter into a dialogue** about the matter.

### Shareholder voting

6.5 The main principle is that:

'Institutional shareholders have a responsibility to **make considered use of their votes**.'

6.6 The supporting principles say that major shareholders should **attend AGMs** where appropriate and practicable, and companies and registrars should facilitate this. Institutional shareholders should ensure their voting **intentions** are being **translated into**

**practice**. On request, they should make available to their clients information about **how they have used their votes**.

## 7 RELATIONSHIPS BETWEEN THE PARTIES

7.1 The Combined Code deals with the role of the board, executive and non-executive directors, the chairman and chief executive and the shareholders. These key parties in the running of a company have often found that there are **tensions** amongst them and these are the areas that we will consider now.

### Chairman and Chief Executive

7.2 The role of the Chairman is to **ensure that the Board of Directors acts responsibly, objectively and properly**. The Chairman controls the procedures at meetings, decides when resolutions are to be taken and in what order, confirms the contents of the minutes of Board meetings and may even have a casting vote when a resolution is evenly supported. These procedural powers can be used to direct the course of debate and to deal with inflammatory situations. His role is generally intended to lend objectivity to the decisions at Board meetings.

7.3 In more detail the Chairman is responsible for:

- leadership of the board
- ensuring the provision of accurate, timely and clear information to the directors
- ensuring effective communication with shareholders
- arranging regular evaluation of the performance of the board
- facilitating the effective contribution of non-executive directors
- ensuring constructive relations exist between non-executive and executive directors.

7.4 The role of Chief Executive is, in contrast, to **run the business under delegated authority from the board and to implement the policies and strategy set by the board**. The Combined Code required that there must be public justification if these two roles, Chairman and Chief Executive, are combined in one person, and in fact in practice around 90% of listed companies do now split these two roles. This separation of roles avoids concentration of authority and power in one individual but also differentiates between the leadership of the Board and the running of the business.

7.5 Ideally there should be a **strong relationship** between the Chairman and the Chief Executive in order to have an effective board. This relationship will tend to work best where there is a valuable mix of **different skills and experiences** which complement each other.

7.6 However in practice **conflicts and tensions** can exist between the Chairman and Chief Executive particularly if one of the parties tries to take over the role of the other or does not appear to appreciate the role of the other.

7.7 The Chief Executive runs the business and as such is used to being in charge. It is often the case that a strong Chief Executive will also try to run the board meetings in a similar vein and attempt to take over the role of Chairman. Conversely the Chairman should, but does not always, support the Chief Executive's performance and allow credit to the Chief Executive for his achievements.

7.8 A further source of tension arises when the **Chairman seeks executive responsibility** in the running of the business. This is particularly the case when the Chairman is a former Chief Executive of the company. In such cases it is often very difficult for the Chairman to give up the running of the company and hand over the reins to the new Chief Executive. The Higgs Report has in fact recommended that the Combined Code be amended to provide that a **Chief Executive should not become Chairman** of the same company.

## Executive and non-executive directors

7.9 The executive directors run the business on a day-to-day basis. The role of the non-executive directors is to bring their **knowledge and experience** to board meetings and to provide an **objective and independent view**. This in itself can cause tensions between the two sets of directors.

7.10 The executive directors may feel that they have superior knowledge of the business and may resent any input from the non-executive directors. The executive directors may not appear to value the experience and contribution of the non-executive directors. If a non-executive director were to make an inappropriate or ill informed contribution then this can lead to executive frustration and defensiveness and attempts to minimise the role of the non-executive directors.

7.11 One way of easing tensions is to ensure that non-executive directors of the **right calibre** are appointed and also that they receive a thorough and appropriate **induction course** before joining the board. Many non-executive directors are confident in areas such as financial performance but are lacking in detailed knowledge of areas such as the market, environmental, political and employment issues which could have a material impact on the future performance of the company.

7.12 It is also important to ensure that there are enough executive directors on the board to provide the detailed knowledge of the business that is required. If there is only a small number of executive directors on the board then this can lead to distortion or withholding of information or a lack of balance in the management contribution to boardroom debate.

## Directors and managers

7.13 As we have seen, the Board of Directors is responsible for setting the strategic aims, values and standards of the company. However the mangers are those responsible for achieving these strategic aims and goals through the day-to-day and medium term operations of the business. If the managers feel that the strategic aims are either unrealistic or inappropriate then there will be tensions if they are under instructions to carry them through. For managers to be motivated to meet strategic aims of the business they must have **faith in the abilities of the directors**.

## Directors and shareholders

7.14 The UK equity market has changed considerably over the last thirty years. Now less than 20% of shareholdings are in the hands of private investors and over 50% of shares are held by institutions such as occupational pension funds, insurance companies, units and investment trusts, charities endowments and educational institutions.

7.15 It is now common practice for chief executives to have **direct involvement with major shareholders** and chairmen often participate in this process as well. From these discussions the investors can develop a better understanding of a wide range of issues from the point of

view of the management and the Chief Executive or Chairman can gain a clear insight into the views and concerns of these shareholders.

7.16 However it is very rare for non-executive directors to have direct involvement with major shareholders and any direct contact there is will tend to centre on discussion of **director remuneration** rather than wider strategy or governance issues. Equally, executive directors tend to have reservations about direct contact between non-executive directors and shareholders as they do not believe that the non-executive directors have enough detailed knowledge to present an accurate picture of company performance. However given the increasing importance of non-executive directors in UK corporate governance, it is generally felt that the relationship between non-executive directors and shareholders should be closer.

7.17 It has been suggested that rather than an AGM being the main or only way through which non-executive directors have direct contact with shareholders, **non-executive directors should meet some of the major shareholders** on a regular formalised basis without the presence of executive directors. The purpose of such meetings would not be to communicate the company's strategy or account for its performance but to **listen to investors' views** and to **answer questions about governance**.

7.18 Any lack of communication between directors and institutional shareholders is not just caused by directors' reluctance to communicate. Indeed the need for a more active engagement by institutional investors with companies in which they invest was a central theme of Paul Myners' review of institutional investment published in 2001. The government has responded to this and has consulted on possible legislation to oblige institutions to promote their beneficiaries' interests through increased activism with the companies they invest in.

## 8 THE TURNBULL REPORT: INTERNAL CONTROL

8.1 The Turnbull committee was set up to prepare guidelines for the directors of listed companies on how to implement the **internal control** aspect of the 1998 Combined Code. The committee produced its report in 1999. The report provided guidelines for directors for ensuring that internal controls and risk management systems were in place and functioning effectively. The report describes, in broad detail, a risk-based approach to management.

8.2 The report, entitled *Internal Control: Guidance for Directors on the Combined Code*, comments that:

> 'A company's system of internal control has a key role in the management of risks that are significant to the fulfilment of its business objectives. A sound system of internal control contributes to safeguarding the shareholders' investment and the company's assets. Internal control facilitates the effectiveness and efficiency of operations, helps ensure the reliability of internal and external reporting and assists compliance with laws and regulations.
>
> 'Effective financial controls, including the maintenance of proper accounting records, are an important element of internal control. They help ensure that the company is not unnecessarily exposed to financial risks and that the financial information used within the business and for publication is reliable. They also contribute to the safeguarding of assets, including the prevention and detection of fraud.'

8.3 The main elements of the Turnbull report are as follows.

(a) Listed companies are expected to **have in place** a robust **system of internal control**, to safeguard the shareholders' investment and the company's assets.

(b) Management should **review** the system of controls at least annually.

(c) The **risks** facing the business should be evaluated regularly.

(d) The **risk management review** should include **operational** controls and **compliance** controls, as well as financial controls. (The system for risk identification and assessment is not specified, but is likely to be along the lines described in Chapter 1 of this Text.)

(e) Risk management is the collective **responsibility of the board of directors**. The board is ultimately responsible for internal control, but may delegate aspects of the work.

(f) The board should keep under **review the need for an internal audit** department.

8.4 Risk management is not anything 'new': it was not invented by the Combined Code and the Turnbull report. However, the system recommended by the Turnbull report is notable because of the following.

(a) It is forward looking.

(b) It is open, requiring appropriate disclosures to all stakeholders in the company about the risks being taken.

(c) It does not seek to eliminate risk. It is constructive in its approach to opportunity management, as well as concerned with 'disaster prevention'. To succeed companies are not required to take bigger risks than others but they do need a good understanding of what risks they can handle.

(d) It unifies all business units of a company into an integrated risk review, so that the same 'language' of risk (risk terminology) is applied throughout the company.

(e) It is strategic, and driven by business objectives, particularly the need for the company to adapt to its changing business environment.

(f) It should be re-evaluated on a regular basis.

(g) It should be durable, evolving as the business and its environment changes.

In order to create shareholder value, a company needs to manage the risks it faces and communicate to the capital markets how it is carrying out this task.

## A sound system of internal control

8.5 The report recommends that, in assessing the soundness of its system of internal control, a board should consider:

(a) the nature and extent of the risks facing the company

(b) the extent and categories of risk that it regards as acceptable for the company to bear

(c) the likelihood of those risks materialising

(d) the ability of the company to reduce the incidence and impact of the risks that do materialise

(e) the costs of operating particular controls, compared with the benefits obtained from managing the related risks

8.6 An internal control system will achieve the following results.

(a) It facilitates the efficient and effective operation of the company, by enabling it to respond appropriately to all the risks it faces in trying to achieve its objectives. This includes safeguarding the company's assets from inappropriate use, and from loss and fraud.

(b) It helps to ensure the quality of internal and external reporting. Proper records should be maintained and there should be processes in place that ensure a flow of relevant and timely information.

(c) It helps the company to ensure compliance with relevant laws and regulations.

8.7 The Turnbull committee commented that a sound system of internal control cannot eliminate the risk of poor judgement in decision-making within a company, but should significantly reduce the risk.

8.8 The role of the board is emphasised in the report, but it is also recognised that the board relies to a considerable degree on the company's executive managers. 'Reviewing the effectiveness of internal controls is an essential part of the board's responsibilities…. Management is accountable to the board for monitoring the system of internal control and for providing assurance to the board that it has done so.' Each company should decide what responsibilities to delegate to the audit committee and an internal audit function, but the board is responsible for the disclosures on internal control in the company's annual report and accounts.

## Internal control reports

8.9 The board should receive and review regular reports on internal control. When reviewing reports, the board should:

(a) consider what the significant risks are, and assess how they have been identified, evaluated and managed

(b) assess the effectiveness of the related internal controls in managing the significant risks: particular attention should be given to any weaknesses that are revealed in any internal controls

(c) consider whether any measures are being taken to remedy weaknesses that have been identified in internal controls

(d) consider whether there is a need for a more extensive monitoring of the internal control system

8.10 These reviews are in addition to the annual assessment of the system of internal control that should be carried out for the purpose of making the annual statement on internal control in the report and accounts.

## The statement on internal control

8.11 The annual statement on internal control should be in narrative form. The Turnbull report states that:

'The board should, as a minimum, disclose that there is an ongoing process for identifying, evaluating and monitoring the significant risks faced by the company, that it has been in place for the year under review and up to the date of the approval of the report and accounts, that it is regularly reviewed by the board and accords with the guidance in this document'.

## Internal audit

8.12 One of the key roles of internal audit is to check that internal controls are adequate and functioning properly.

8.13 The Turnbull report states that the need for an internal audit department or 'function' will vary according to company-specific factors, such as the scale, diversity and complexity of its operations and the number of employees.

8.14 In the absence of an internal audit function, management should apply other monitoring processes to be able to assure the board that the internal control system is functioning as it should.

8.15 A company without an internal audit function should re-assess the need for one each year. The Listing Rules require that if a company does not have an internal audit function and has not assessed the need for one during the year, this fact should be disclosed in the annual report and accounts.

### The Flint Review

8.16 A new corporate governance review team was set up in 2004 under HSBC Finance Director Douglas Flint in order to evaluate the Turnbull rules on internal control and risk management. Flint is due to report sometime in 2005 after two consultation exercises and may recommend a further extension to the rules from the Turnbull report.

8.17 The Flint Review was ordered by the Financial Reporting Council and will study the US Sarbanes-Oxley approach to see whether the UK should follow the example of the US and go down this route. The main differences that could be seen in UK corporate governance if the Sarbanes-Oxley route is followed are that the directors would be forced to report whether their internal controls are effective and that the external auditors must also report on the effectiveness of these controls.

8.18 The first stage of the consultation exercise will run to early March 2005 with the second stage planned to start in April or May 2005. Therefore it is unlikely that there will be further regulations until the latter half of 2005. Keep an eye on the business press for any developments in this area.

## 9 THE SMITH GUIDANCE ON AUDIT COMMITTEES

9.1 In July 2002 the DTI asked the FRC to put in hand development of the existing Combined Code guidance on **audit committees**, originally deriving from Cadbury. The FRC set up a group under the chairmanship of Sir Robert Smith to do this. The final report was published in January 2003 and is included in the Combined Code.

### Composition of the audit committee

9.2 As stated earlier, Smith decided that the audit committee should include **at least three** members, all **independent non-executive directors**. **At least one** member should have significant, **recent and relevant financial experience**, and suitable **training** should be provided for all.

### Role of the audit committee

9.3 As stated earlier, Smith identified the role of the committee to be as follows.

- To monitor the integrity of the financial statements of the company, reviewing significant financial reporting judgements.
- To review the company's internal financial control system and, unless expressly addressed by a separate risk committee or by the board itself, risk management systems.

- To monitor and review the effectiveness of the company's internal audit function.
- To make recommendations to the board in relation to the external auditor's appointment; in the event of the board's rejecting the recommendation, the committee and the board should explain their respective positions in the annual report.
- To monitor and review the external auditor's independence, objectivity and effectiveness, taking into consideration relevant UK professional and regulatory requirements.
- To develop and implement policy on the engagement of the external auditor to supply non-audit services, taking into account relevant ethical guidance regarding the provision of non-audit services by the external audit firm.

9.4 In addition the committee should be provided with **sufficient resources,** its activities should be **reported** in a separate section of the directors' report (within the annual report) and the **chairman** of the committee should be present to answer questions at the **AGM**.

## 10 HIGGS' SUGGESTIONS FOR GOOD PRACTICE

10.1 Higgs' review focused on the effectiveness of non-executive directors in promoting company performance and on issues of accountability. The recommendations aimed to increase rigour and transparency in the appointment process, to foster meritocracy and to widen the spread of experience in UK boardrooms.

10.2 **Schedule B** of the Combined Code includes 'Guidance on liability of non-executive directors: care, skill and diligence'. Basically this simply collects all the principles in the main body of the code regarding non-executives into one place, so we will not reproduce it here.

10.3 The suggestions in the Combined Code derived from the Higgs report include a number of checklists, for example an induction checklist and a performance evaluation checklist.

10.4 There is also guidance for various parties involved in corporate governance, as summarised below.

### Summary of the principal duties of the remuneration committee

10.5 The committee should:

- set remuneration levels for all executive directors, the chairman and the company secretary. The remuneration of non-executive directors shall be a matter for the chairman and executive members of the board. No director or manager should be involved in any decisions as to their own remuneration;
- determine targets for any performance-related pay schemes operated by the company;
- determine the policy for and scope of pension arrangements for each executive director;
- ensure that contractual terms on termination, and any payments made, are fair to the individual and the company, that failure is not rewarded and that the duty to mitigate loss is fully recognised;
- determine the total individual remuneration package of each executive director including, where appropriate, bonuses, incentive payments and share options;

- agree the policy for authorising claims for expenses from the chief executive and chairman;
- ensure that provisions regarding disclosure of remuneration, including pensions, as set out in the Directors' Remuneration Report Regulations 2002 and the Combined Code, are fulfilled.

### Summary of the principal duties of the nomination committee

10.6 A nomination committee should lead the process for board appointments and make recommendations to the board. A majority of members of the committee should be independent non-executive directors.

10.7 Amongst other matters the committee should:

- evaluate the balance of skills, knowledge and experience on the board and, in the light of this evaluation, prepare a description of the role and capabilities required for a particular appointment;
- review annually the time required from a non-executive director. Performance evaluation should be used to assess whether the non-executive director is spending enough time to fulfil their duties;
- consider candidates from a wide range of backgrounds and look beyond the 'usual suspects';
- give full consideration to succession planning in the course of its work, taking into account the challenges and opportunities facing the company and what skills and expertise are therefore needed on the board in the future;
- make a statement in the annual report about its activities; the process used for appointments and explain if external advice or open advertising has not been used; the membership of the committee, number of committee meetings and attendance over the course of the year.

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### Activity 17.3

A function of non-executive directors is to reduce potential conflicts of interest between management and shareholders.

What are the major potential conflicts of interest?

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## 11 REPORTING OF CORPORATE GOVERNANCE

11.1 An important element of corporate governance is communication between the company and its shareholders. The most important medium of communication is the annual report and accounts, which companies are required to prepare and distribute to each shareholder. The format and much of the content of the directors' report and the financial accounts is specified by the Companies Act.

### Disclosure of corporate governance arrangements

11.2 The **Listing Rules** require a statement to be included in the annual report relating to compliance with the Combined Code. **Schedule C** of the Combined Code conveniently summarises the reporting requirements that we have mentioned at various points earlier in this chapter and most of this is reproduced here.

(a) The **annual report** should record:

(i) **how the board operates**, including a high level statement of which types of decisions are to be taken by the board and which are to be delegated to management;

(ii) the **names** of the **chairman**, the **deputy chairman** (where there is one), the **chief executive**, the **senior independent director** and the **chairmen and members** of the nomination, audit and remuneration **committees**;

(iii) the **number of meetings** of the board and those committees and individual **attendance** by directors;

(iv) the **names** of the **non-executive directors** whom the board determines to be **independent**, with reasons where necessary;

(v) the **other significant commitments** of the chairman and any changes to them during the year;

(vi) how **performance evaluation** of the board, its committees and its directors has been conducted;

(vii) the steps the board has taken to ensure that members of the board, and in particular the non-executive directors, develop an **understanding of the views of major shareholders** about their company.

(b) The report should also include:

(i) a separate section describing the **work of the nomination committee**, including the process it has used in relation to board appointments and an explanation if neither external search consultancy nor open advertising has been used in the appointment of a chairman or a non-executive director;

(ii) a description of the **work of the remuneration committee** as required under the Directors' Remuneration Report Regulations 2002, and including, where an executive director serves as a non-executive director elsewhere, whether or not the director will retain such earnings and, if so, what the remuneration is;

(iii) an explanation from the directors of their **responsibility for preparing the accounts** and a statement by the **auditors** about their **reporting responsibilities**;

(iv) a statement from the directors that the business is a **going concern**, with supporting assumptions or qualifications as necessary;

(v) a report that the board has conducted a **review of the effectiveness** of the group's system of **internal controls**;

(vi) a separate section describing the **work of the audit committee** in discharging its responsibilities;

(vii) where there is **no internal audit function**, the **reasons** for the absence of such a function;

(viii) where the board does **not accept** the audit committee's recommendation on the appointment, reappointment or removal of an **external auditor**, a statement from the audit committee explaining the recommendation and the reasons why the board has taken a different position; and

(ix) an explanation of how, if the external auditor provides non-audit services, auditor objectivity and independence is safeguarded.

(c) The following information should be made available (which may be met by making it **available on request** and placing the information available on the company's **website**):

(i) the **terms of reference** of the nomination, remuneration and audit committees, explaining their role and the authority delegated to them by the board;

(ii) the terms and conditions of appointment of non-executive directors; and

(iii) where remuneration consultants are appointed, a statement of whether they have any other connection with the company.

(d) The board should set out to shareholders in the papers accompanying a resolution to **elect or re-elect directors**:

(i) sufficient **biographical details** to enable shareholders to take an informed decision on their election or re-election.

(ii) **why** they believe an individual should be elected to a **non-executive** role.

(iii) on re-election of a **non-executive director**, confirmation from the chairman that, following formal performance evaluation, the individual's performance **continues to be effective** and to demonstrate commitment to the role, including commitment of time for board and committee meetings and any other duties.

## Performance reporting and measures of performance

11.3 The main element of information in the annual report and accounts is the accounting information itself. The Combined Code requires the board to present a 'balanced and understandable assessment' of the position and prospects of the company.

11.4 Users of published accounts should be able to assess the company's financial position and performance from the information provided. Financial accounts can be analysed by means of ratios, such as:

(a) total earnings and growth in earnings

(b) total earnings before interest, taxation, depreciation and amortisation (EBITDA), and growth in EBITDA

(c) liquidity ratios (current ratio, acid test ratio)

(d) gearing ratio

(e) profit margin

(f) return on capital employed

Investors are often tempted to focus on one key measure of performance, particularly on earnings per share (and growth in earnings per share), but it is questionable whether a single performance measure can provide a satisfactory assessment of how well or badly the company has performed.

11.5 It is quite common, however, for an incentive scheme for directors to be based on achieving or exceeding a target for performance, and 'performance' is often based on a single measure, or a limited number of performance measures.

11.6 A measure of company performance, for incentive scheme purposes, should have the following qualities:

(a) It should be consistent with the objectives of the company

(b) It should reflect the performance of management

(c) It should be consistent with the interests of shareholders and other stakeholders in the company

(d) It should require only small adjustments to remain consistent, despite any structural or operational changes

(e) It should not be subject to manipulation (for this reason, the **Association of British Insurers (ABI)** prefers incentive schemes to be based on performance over a number of years rather than in any single year. Single year figures are much more easily manipulated.)

11.7 Performance measures, for the purpose of incentive schemes, normally fall into three categories: market-based measures, earnings-based measures and internal measures.

11.8 **Market-based measures** look at the return obtained by a shareholder on investing in the company's shares. The rationale for using a market-based measure is that performance is measured in terms of added wealth for shareholders.

**KEY TERM**

The most common market-based measure is probably **total shareholder return (TSR)**. This is the total return obtained by a shareholder, in terms of dividend payments and share price growth, over a designated period of time.

11.9 The main drawbacks to using TSR as a performance measure for incentive schemes are that:

(a) It is probably not possible to attribute total shareholder return to any individual director

(b) Total shareholder return is also dependent on factors outside the board's control, such as economic conditions and the state of the share markets

(c) Single-period figures for total shareholder return are unreliable and prone to manipulation

11.10 For this reason, the ABI recommends that if TSR is used as a performance measure for an executive incentive scheme, the scheme should also use another, earnings-based, performance measure such as growth in earnings per share.

TSR is explained in more detail below.

11.11 **Earnings-based measures** of performance use the reported accounting profits and are used fairly widely for incentive schemes. Typically, executive rewards are based on growth in EBITDA, total earnings, post-tax profits or pre-tax profits or earnings per share. The main drawbacks to using earnings-based performance measures for incentive schemes are as follows.

(a) They ignore the risk element in earnings. If a company increases profits by investing in higher-risk projects, the growth in profits could nevertheless destroy shareholder value. (Higher risk results in shareholders expecting higher returns.)

(b) They are based exclusively on historical performance, whereas it can be argued that historical results might be attributable to an executive's predecessors. The work done by an executive should therefore perhaps consider achievements that have been made that are likely to have an impact on future profits.

(c) They are based on accounting profits for the most recent year, which the directors could manipulate by use of accounting policies and recognising profits in the current period.

11.12 An incentive scheme might be based on one or more **internal measures** of performance. Internal measures can be devised for the business as a whole, or for individual divisions within the group. Internal measures of performance might be financial measures, such as market value added (or shareholder value added), or cash flow return on investment (CFROI). Alternatively, non-financial measures of performance might be used, perhaps based on the company's balanced scorecard of targets.

One commonly used internal measure for performance appraisal is the economic profit, alternatively known as the **economic value added (EVA)**. The idea is that a company only adds value for its shareholders if it makes a profit in excess of what could have been earned if the capital had been invested elsewhere.

The basic formula is:

$$\text{Economic profit} = \text{Profit after tax} - (\text{WACC} \times \text{invested capital})$$

The profit after tax is the net operating profit after tax, and can be adjusted if required to remove non-recurring gains and losses such as restructuring costs.

The invested capital is the capital employed in the balance sheet, and again can be adjusted if required, eg to capitalise assets such as research costs that are not recognised as assets in traditional financial reporting.

As an example of calculating economic profit, suppose that Britney plc has a WACC of 10% and reports profit after tax of £60m from net assets of £500m. The economic profit for the period would be £60m – (10% × £500m) = £10m. This is the value that has been created by the board during the period.

11.13 A drawback to using internal measures to reward executives is that the information is not available to shareholders. Shareholders have to rely on the remuneration committee for an assurance that executives are being rewarded in a way that is consistent with the long-term interests of the shareholders and the company. Also a technique such as EVA is only a single period measure, so is, again inconsistent with longer term views.

11.14 Total shareholder return (TSR) is recognised, particularly by academics, as a relevant measure of the creation of value by a company. It is calculated by comparing what a shareholder starts by investing with anything he subsequently contributes (e.g. in a rights issue) and anything he receives, in the form of dividends and share buy-backs. When there is a demerger (for example, in the UK, the demerger of ICI and Zeneca, and the demerger of British Telecommunications and MMO2), the value of the different securities acquired by the shareholders in the former combined entity should be added up.

11.15 Examples of how TSR might be presented are shown below. (The calculation of the annual return is not shown.)

| | £ | £ |
|---|---|---|
| Value of shares at start of period, Year 0 | | 100.00 |
| Shares re-purchased by the company | 8.50 | |
| Total dividends in the period (4 years) | 15.90 | |
| | 24.40 | |
| Value of remaining shares at end of period | 101.80 | |
| Total present value, end of year 4 | | 126.20 |
| Total shareholder return in the period | | 26.20 |
| TSR as a percentage return per annum | | 6.0% |

| | £ | £ |
|---|---|---|
| Value of shares at start of period, Year 0 | | 100.00 |
| Rights issue in Year 2: additional investment | | 21.00 |
| | | 121.00 |
| Dividends in the period (5 years) | 27.60 | |
| Value of remaining shares at end of period | 138.38 | |
| Total present value, end of year 5 | | 165.98 |
| Total shareholder return in the period | | 44.98 |
| TSR as a percentage return per annum | | 7.0% |

11.16 Unfortunately, when measuring TSR, the choice of the time period is critical. Over a short time cycle of one year or so, the figure for TSR can be distorted, for example by the effect of temporary movements up or down in the share price. Ideally, the performance of managers in improving TSR should be measured over the term of their period in office, or for at least a number of years (if their tenure in office is long).

**Exam alert**

A written question in the June 2002 exam asked for an explanation of how the codes of corporate governance can help in managing the types of risk faced by companies.

### Directors' share options

11.17 One common method of remunerating directors is to grant them **share options**. This can be regarded as a method of ensuring **goal congruence** between the directors of the company and the company shareholders. The directors will have a direct benefit in the share price being as high as possible at the time when they can exercise their options. This should be in line with the shareholders' views: they will like to see the share prices high as this increases their wealth.

11.18 However it can also be argued that the directors could take a **short-term view** and enter into projects and investments that are designed to increase the share price in the short-term, at least until they exercise their options, rather than investing in projects or investment that are for the longer term benefit of the company.

## 12 APPRAISING THE PERFORMANCE OF THE BOARD

12.1 In the previous section we considered methods of appraising the performance of the company as a whole. However it is also necessary to consider how the performance of the Board of directors as a whole, and individually, could be appraised. The directors are the stewards of the company assets and as such their performance in protecting and enhancing those assets should be assessed. Indeed the Combined Code states that 'the board should undertake a formal and rigorous annual evaluation of its own performance and that of its committees and individual directors'.

12.2 The recommendations of the Combined Code are probably a good place to start as this sets out how the Board is meant to perform. Therefore we can consider each main recommendation of the Code and then decide on measures to assess how well the directors have carried out these recommendations.

## Responsibility for the success of the company

12.3 The first recommendation of the Code is that the Board 'is collectively responsible for the success of the company'. The success of the company can initially be measured by traditional accounting performance measures such as TSR and EBITDA considered earlier in the chapter but there may be other factors that could be considered to more directly assess the part that the Board of directors has played in these successes. Measures that might be considered could include:

- whether the board has developed a clear mission statement and strategies
- whether all board decisions reflect this mission and these strategies
- how regularly the Board assesses the progress of the company towards achieving the mission and strategies

## Composition of the Board

12.4 The rest of the first section of the Code deals with the composition of the Board. In particular it considers the division of responsibilities at the head of the company, the balance of directors, the appointment of directors, information provided to the directors, the professional development of the directors and re-election of directors.

12.5 These elements of the performance of the Board could be appraised by using some or all of the following measures of performance.

- How many Board meetings were held in the year and how regular these Board meetings are
- The number of unscheduled meetings of the Board that were called when circumstances required
- Reviewing any written codes which deal with the roles and composition of the main Board as well as the remuneration, audit and nomination committees to ensure that they are still appropriate
- The attendance record of individual directors at Board meetings and other sub-committee meetings
- The number of executive and non-executive directors during the year
- Ensuring that there is adequate division of responsibilities between the chairman and the chief executive
- The balance of skills and experience of the directors
- The age profile of the directors
- The timing of management information provided to directors
- The number of directors attending any training programmes
- The number of new directors attending a formal induction programme
- Ensuring that all directors are nominated for re-election at a maximum of three year intervals

## Directors' remuneration

12.6 The next main area of the Code concerns the level and makeup of the remuneration of the individual directors and the process for determining this remuneration. Factors that could be considered here include:

- ensuring that the remuneration committee is made up of independent non-executive directors
- ensuring that the remuneration policy and details of the directors' remuneration is reported in the annual report
- assessment of how significant an element of the directors' remuneration is performance related
- assessment of whether any performance related element of remuneration aligns the interests of the directors with those of the shareholders (see earlier in this chapter)

## Accountability and audit

12.7 This element of the Code deals with the directors' responsibility for producing the financial statements, for maintaining a sound system of internal controls and dealing with the external auditors. The Board's successes in this area could be assessed by considering the following.

- How regularly the Board of directors reviews the internal controls
- Whether the company has an unqualified audit report
- The existence and make up of the audit committee

## Communication

12.8 The final elements of the Code deal with the Board's relationship and communications with its shareholders, in particular its institutional shareholders. Factors that could be considered here are:

- how key decisions and strategies are communicated to all stakeholders in the company
- how frequently directors meet with institutional shareholders
- the type of information about the company that is provided to institutional shareholders and how frequently
- the number of private shareholders attending the AGM each year

## Information requirements

12.9 The discussion above has made it quite clear how wide-ranging the responsibilities of the Board of directors of a company are and therefore the many areas that would need to be assessed in order to fully appraise the performance of the Board as a whole and of individual directors within the Board. The information required to make such an assessment is very wide ranging and would certainly not all be found in the annual financial statements of the company. In order for there to be a full assessment of performance there would need to be access to many other documents such as:

- minutes of the Board
- minutes of the nomination, remuneration and audit committees
- attendance records of Board and sub-committee meetings

- CVs of the directors
- directors' service contracts
- training records
- management reports provided to the Board
- internal audit reports
- minutes of the AGM

12.10 There is no set structure for appraisal of the performance of the Board of directors but the ideas in this section should offer some areas that might be useful in making such an assessment.

**Activity 17.4**

If you were a private shareholder in a plc and were trying to assess the performance of the Board of directors for the latest financial year what information might you be able to find from the annual report that could be useful in this area?

## 13 OPERATING AND FINANCIAL REVIEW

13.1 A further addition to the transparency and reporting of corporate governance was introduced in November 2004 by the Accounting Standards Board when they issued their *Reporting Exposure Draft: Reporting Standard 1 – Operating and Financial Review*. This requires quoted companies to prepare a statutory Operating and Financial Review (OFR) for financial years beginning on or after 1 April 2005.

13.2 This standard requires the directors to prepare an OFR addressed to the investors, setting out their **analysis of the bus**iness, with a **forward-looking orientation** in order to assist investors to assess the strategies adopted by the company and the potential for those strategies to succeed.

13.3 The OFR is to be an analysis of:

- the **development and performance** of the business during the financial year.
- the **position of the business** at the end of the year
- the **main trends and factors** underlying the development, performance and position of the business during the financial year
- the main trends and factors which are likely to affect their **future** development, performance and position.

13.4 The standard also states that the OFR shall both **complement and supplement the financial statements**, be **comprehensive and understandable**, be **balanced** and **neutral** and be comparable over time.

13.5 The standard sets out the key elements of the disclosure framework that directors are required to apply in preparing the OFR, together with the requirements to include details on particular matters to the extent necessary to meet the objective of the OFR and the general disclosure requirements.

13.6 In the OFR the directors are to disclose **Key Performance Indicators (KPIs)**. These KPIs are those judged by the directors to be the most effective to use in measuring the delivery of their strategies and in managing their business. They must also disclose information that will **enable investors to understand and evaluate** each of the KPIs.

13.7 The OFR is not prescriptive as to what is disclosed, but the standard does encourage the inclusion of other measures and evidence which support the information included in the OFR. It is accompanied by Implementation guidance that provides illustrative examples of KPIs that might be disclosed as well as further guidance as to what is envisaged with regard to particular matters.

## Key learning points

- The rules on corporate governance for UK listed companies are contained in the **Combined Code,** which is included in the Listing Rules of the FSA. The main principles of the Code are summarised **'at a glance'** at the beginning of this chapter.
- The roles of **chairman** and **chief executive** should be held by **different individuals**.
- At least **half** of the board should be **independent non-executives**.
- Appointments to the board should be made by a **nomination committee** on which the majority of the members are independent non-executives.
- All directors should have **enough time** (few enough other commitments) to allow them to do their job properly.
- The board should annually evaluate its **own performance** and that of its **committees** and **individual directors** and report on this matter.
- All directors should be subject to re-election at intervals of **no more than three years**.
- The **remuneration committee** of the board should comprise at least **three independent non-executives**. It should have a key role in formulating remuneration policy for senior executives, and should ensure that any **incentive scheme** for senior executives should be **performance-related**. Shareholders should be invited to approve any long-term incentive scheme.
- **Disclosure** of directors' remuneration in the annual report is governed by the Directors' Remuneration Report Regulations 2002.
- The Code requires that the annual report should contain a statement that the company is able to continue as a **going concern** and a statement that the board has reviewed the effectiveness of **internal controls**.
- The Code promotes the role of the **audit committee** comprising at least **three** members, who should all be **independent non-executive directors**.
- The Code encourages **dialogue** between the company's board and its shareholders.
- **Institutional** shareholders should **make** '**considered**' **use of their votes**, and be ready to enter into dialogue with the companies in which they invest.
- The **Turnbull** guidance within the Code recommends a **risk-based management system**, principally via a sound system of **internal controls**.
- The **Smith** guidance describes the composition and role of the **audit committee**.
- **Higgs** suggestions for good practice include a number of checklists, for example an induction checklist and a performance evaluation checklist and also guidance for various parties involved in corporate governance.
- The **Listing Rules** require a statement to be included in the annual report relating to compliance with the Combined Code. **Schedule C** of the Combined Code summarises the many reporting requirements.
- **Total shareholder return (TSR)** is the total return obtained by a shareholder, in terms of dividend payments and share price growth, over a designated period of time.
- The **appraisal of the board** of directors as a whole and individual directors will cover much more than just a financial appraisal. Some relevant information may come from the annual report but many other internal documents would need to be assessed for a thorough appraisal.

**Key learning points (cont'd)**

- The OFR contains an analysis of the development and performance of the business during the year, its position at the end of the year and the main trends and factors affecting that and the future development of the business.

## Quick quiz

1 List the titles of the seven main provisions of the Combined Code regarding directors.

2 What are the requirements of the Listing Rules regarding the Combined Code?

3 List seven facts that may suggest that a director is not independent.

4 How many members of the nomination committee should be independent non-executive directors?

5 What provisions apply if a non-executive director serves longer than nine years?

6 With regard to a main principle of the Combined Code, complete the following sentence, regarding directors' remuneration: "Levels of remuneration should be …"

7 What is a 'smaller' company, under the Combined Code and how many members should its remuneration committee have?

8 Directors of public companies are entitled to privacy regarding their expense allowances. True or false?

9 True or false: the board is only required to review financial controls, not all controls.

10 All members of the audit committee should have financial experience. True or false?

11 Under the Combined Code a company's external auditors may not also supply non-audit services to that company. True or false?

12 According to the Turnbull report, what should the board consider when assessing the soundness of its system of internal control?

13 According to Higgs, which of the following (if any) should a non-executive director be able to do?

(a) Help develop strategy

(b) Have an enquiring mind

(c) Be well-informed about the environment in which the company of which they are a non-executive director operates

(d) Understand the views of major investors

14 List six items that should be reported in the annual report under the Combined Code.

15 How is TSR calculated?

## Answers to quick quiz

1 See the 'at a glance' summary at the beginning of this chapter.

(a) The board
(b) Chairman and chief executive
(c) Board balance and independence
(d) Appointments to the board
(e) Information and professional development
(f) Performance evaluation
(g) Re-election

2 Paragraph 12.43A of the Listing Rules requires a listed company incorporated in the UK to make disclosure statements in its annual report and accounts about compliance with the Combined Code.

(a) A narrative statement of **how** it has applied the principles set out in Section 1 of the Combined Code, providing explanation which enables its shareholders to evaluate how the principles have been applied;

(b) A statement as to **whether** or not it has complied throughout the accounting period with the Code provisions set out in Section 1 of the Combined Code, or reasons for any non-compliance.

3 The board should state its reasons if it determines that a director is independent in spite of things that may appear to suggest otherwise, including if the director:

(a) has been an **employee** of the company or group within the last five years;

(b) has, or has had within the last three years, a **material business relationship** with the company either directly, or as a partner, shareholder, director or senior employee of a body that has such a relationship with the company;

(c) has received or receives additional **remuneration** from the company apart from a director's fee, participates in the company's share option or a performance-related pay scheme, or is a member of the company's pension scheme;

(d) has **close family ties** with any of the company's advisers, directors or senior employees;

(e) holds **cross-directorships** or has significant links with other directors through involvement in other companies or bodies;

(f) represents a **significant shareholder**; or

(g) has served on the board for **more than nine years** from the date of first election.

4 A **majority** of the members of the nomination committee should be independent non-executive directors.

5 They should be subject to annual re-election, and consideration should be given as to whether they can still be regarded as independent.

6 'Levels of remuneration should be sufficient to attract, retain and motivate directors of the quality required to run the company successfully, but a company should avoid paying more than is necessary for this purpose.' You may have added that 'A significant proportion of executive directors' remuneration should be structured so as to link rewards to corporate and individual performance.'

7 A smaller company is one that is below the FTSE 350 throughout the year immediately prior to the reporting year. Its remuneration committee should have at least two members (independent non-executives), as opposed to at least three for a larger company.

8 False: they are required to disclose their expense allowances (and the information must be audited) under The Directors' Remuneration Report Regulations 2002.

9 False: their review should cover all material controls, including financial, operational and compliance controls and risk management systems.

10 False (although this would not be a bad thing). The Code says that **at least one** member of the audit committee should have recent and relevant financial experience.

11 False – although reading between the lines it could be said that the Code implies that a ban on non-audit services may be desirable. This may well be the subject of future UK legislation.

12 The report recommends that, in assessing the soundness of its system of internal control, a board should consider:

(a) The nature and extent of the risks facing the company

(b) The extent and categories of risk that it regards as acceptable for the company to bear

(c) The likelihood of those risks materialising

(d) The ability of the company to reduce the incidence and impact of the risks that do materialise

(e) The costs of operating particular controls, compared with the benefits obtained from managing the related risks

13 All of them (and other things in addition).

14 Check your answers against paragraphs 11.2(a) and 11.2(b) of this chapter.

15 Total shareholder return (TSR) is calculated by comparing what a shareholder starts by investing, with anything he subsequently contributes (e.g. in a rights issue) and anything he receives, in the form of dividends and share buy-backs.

## Answers to activities

### Answer 17.1

There is no formal answer to this activity as it will depend on the results of your own research.

### Answer 17.2

At least half of the board excluding the chairman should be independent non-executive directors, which means that at least two of the other four board members must be non-executive.

The roles of chairman and chief executive should be split, so that there will be a chief executive officer (an executive director obviously) and a chairman. The chairman could be either an executive or non-executive.

One board member is likely to be a finance director (an executive), given the importance of financial objectives, financial controls and financial information.

### Answer 17.3

1 Executives' remuneration and incentive schemes. If executives can decide their own remuneration, there is a likelihood that they will reward themselves too highly.

2 Nomination of new directors. If the chairman or chief executive officer have control over nominations to the board, there is a risk that they will appoint individuals who support them and do whatever they say.

3 Audit. There is a risk that executive directors, unchallenged, might make use of company assets for their personal benefit, and might conceivably be guilty of theft or fraud. Non-executives on the audit committee should provide a check against this happening.

4 Capital expenditure decisions, acquisitions, defence against takeovers. Non-executive directors are less likely to make decisions that add to the power or status of executives (eg by pursuing takeover bids to enlarge the company) unless they seem in the best interests of the company's shareholders. Non-executives are also more likely to take an objective view of a takeover bid from another company, because they do not have the same concern as executives for job preservation.

### Answer 17.4

If trying to appraise the performance of the Board of directors using the annual report the following information should be found in the annual report and be useful in this area:

- financial performance such as ROCE, TSR, EBITDA etc
- names and backgrounds of directors
- chief executive's review
- chairman's statement
- directors' report
- report of the remuneration committee
- details of notes to the financial statements regarding directors' remuneration
- details of the re-election of directors during the year
- the external audit report

# Chapter 18 Other codes

## Chapter topic list

1 ABI guidelines
2 Corporate citizenship
3 Corporate governance: an international perspective
4 German corporate governance
5 French corporate governance
6 Japanese corporate governance
7 The OECD principles

## Learning objectives

On completion of this chapter you will be able to:

- discuss the frameworks of corporate governance regulations and the key issues relating to these frameworks
- identify and discuss the main social, environmental, political and ethical issues that businesses must confront

The detailed areas of the syllabus covered are:

*The nature of corporate governance*

- models of corporate governance (including international comparisons)

*Corporate citizenship*

- the nature of corporate social responsibility
- social and environmental issues in corporate governance
- ethical concepts and issues in corporate governance

## 1 ABI GUIDELINES

1.1 As we have seen in the previous two chapters, an important aspect of corporate governance is the relationship between the board of directors and the company's major institutional shareholders.

1.2 The Association of British Insurers (ABI) and the National Association of Pension Funds (NAPF) have issued guidelines to their members on how institutional shareholders should act. The 'ABI guidelines' are in fact a diverse set of documents developed since 1990 on governance issues of interest to institutional investors (you can view them all online at http://www.ivis.co.uk/pages/framegu.html).

1.3 The main guidelines are as follows.

(a) **Responsible voting**. Responsible voting is defined as the application of informed decisions reached within a framework of a considered corporate governance policy that is based on the Combined Code of the Stock Exchange (Section 2). In general, the board of directors should be **positively supported** unless there are good reasons for not doing so. In this way, board members should recognise the importance of having the support of their institutional investors over a period of time and should be concerned if they are not getting this support. Where an institutional investor judges it appropriate to vote against a board proposal at a meeting of the company, it is important, wherever possible, to make representations to the board in time for the problem to be considered and consultations to take place.

(b) Shareholders should be concerned about the **composition of the board** and pay particular attention to the appointment and re-election of non-executives. They should also ensure that there is no undue concentration of decision-making power on the board.

(c) Institutional investors should support the important **role played by non-executive directors,** and the establishment of audit, remuneration and nomination committees.

(d) Institutional investors should also support **incentive schemes** for executives, but within prudent limits which avoid undue 'dilution' of the interests of existing shareholders. Incentive schemes should be supported if they align the interests of the executive directors with those of the long-term shareholders. The ABI recognises that this is best achieved by means of rewards under incentive schemes being made conditional on the achievement of selected performance criteria.

(e) The ABI has expressed concern about the non-application of **pre-emption rights** of existing shareholders. This is the right of existing shareholders (under the Companies Act) to be offered any new shares issued by a company in proportion to their existing shareholding. Shareholder approval is required before the directors can issue new shares in any other way, for example under the terms of an executive share option scheme. The ABI guidelines state that not more than 7½% of a company's ordinary shares should be issued in non-pre-emption right issues over any rolling three-year period.

1.4 One of the most important of the ABI guidelines concerns executive compensation and share-based remuneration, such as **share incentive schemes**. These guidelines are regularly reviewed and updated, most recently in December 2004. These guidelines recommend the following.

(a) All new share incentive plans should be approved by the shareholders by means of a separate and binding resolution.

(b) Awards under the scheme (eg the granting of share options to executives) should be made 'little and often' rather than occasionally and in a large quantity. This is to avoid issuing share options just before the share price falls, or when the share price is temporarily abnormally low.

(c) The ABI stresses the importance of demanding and stretching performance targets for any long-term share incentive scheme. There are question marks about the use of 'total shareholder return' (TSR) as a performance measure, and the ABI recommends that if it is used as a basis for making rewards, it should either be supported by a secondary test of performance (eg growth in earnings per share), or the remuneration committee should be satisfied that the TSR recorded means that the required financial performance has been achieved.

(d) The ABI supports the concept of a sliding scale of rewards, depending on how the company's performance compares with the performance of other companies, eg whether it is in the top quartile.

(e) Shareholders should be informed about the likely cost of the incentive scheme before they vote to approve it.

(f) The ABI supports incentive plans that encourage executives to build a meaningful shareholding in their company. (Note: under the Combined Code, incentive schemes should apply to executives, not to any non-executives.)

1.5 A NAPF committee has recommended enhanced use of **electronic voting** for general meetings, and for greater use of electronic methods of communication between a company and its shareholders. Electronic communications should encourage greater participation in voting by shareholders.

1.6 A recent guideline dating from 2001 deals with **corporate social responsibilities**. It sets out the form of disclosures which institutions would expect to see included in the annual report of listed companies. Specifically they refer to disclosures relating to Board responsibilities and to policies, procedures and verification.

1.7 For example, with regard to the board, the company should state in its annual report whether:

(a) The Board takes regular account of the significance of **social, environmental and ethical (SEE)** matters to the business of the company.

(b) The Board has identified and assessed the significant risks to the company's short and long term value arising from SEE matters, as well as the opportunities to enhance value that may arise from an appropriate response.

(c) The Board has received adequate information to make this assessment and that account is taken of SEE matters in the training of directors.

(d) The Board has ensured that the company has in place effective systems for managing significant risks, which, where relevant, incorporate performance management systems and appropriate remuneration incentives.

## 2 CORPORATE CITIZENSHIP

2.1 There are three main components of what is known as corporate citizenship:

- the basic values, policies and practices of a business
- the management of environmental and social issues in the value chain
- the voluntary contributions made by a company to community development

## Values, policies and practices

2.2 Many companies throughout the world now realise that they have choices as to how they manage and carry out their businesses. The approach that they take for example to labour and customer relations can play a large part in whether or not they are seen as **good corporate citizens**. The world's largest companies are setting high standards of behaviour in many aspects of business as well as in a wider context and this in turn influences the behaviour of smaller companies and local firms.

2.3 There is now a realisation within companies that their everyday activities have a profound social impact and that the well being of society is driving a more comprehensive approach to **corporate citizenship** and **social and environmental responsibility**.

2.4 Companies are providers of great wealth to society in general. Through their day to day activities they provide jobs, train employees, provide healthcare for employees and families, transfer technology around the world, produce a huge variety of goods and services which enhance lives around the world and pay very large sums of taxes which make government possible in parts of the developing world.

2.5 Companies and directors in particular have always been aware that they are formally accountable to the owners of the company, the shareholders. However their basic business activities also mean that they are accountable to a much **wider group of stakeholders** for their actions. This idea has become central to the management of corporate citizenship and social responsibility issues and has led to companies giving an increasingly public account of their relations with these various stakeholders.

2.6 These wider stakeholders and the issues that companies now consider include the following:

| | |
|---|---|
| *Employees* | wage levels, accident rates, training costs, handling of redundancy or downsizing |
| *Customers* | the price and value of goods and services, quality issues, handling of complaints, values in advertising |
| *Investors* | return on investment, corporate governance, directors' share dealings, transparency of financial information |
| *Business partners* | jobs sustained, transfer of technology, timely payment of bills |
| *The community* | charitable gifts, community investment, willingness to listen and talk |
| *Government* | payment of taxes, fair transfer pricing, compliance with laws and regulations |

2.7 In addition it can also be argued that for many companies the physical environment is also being treated like other stakeholders with detailed **environmental reports** covering the whole product life cycle from an increasing number of companies.

2.8 An alternative to the stakeholder view of a company is in the Friedman view that the **primary social responsibility of a business is to make money for its shareholders** whilst keeping within the framework and the law.

## Corporate social responsibility in the value chain

**KEY TERM**

The **value chain** is the sequence of business activities by which value is added to the products or services produced by an organisation.

2.9 The value chain of a company typically stretches both backwards to suppliers and forwards to customers and an important aspect of corporate citizenship is the way in which companies deal with these forward and backwards linkages.

2.10 **Backwards linkages** are the relations with suppliers. Increasingly consumers, particularly in America and Europe, are concerned about the conditions under which products are made. Companies now need to consider and ask about conditions of employment and wages of their suppliers in less developed countries particularly in societies where low wages, poor conditions, child labour and environmental problems prevail.

2.11 **Forward linkages** are between suppliers and manufacturers and their customers. In particular suppliers are now becoming concerned about the misuse of their products and also their safe disposal. Customers are concerned about the potential misuse of alcohol and prescription pharmaceuticals and about the responsibilities of providers of these goods in terms of advertising and image. Consumers are also increasingly concerned about the safe disposal or **re-cycling of products** and this in turn must be taken into consideration by suppliers or manufacturers of the products.

## Voluntary contributions to society

2.12 It has been traditional that companies are expected to play a role as good citizens by making a contribution to the society that sustains the framework of law and civil society in which they do business. It has been argued that there are three basic types of voluntary contributions that companies make to society around the world:

- charitable gifts
- community investment
- commercial initiatives

2.13 **Charitable gifts** are aimed at promoting the common good and are not only the company making philanthropic donations but also support for employee volunteering and giving. There are rarely measurable benefits to the business but a reputation can be established as a 'caring company'.

2.14 **Community investment** is usually from a community budget aimed at a few areas of interest to the company designed to protect and promote its long term interests. Examples might be local anti-crime initiatives by retail businesses or work to improve education and training. The returns to the business from this type of activity are measurable to some degree by an improvement in the physical or social environment in which the business operates or a better educated or trained potential workforce.

2.15 **Commercial initiatives** in the community aim to achieve a wide range of business goals and promote brands supported from business budgets such as marketing, human resources and research. Examples might include support for research in universities, supplier development and cause-related marketing. Again returns to the business are measurable in

terms of access to new ideas, best quality employees and suppliers or increased sales and market share.

### Reporting corporate citizenship

2.16 As has been discussed in the previous paragraphs it is now widely agreed that companies are accountable for their impact on a group of wider stakeholders in society. However the challenge for companies is how to provide an appropriate account as to how they are responsible corporate citizens. Effective reporting is best based on solid measures of performance but in 'soft' areas of social impact, hard measures are still difficult to produce. Many companies employ **benchmarking techniques** in order to overcome these difficulties. Therefore in these soft areas an effective method of assessing performance is for companies to compare their own performance either with individual similar companies or with averages for the industry as a whole.

## 3 CORPORATE GOVERNANCE: AN INTERNATIONAL PERSPECTIVE

3.1 An earlier chapter explained the history of corporate governance in the UK. Developments in the UK have gone in parallel with changes in other countries, most of which have standards of governance well below those demanded by global investors, particularly US and UK investment institutions. Some examples of common practices are listed below.

(a) It is not uncommon for individual shareholders to have **voting rights or decision-making powers** that are disproportionately large, given the size of their shareholding.

(b) Some shareholders act in collusion, with **cross-shareholdings in each other's equity**. For example, Company A might hold 15% of the equity of Company B, which in turn holds 15% of the shares in Company A. There might be an understanding between the directors of Companies A and B that they will always support each other in votes by the shareholders.

(c) The directors of a company might be able to frustrate a hostile takeover bid by including '**poison pill**' provisions in the company's constitution. In 2001, the EU introduced plans for the prohibition of poison pills, but these will not be implemented for some years.

(d) When a company is the target of a friendly takeover, **large shareholders** in the target company might be offered a higher price for their shares than small shareholders.

### The Sarbanes-Oxley Act 2002 – United States

3.2 In the US the response to the Enron scandal was the **Sarbanes-Oxley Act 2002** which applies to all companies that are required to file periodic reports with the Securities and Exchange Commission (SEC). The Act is the most far-reaching US legislation dealing with securities in many years and has major implications for public companies. Rule-making authority is delegated to the SEC on many provisions.

3.3 Sarbanes-Oxley shifts responsibility for financial probity and accuracy to the board's **audit committee**, which typically comprises three independent directors, one of whom has to meet certain financial literacy requirements.

3.4 Along with rules from the Securities and Exchange Commission, Sarbanes-Oxley requires companies to increase their financial statement **disclosures**, to have an internal **code of ethics** and to impose **restrictions on share trading** by, and loans to, corporate officers.

**Chief executives** and **chief financial officers** have to attest to the accuracy of their company's accounts in separate **sworn statements** filed with the SEC.

3.5 The biggest expense involving compliance that companies are incurring is in fulfilling the requirement to ensure their **internal controls** are properly documented and tested. US companies had to have efficient controls in the past, but they are now having to document them more comprehensively than before, and then have the external auditor sign off on their effort.

3.6 The Act has set up a new regulator, **The Public Company Accounting Oversight Board (PCAOB),** to oversee the audit of public companies that are subject to the securities laws. It also formally strips accountancy firms of almost all non-audit revenue streams that they used to derive from their audit clients, for fear of conflicts of interest. The Act also requires that the lead audit partner and the review partner on a public company's account must be changed every five years.

3.7 For lawyers, the Act strengthens requirements on them to whistleblow internally on any wrongdoing they uncover at client companies, right up to board level.

3.8 The Act also has a significant **international** dimension. About 1,500 non-US companies, including many of the world's largest, list their shares in the US and are covered by Sarbanes-Oxley. There were complaints that the new legislation conflicted with local corporate governance customs, and following an intense round of lobbying from outside the US, changes to the rules were secured. For example, German employee representatives, who are non-management, can sit on audit committees, and audit committees do not have to have board directors if the local law says otherwise, as it does in Japan and Italy.

## 4 GERMAN CORPORATE GOVERNANCE

4.1 The German Corporate Governance Code was finalised in May 2003 with the stated aim of 'making the German Corporate Governance system transparent and understandable .... to promote the trust of international and national investors, customers, employees and the general public in the management and supervision of listed German stock corporations'.

4.2 In Germany the law requires the dual board system for stock corporations whereby there is a Management Board responsible for management of the enterprise and a Supervisory Board which appoints, supervises and advises the members of the Management Board. The members of the Supervisory Board are elected by the shareholders and for large companies the Supervisory Board also includes employee representatives.

4.3 In contrast to the Combined Code in the UK, the German Code includes **statutory regulations** for the management and supervision of listed companies. The Code also consists of **recommendations** which can be deviated from but only if this is disclosed annually, and **suggestions** which can be deviated from without disclosure.

4.4 The German Code covers the six main areas:

- shareholders and the general meeting
- co-operation between the Management Board and the Supervisory Board
- Management Board
- Supervisory Board
- transparency
- reporting and audit of the annual financial statements

## Shareholders and the general meeting

4.5 Shareholders exercise their rights at the General Meeting and vote there. Each share carries one vote with no multiple voting rights, preferential voting rights or maximum voting rights.

4.6 At the General Meeting the annual financial statements are submitted and the shareholders' representatives to the Supervisory Board are elected as well as the auditors.

## Co-operation between the Management Board and the Supervisory Board

4.7 The Management Board co-ordinates the enterprise's strategic approach with the Supervisory Board and discusses the current state of strategy implementation with the Supervisory Board at regular intervals. Decisions or measures which fundamentally change the asset, financial or earning situations of the enterprise require the approval of the Supervisory Board.

4.8 The Management Board informs the Supervisory Board of all issues important to the enterprise with regard to planning, business development, risk situation and risk management. Good corporate governance requires an open discussion between the Management Board and the Supervisory Board. In the event of a takeover the Management Board and Supervisory Board must submit a statement of their position so that the shareholders can make an informed decision on the offer.

4.9 Any loans made by the enterprise to members of the Management or Supervisory Boards or their relatives require the approval of the Supervisory Board.

## Management Board

4.10 The Management Board is responsible for independently managing the enterprise and is obliged to act in the enterprise's best interest and undertakes to increase the sustainable value of the enterprise. The Board must also ensure appropriate risk management and risk controlling in the enterprise.

4.11 Compensation of the members of the Management Board is determined by the Supervisory Board. This shall comprise a fixed salary and variable components linked to business performance.

## Supervisory Board

4.12 The Supervisory Board should advise regularly and supervise the Management Board in the management of the enterprise and also appoints and dismisses the members of the Management Board.

4.13 The Supervisory Board should set up an Audit Committee which handles issues of accounting and risk management, the necessary independence of the auditor, issuing the audit mandate, the determination of audit focal points and the audit fee.

4.14 The compensation of the members of the Supervisory Board is determined at the General Meeting or in the Articles of Association and this should be both fixed and performance-related compensation.

### Transparency

4.15 The Management Board must disclose without delay any new factors which have arisen which are not known publicly is such facts substantially influence the price of the company's shares. As soon as the company becomes aware of an individual acquiring, exceeding or falling short of 5%, 10%, 25%, 50% or 75% of the voting rights the Management Board must disclose this without delay.

4.16 The company's treatment of all shareholders in respect of information should be equal and all new facts made known to financial analysts shall also be disclosed to the shareholders without delay.

### Reporting and audit of the annual financial statements

4.17 The financial statements will be prepared by the Management Board and examined by the auditor and the Supervisory Board.

4.18 The Supervisory Board or Audit Committee shall obtain a statement from the auditor, prior to election as auditor, stating any professional, financial or other relationships between the auditor and the enterprise which could call the auditor's independence into question. This statement should include the extent to which other services were performed for the enterprise in the past year or contracted for the following year, especially consultancy services.

4.19 The auditor should report all facts and events of importance which arise during the performance of the audit to the Supervisory Board without delay.

## 5 FRENCH CORPORATE GOVERNANCE

5.1 After the Cadbury committee reported in the UK in 1992, corporate governance began to be discussed in France, driven by two main factors at the time:

- the increasing importance of US and UK purchasers of French company shares, investors who wanted the same degree of transparency over their new French investments as they were used to having on their own domestic shareholdings.
- a series of huge financial losses arising from uncontrolled managements, eg at Credit Lyonnais and Michelin.

The initial French reaction was hostile to change; the new ideas on corporate governance were seen to be Anglo-Saxon in origin and therefore not to be encouraged. However there have been large-scale changes in the governance of French companies over the last 15 years.

5.2 The main changes in French corporate governance have been:

- a **reduction in the level of cross-shareholdings** between friendly domestic companies, to be replaced by high levels of foreign ownership. For example, foreign mutual and pension funds now own around half of all equity shares of French blue chip companies.
- The traditional large French conglomerate has sold off many of its non-core businesses to concentrate on its **core competencies**. No longer are poorly performing parts of the group being subsidised by the more successful parts; employees have to work in a successful business unit for their jobs to be safe.

- French firms have aggressively adopted systems of **incentivised pay**. Around half of the remuneration of top managers of blue chip companies is now in the form of performance-related bonuses rather than fixed salary.

5.3 There was undisguised joy in the French business elite when the US economy hit trouble at the end of the 1990s. They believed that the bursting of the dot.com bubble and the problems at Enron, etc proved that the traditional French method of corporate governance had been the best model all along. In fact the Anglo-Saxon model may have the last laugh, since the very large shareholdings by overseas investors are leading to a much greater responsiveness to shareholder concerns than was ever the case in the past.

## 6 JAPANESE CORPORATE GOVERNANCE

6.1 In general terms corporate governance in Japan lags significantly behind that in the UK, US and Germany. Much of this is to do with the historic way in which Japanese companies have been funded and operated.

6.2 Two key elements of this are the position of the banks in Japan and the system of cross shareholdings.

6.3 Japanese banks are both creditors and shareholders in Japanese companies however since the 1980s their shareholdings have been limited to 5%. However their loans to companies are unlimited and until recent times the banks have been the sole providers of debt finance. As creditors therefore they have had little direct interest in the value of the company shares and corporate governance has been very much in the interests of the banks. Corporate governance was therefore largely in the hands of creditors rather than shareholders.

6.4 The other barrier to effective corporate governance has been the '**keiretsu**' **system** whereby groups of companies together own controlling blocks of each other's shares. This arose largely as an anti-takeover barrier but has resulted in companies being effectively insulated from shareholder pressure as public shareholders have had little or no voice in Japanese corporate governance.

6.5 However in recent years this banking dominance, the system of cross shareholdings, lifetime employment and Japanese style management, where directors are loyal to the chief executive rather than the shareholders, appear to be eroding although have not yet disappeared. Together with legal reforms and innovations in corporate finance this has led to new patterns of corporate governance emerging.

6.6 The Japanese are well aware that there are two kinds of governance system:

- the insider oriented systems like the old Japanese system, and
- open market oriented systems such as those in the UK and US.

The Japanese system it can be argued provides a high degree of managerial stability and autonomy but is inherently non-transparent and discriminatory towards outsiders. In the current economic climate in Japan it has become clear that the current Japanese system needs to be adapted or re-designed. The Japan Corporate Governance Forum was established in 1994 to consider this area.

6.7 The current situation in Japan is that companies are making reforms in corporate governance and there are legal reforms which help to tighten the connection between a company's performance and its share price. However it is still not clear either the true extent of these reforms or the impact of the reforms. Japanese companies may be converging

on the US model of corporate governance or may be developing a new and distinct approach to corporate governance.

### Activity 18.1

In June 2001, the board of Volkswagen gained shareholder approval to buy back up to 10% of the company's voting shares. This was seen to be a move designed, in part at least, to reduce the risk of a successful hostile takeover bid for the company in the future. A number of shareholders at the meeting expressed their concerns about:

(a) The existence of two classes of shares (voting and non-voting)

(b) The so-called VW Law that limits the voting rights of any individual shareholder to 20% (thus providing further protection against takeover)

(c) The preferential status of the company's largest shareholder, the state of Lower Saxony, which held 18.6% of the voting shares.

Investment institutions claimed at the meeting that the interests of the government of Lower Saxony were different from those of the other shareholders.

The company refused to discuss its future plans or strategies and commented only that they would not be re-issuing the shares that the company had already bought back in 2000.

Comment on corporate governance in VW.

## 7 THE OECD PRINCIPLES

7.1 The Organisation for Economic Co-operation and Development (OECD) has carried out an extensive consultation with member countries, and developed a **set of principles of corporate governance** that countries and companies should work towards achieving.

7.2 The OECD developed its Principles of Corporate Governance in 1998 and issued a revised version in April 2004. They are non-binding principles, intended to assist governments in their efforts to evaluate and improve the legal, institutional and regulatory framework for corporate governance in their countries.

7.3 They are also intended to provide guidance to stock exchanges, investors and companies. The focus is on publicly-traded companies, but many of the principles can also apply to private companies and state-owned organisations.

7.4 The reason for encouraging better corporate governance is to **improve economic efficiency**. 'A key element in improving economic efficiency is corporate governance, which 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 shareholders, and should facilitate effective monitoring, thereby encouraging firms to use resources more efficiently.'

7.5 The OECD principles deal mainly with governance problems that result from the **separation of ownership and management** of a company (ie the shareholders and the board/management). Issues of ethical concern and environmental issues are also relevant, although not central to the problems of governance.

7.6 The OECD has stated that its interest in corporate governance arises from its concern for **global investment**. Corporate governance arrangements should be credible and should be understood across national borders. Having a common set of accepted principles is a step towards achieving this aim.

7.7 The OECD identifies the key participants in the corporate governance system to be:

(a) The board of directors (in a two-tier board system, the supervisory board)

(b) Management (in a two-tier board system, the management board)

(c) Controlling shareholders

(d) Institutional shareholders (who demand more influence)

(e) Individual small shareholders, wanting fair treatment from management and any controlling shareholder

(f) Creditors, acting as external monitors over company performance

(g) Employees, who contribute to the performance and long-term success of their company

(h) Governments, wishing to establish an overall institutional and legal framework for corporate governance

## Five areas of corporate governance

7.8 The OECD principles are grouped into five broad areas:

(a) The rights of shareholders
(b) The equitable treatment of shareholders
(c) The role of stakeholders
(d) Disclosure and transparency
(e) The responsibilities of the board

In each area, best practice is set out, eg:

(a) Shareholders should have the right to participate and vote in general meetings of the company.

(b) All shareholders of the same class of shares should be treated equally, including minority shareholders and overseas shareholders

(c) All stakeholders should have access to relevant information on a regular and timely basis.

(d) Timely and accurate disclosure must be made of all material matters regarding the company, including the financial situation.

(e) The board is responsible for the strategic guidance of the company and for the effective monitoring of management.

There is no need for you to study the OECD principles in excessive detail; you should concentrate your study of corporate governance principles around the contents of the Combined Code.

## Key learning points

- The **ABI** issues guidelines to its members, on matters such as responsible voting and the protection of the pre-emption rights of shareholders. The ABI encourages its members to give positive support to the board, unless there are good reasons for not doing so. In this way, it is expected that (a) a positive dialogue between a company and its institutional investors will be created and (b) the board will give closer attention to matters where the shareholders disapprove of actions or decisions by the board.
- Corporate governance issues have an **international perspective**, because many institutional investors invest in countries around the world. They would like common standards of corporate governance wherever they invest.
- In the US the Sarbanes-Oxley Act introduced stringent laws regarding corporate governance issues.
- Germany issued a Corporate Governance Code in 2003 which introduced statutory regulations for listed companies.
- Corporate governance in France is converging towards the US model, despite misgivings by the French business elite.
- Japan has been going through a period of recession together with changes in the way in which companies operate and are funded and this has led to a move towards changes in corporate governance some of which are based on the UK/US model of corporate governance.
- The OECD has issued principles of corporate governance that many countries have agreed to, and are encouraged to adopt.
- There are five broad areas to which the OECD principles relate: (a) the rights of shareholders (eg to vote, to transfer their shares, to a share of the profits of their company) (b) the equitable treatment of shareholders by the company (c) the role of stakeholders (d) disclosure of information and transparency and (e) the responsibilities of the board of directors.
- Corporate governance should encourage active co-operation between companies and their shareholders.

## Quick quiz

1 Why is the ABI an influential organisation with regard to corporate governance?

2 What is a 'poison pill'?

3 When one company plans a takeover of another, in what ways might some shareholders in the target company be treated less equitably than others?

4 In what ways might some shareholders effectively be prevented from exercising their right to vote at general meetings of their company?

5 What is the dual board system in German companies?

6 What were the two main factors which meant that Japanese corporate governance in the past has been creditor focused rather than shareholder focused?

## Answers to quick quiz

1 The Association of British Insurers and the National Association of Pension Funds are trade associations representing the main institutional investors in the UK. They make recommendations to their members on participating in company decision-making (voting at general meetings of the company) and on a range of matters such as share option schemes and rights issues. The ABI and NAPF could therefore, through influencing their members, bring pressure to bear on companies to reform their corporate governance practices.

2 Something that makes it difficult, or even impossible, for one company to take over another without the support and approval of the target company's board. Poison pills might include a right of the board to issue new shares without shareholder approval, or to restrict the voting rights of majority shareholders.

3 Some shareholders might have inside information about the intended takeover, and be able to deal in the shares in advance of any public announcement. The bidder might be permitted to offer one price to some shareholders but a lower price to others (e.g. to minority shareholders). The bidder might be permitted to offer to buy the shares of some of the shareholders, without having to make an offer to all the shareholders.

4 The company might be permitted to call a general meeting at very short notice: some shareholders, especially foreign shareholders, might not have time to respond. There might be strict rules about voting and the use of proxy votes. For example, if proxy votes are not allowed and shareholders must attend and vote in person, any shareholders who are unable to attend (e.g. foreign shareholders) will be disadvantaged.

5 In Germany the law requires the dual board system for stock corporations whereby there is a Management Board responsible for management of the enterprise and a Supervisory Board which appoints, supervises and advises the members of the Management Board. The members of the Supervisory Board are elected by the shareholders and for large companies the Supervisory Board also includes employee representatives.

6 The investment power of the banks and cross shareholdings where companies would hold large amounts of shares in each other in order to avoid take-overs.

## Answer to activity

## Answer to activity 18.1

Although Volkswagen won support for its proposal at the meeting, the company can be criticised on the following grounds.

(a) 'Poison pill' defences that protect a company against a hostile takeover bid should not be established.

(b) The company should have only one class of ordinary shares.

(c) The board may be acting in the interests of a major shareholder, but without giving proper consideration to the interests of other shareholders.

(d) The dialogue between the company and its institutional shareholders appears to be inadequate.

The *Financial Times* reported (8 June 2001) that the share structure of the company had been blamed for the poor performance of VW shares, and quoted a German fund manager as saying: 'Abolishing Lower Saxony's special rights and limiting the shares to one type would not only be a positive signal for the capital markets, but would also boost VW's value and, last but not least, send a positive signal for Germany as a financial market place.'

The *Financial Times* commented itself that: 'VW's management is lagging behind global trends towards transparency in corporate governance and the creation of shareholder value. Currently, smaller shareholders hold few of the strong cards. But in a few years, much will change... The pressures will increase as a growing proportion of large companies' shares is owned by international investors.'

# *List of key terms and Index*

These are the terms which we have identified throughout the text as being KEY TERMS. You should make sure that you can define what these terms mean; go back to the page highlighted here if you need to check.


**A**ppetite for risk 25
Arbitrage 129

**B**eta factor 238
Borrower's option 195

**C**lientele effect 278
Corporate governance 294
Cost of capital 226
Cost of funds 226
Credit risk 120, 130, 131
Currency future 168
Currency option 190
Currency risk 136

**D**erivatives 125, 164

**E**conomic exposure 148
Enterprise Risk Management (ERM) 12
Enterprise value 260
Executive directors 299
Exercise price 190
Expected value 56

**F**inancial future 168
Financial instruments 124
Financial risk 120
Forward contract 126
Forward exchange contract 143
Forward rate agreement 204
Futures 125, 164
Futures contract 168

**H**edge 127
Hedging 159

**I**nterest rate guarantee 195
Interest rate option 195
Interest rate risk 123
Internal auditing 39
Internal control system 302
Intrinsic value 188

**L**ender's option 195
LIBOR 155

**M**arginal cost of capital approach 244
Market risk 236
Minimum return 226

**N**on-executive directors 299

**O**pportunity 6
Option 127, 184

**R**isk assessment 54, 75
Risk averse attitude 25
Risk seeking attitude 25

**S**crip dividend 287
Signalling 286
Swap 126, 214
Systematic risk 234

**T**ime value 189
Total Shareholder Return (TSR) 336
Translation exposure 149

**U**nsystematic risk 234

**V**alue at Risk (VaR) 65, 75

**W**eighted average cost of capital (WACC) 240

ABI guidelines, 348
Access controls, 103
Accountability, 297
Accountability and audit, 322
Action plans, 86
After-tax cost of debt capital, 230
Agency theory, 296
American option, 127
American-style options, 185
Annual general meeting (AGM), 324
Appointments to the board, 317
Appraisals, 99
Arbitrage, 129, 216
Armstrong, Michael, 99
Association of British Insurers (ABI), 336, 348
Audit committee, 37, 323, 331, 352
Auditors, 323
Avoidance, 66

Backup controls, 104
Balanced portfolio, 235
Base currency, 138
Base rate, 154
Basel Accord, 74
Basis risk, 177
Bearer of risk, 82
Benchmarking, 53
Benefits of risk management, 9
Beta factor, 238, 250
Board balance and independence, 316
Board of directors, 36
Borrower's option, 195
Brainstorming, 51
Branson, Richard, 29
BS EN ISO 9001:2000, 91
Bureaucracy, 96
Business process re-engineering (BPR), 89
Business risk, 108, 243, 254

Cadbury Committee, 304
Call option, 184
Capital asset pricing model (CAPM), 234
Capital gains, 277, 278
Capital structure, 227, 240, 260, 262
CAPM formula, 239
Chairman, 315
Changing attitudes, 44
Chicago Board of Trade (CBOT), 164
Chicago Mercantile Exchange (CME), 164
Chief executive, 315
Chief Executive Officer (CEO), 38
Chief Risk Officer (CRO), 38
Clientele effect, 278
Combined Code on Corporate Governance (1998), 73, 305
Combined Code on Corporate Governance (2003), 10, 303, 306, 312
Communication, 43
Companies Act 1985 (Operating and Financial Review and Directors' Report etc) Regulations 2005, 10, 74
Company Law Review, 306
Company secretary, 317
Compensation payment, 207
Compulsory insurance, 10
Contingency planning, 106
Contract price, 170
Control, 69
Control environment, 69
Control procedures, 69
Corporate characteristics, 23
Corporate ethics, 32
Corporate governance, 294
Corporate governance reporting, 333
Corporate social responsibilities, 349
Corporate values, 35
Correlation coefficient, 58
COSO (Committee of Sponsoring Organisations of the Treadway Commission), 15
Cost of capital, 226
Cost of debt, 254
Cost of equity, 232
Cost of preference shares, 228
Counterparty, 171
Coupon swap, 214
Credit analysis, 121
Credit arbitrage, 216, 218
Credit assessments, 121
Credit rating, 121
Credit risk, 120, 130, 131
Creditors, 303
Criminal Records Bureau, 95
Culture, 31
Currency futures, 168, 172
Currency of invoice, 141
Currency options, 144, 184, 190
Currency risk, 124, 136
Currency swap, 220
Customer-related processes, 92
Customers, 41

Daily settlement price, 170
Data integrity, 101
Davidson-Frame, J, 80
Deal and Kennedy, 33
Debt portfolio, 158
Default risk, 156
Delivery day, 169
Denial of service attack, 102
Derivatives, 125, 164
Design and development processes, 91
Dialogue with companies, 325
Direct quote, 139
Directors, 314
Directors' remuneration, 319
Directors' Remuneration Report Regulations 2002, 305, 306, 321
Disaster recovery plan, 107
Discount, 145
Discount rate, 254
Dividend growth, 274
Dividend growth model, 233, 275
Dividend payout, 278
Dividend policy, 280
Dividend valuation model, 232, 239
Dividends, 280
Due diligence, 111
Dynamism, 297

Earnings retention, 278
Economic exposure, 136, 148
Economic risk, 136, 148
Electronic voting, 349
Email risks, 105
Employee rights, 302
Employment contracts, 95
Empowerment, 96
Encryption, 105
Enron, 4, 295, 352
Enterprise Risk Management (ERM), 11
Enterprise value, 260
Environmental scanning, 109
Equity beta, 252
Escalation trigger, 52
Ethics, 32
Eurex, 165
European option, 127
European-style options, 185
Event identification, 51
Event interdependencies, 53
Event inventories, 51
Event risk, 106
Exchange Delivery Settlement Price (EDSP), 170
Exchange-traded options, 185
Executive directors, 298, 314
Executive share options, 319
Exercise price, 184
Exercising an option, 185
Expected values, 56
Exposure, 9
Exposure management, 127
External audit, 300
External auditor, 41, 323

Final dividend, 286
Financial asset, 125
Financial futures, 164, 168
Financial instruments, 124
Financial liability, 125
Financial options, 184
Financial reporting, 322
Financial risk, 8, 243, 254
Fire safety, 106
Firewalls, 105
Fixed forward exchange contract, 144
Fixed rate borrowing, 216
Floating rate, 155
Floating rate debt capital, 243
Flooding, 106
Foreign exchange risk, 124, 136
Forex, 136
Forward contracts, 126, 165, 193
Forward exchange contracts, 142
Forward points, 145
Forward rate, 143
Forward Rate Agreement (FRA), 126, 204
Frameworks for risk management, 14
Fraud, 101, 105
Fundamental risks, 7
Fundamental theory of share values, 233, 275
Futures, 125, 164
Futures contracts, 165, 168, 193
FX markets, 146

Garratt, Bob, 43
Geared betas, 250
Gearing, 250, 285
Gordon's growth model, 233
Greenbury Committee, 304

Hampel Committee, 305
Handy, Charles, 31, 34
Hazard and Operability (HAZOP), 52
Health and safety, 10
Hedge, 127
Hedge efficiency, 159, 177
Hedging, 127, 140, 159, 166, 172, 187, 206
Higgs' Report, 306, 332

Idiosyncratic risk, 234
Implementation of corporate governance procedures, 303, 312
Income tax, 277
Independence, 316
Independence of external auditors, 301
Independent non-executive directors, 316
Indirect quote, 139
Initial margin, 171
Input controls, 104
Inspections, 53
Institutional shareholders, 302, 324, 325
Insurance, 67, 187
Inter-bank market, 156
Interdependency, 53
Interest rate changes, 157
Interest rate exposures, 158
Interest rate guarantee, 195
Interest rate options, 184, 195
Interest rate risk, 123, 154, 158
Interest rate swap, 126, 214
Interest rates, 154
Interim dividend, 286
Internal audit, 39, 301, 324, 330
Internal control, 69, 302, 322, 326, 328, 353
Internal rate of return (IRR), 229
International corporate governance, 352
International Monetary Market (IMM), Chicago, 165
Interviews, 52
In-the-money, 188
Intrinsic value, 188
Involvement, 44
Irredeemable debt, 228
Irrelevancy theory, 279
ISO 9001, 91

Joint ventures, 68

Lagging, 142
Lam, James, 11, 39, 80
Last trading day, 169
Leading and lagging, 142
Leading event indicator, 52
Legal risk, 108
Lenders' options, 195, 196
Limitations of risk management, 14
Listing Rules, 312, 333
Lobbying, 108
London Clearing House (LCH), 171
London Inter-Bank Offered Rate (LIBOR), 154
London International Financial Futures and Options Exchange (LIFFE), 165
Long position, 166

Margin, 171
Marginal cost of capital, 244
Market price, 170
Market risk, 123, 130, 131, 236
Market risk premium, 238
Marking to market, 171
Marks and Spencer, 27
Matching assets and liabilities, 142
Matching receipts and payments, 141
Maturity mix, 159
Miles and Snow, 33
Mistake-handling, 42
MM theory, 262
MM theory with taxation, 267
Modigliani and Miller (MM), 262, 279
Money markets, 156
Monitoring, 71
Motivation, 98
Myners' Review of Institutional Investment, 306

National Association of Pension Funds (NAPF), 348
National culture, 35
Net operating income approach, 261
Net present value (NPV), 244
Network risks, 102
New York Cotton Exchange, 165
Nomination committee, 317, 333
Non-audit services, 323
Nonconforming products, 93
Non-executive directors, 299, 314, 348

Objectives, 24
OECD Principles of Corporate Governance 2004, 303, 357
On-the-money, 188
Operating and Financial Review, 74, 341
Operational risk, 8, 80
Opportunity, 5, 6
Optimal capital structure, 260
Option forward contracts, 144
Option forward exchange contracts, 144
Option premium, 127, 184, 188
Options, 127, 184
Options trading strategies, 198
Organisation for Economic Co-operation and Development (OECD), 357
Organisation structure, 36
Out-of-the-money, 188
Outsourcing, 68
Over the counter (OTC) derivatives, 125
Over-the-counter (OTC) options, 185, 190
Over-the-counter (OTC) swaps, 214
Ownership and management, 295, 357
Ownership of risk management, 42

Parmalat, 295
Particular risks, 7
Passwords, 103
People risk, 94
Performance evaluation, 318
Performance management, 99
Performance related remuneration, 320
Performance reporting, 335
Performance reviews, 99
Personal taxation, 277
PEST analysis, 110
Philadelphia Stock Exchange, 190
Physical damage, 101
Policies, 96
Policy, 27
Political risk, 106
Portfolio, 158, 235
Portfolio analysis, 58
Premium, 145
Primary financial instruments, 124
Private companies, 234
Probability, 9, 54, 55
Probability-impact matrix, 85
Procedural control, 96
Procedures, 96
Process risk, 88
Public Company Accounting Oversight Board (PCAOB), 353
Public relations, 109
Purchasing processes, 92
Pure risks, 7
Put option, 184

Quality management systems, 90
Questionnaires, 52

Recruitment, 94
Redeemable debt, 228
Reduction, 67
Re-election, 318
Reference rate, 204
References, 95
Refinancing risk, 159
Regulators, 41
Relations with shareholders, 324
Remuneration, 319
Remuneration committee, 319, 332
Repo rate, 154
Reporting, 73
Reporting of corporate governance, 333
Reputational risk, 109
Residual theory of dividend policy, 279
Response to risk, 65
Responsible voting, 348
Retained earnings, 280
Retention policy, 279
Reward, 98
Risk, 5, 6
Risk appetite, 24, 25
Risk assessment, 54, 85
Risk averse, 25
Risk awareness, 43, 50
Risk control, 69
Risk identification, 50, 81
Risk management, 127
Risk management group, 37
Risk management processes, 49
Risk map, 55
Risk monitoring, 71
Risk neutral, 25
Risk package, 64
Risk register, 51, 83
Risk reporting, 73
Risk response, 65, 86
Risk seeking, 25
Risk tolerance, 28
Risk-free rate of return, 227

Risk-free securities, 235
Rover, 4
Royal Dutch/Shell, 295
Rules, 96

Sarbanes-Oxley Act 2002, 303, 352
Scenario analysis, 61
Scenario planning, 110
Schein, Edgar, 31
Scrip dividend, 287
Secondary financial instruments, 124
Securities and Exchange Commission (SEC), 303, 352
Selection, 95
Senior management, 38
Sensitivity analysis, 60
Settlement date, 169
Settlement rate, 204
Severity, 9
Share incentive schemes, 348
Share options, 184
Share price prediction, 239
Shareholder voting, 325
Shareholders, 286
Sharing, 67
Shell, 111
Short position, 166
Signalling, 286
Simulation, 63
Singapore Exchange (SGX), 165
Six Sigma, 94
SMART, 24
Smith guidance, 306, 331
Social responsibilities, 349
Social, environmental and ethical (SEE), 349
Software piracy, 105
SPAMSOAP, 70
Speculation, 128
Speculative risks, 7
Spot rate, 139, 143
Stakeholder theory, 297
Standard deviation, 57
Standby facilities, 107
Statutory governance frameworks, 303
Stewardship theory, 296
Stress testing, 65
Strike price, 184
Supplier partnerships, 68
Suppliers, 41, 92
Swaps, 126, 214
Symmetrical risk, 6
Systematic risk, 123, 234, 250
Systems integrity, 101
Systems risks, 100

Tax credit, 277
Tax shield exhaustion, 268
Taxation, 230
Ticks, 170
Total Quality Management (TQM), 90
Total shareholder return (TSR), 321, 336
Trade Unions, 100
Traditional view of dividend policy, 279
Traditional view of WACC, 261
Training, 44, 97
Transaction exposure, 136, 148
Transaction risk, 136, 148
Translation exposure, 136, 149
Translation risk, 136, 149
Treasury bills, 154
Turnbull, 10, 28
Turnbull Committee, 305
Turnbull Report, 74, 328
Two-way risk, 6

Uncertainty, 6
Ungeared betas, 250
Uninterruptible power supplies, 106
Unsystematic risk, 234

Value at Risk (VaR), 64
Variable currency, 138
Variable rate, 155
Variable rate borrowing, 216
Variation margin, 171
Virgin Galactic, 29
Viruses, 104
Volatility, 9, 57
Voluntary governance frameworks, 303

Wack, Pierre, 110
Weblogs, 109
Weighted average cost of capital (WACC), 240, 261
Whistleblowing, 353
Worldcom, 295

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