

Qualification Programme

# Module B: Corporate Financing



FOURTH EDITION



Hong Kong Institute of  
Certified Public Accountants  
香港會計師公會



Hong Kong's  
CPA Qualification  
香港會計師專業資格

LEARNING PACK



Qualification Programme

Module B

Corporate Financing



Hong Kong Institute of  
Certified Public Accountants  
香港會計師公會



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## Director's message

Welcome to the Qualification Programme (QP) of the Hong Kong Institute of Certified Public Accountants (HKICPA).

You have made the decision to complete the HKICPA's QP which entails completing the training programme, passing professional examinations and acquiring practical experience under an authorized employer or supervisor. This marks a further step on your pathway to a successful business career as a CPA and becoming a valued member of the HKICPA.

The QP comprising four core modules and a final examination will provide you with a foundation for life-long learning and assist you in developing your technical, intellectual, interpersonal and communication skills. You will find this programme challenging with great satisfaction that will open a wide variety of career opportunities bringing in attractive financial rewards.

A module of the QP involves approximately 120 hours of self-study over fourteen weeks, participation in two full-day workshops and a three-hour open-book module examination at the module end. We encourage you to read this Learning Pack which is a valuable resource to guide you through the QP.

The four core modules of the QP are as follows:

- Module A: Financial Reporting
- Module B: Corporate Financing
- Module C: Business Assurance
- Module D: Taxation

Should you require any assistance at any time, please feel free to contact us on (852) 2287 7228.

May I wish you every success in your QP!

Jonathan Ng

Executive Director  
Hong Kong Institute of Certified Public Accountants

# Introduction

This is the fourth edition of the Learning Pack for Module B Corporate Financing of the HKICPA Qualification Programme.

The Institute is committed to updating the content of the Learning Pack on an annual basis to keep abreast of the latest developments. This edition has been developed after having consulted and taken on board the feedback received from different users of the previous edition. Some of the examples and self-test questions have been rewritten to better reflect current working practices in industry and facilitate the learning process for users of the Learning Pack.

The Learning Pack has been written specifically to provide a complete and comprehensive coverage of the learning outcomes devised by HKICPA, and has been reviewed and approved by the HKICPA Qualification and Examinations Board for use by those studying for the qualification.

The HKICPA Qualification Programme comprises two elements: the examinations and the workshops. The Learning Pack has been structured so that the order of the topics in which you study is the order in which you will encounter them in the workshops. There is a very close inter-relationship between the module structure, the Learning Pack and the workshops. It is important that you have studied the chapters of the Learning Pack relevant to the workshops before you attend the workshops, so that you can derive the maximum benefit from them.

On page ix you will see the HKICPA learning outcomes. Each learning outcome is mapped to the chapter in the Learning Pack in which the topic is covered. You will find that your diligent study of the Learning Pack chapters and your active participation in the workshops will prepare you to tackle the examination with confidence.

One of the key elements in examination success is practice. It is important that not only you fully understand the topics by reading carefully the information contained in the chapters of the Learning Pack, but it is also vital that you take the necessary steps to practise the techniques and apply the principles that you have learned.

In order to do this, you should:

- work through all the examples provided within the chapters and review the solutions, ensuring that you understand them;
- complete the self-test questions within each chapter, and then compare your answer with the solution provided at the end of the chapter; and
- attempt the exam practice questions that you will find at the end of the chapter. Many of these are HKICPA past examination questions, which will give an ideal indication of the standard and type of question that you are likely to encounter in the examination itself. You will find the solutions to exam practice questions at the end of the book.

In addition, you will find at the end of the Learning Pack a bank of past HKICPA case-study style questions. These are past 'Section A' examination questions, which present a case study testing a number of different topics within the syllabus. These questions will provide you with excellent examination practice when you are in the revision phase of your studies, bringing together, as they do, the application of a variety of different topics to a scenario.

Please note that the Learning Pack is not intended to be a 'know-it-all' resource. You are required to undertake background reading including standards, legislations and recommended texts for the preparation for workshop and examination.

## Module structure

This module will enable you to handle ethical dilemmas and financial matters and appreciate the following four key financial roles which are common to commercial organisations. Please refer to the QP Learning Centre for the six-month rule.

- The executive management role to provide leadership and direction;
- The management reporting role to provide operational and financial information for decision making;
- The treasury operations role to manage cash flows both present and future and its related financial risks; and
- The corporate finance role to advise on the restructuring and expansion of business.









## Overall Structure of Module B (Corporate Financing)





# Chapter features

Each chapter contains a number of helpful features to guide you through each topic.

<b>Topic list</b>	Tells you what you will be studying in the chapter. The topic items form the numbered headings within the chapter.
<b>Learning focus</b>	Puts the chapter topic into perspective and explains why it is important, both within your studies and within your practical working life.
<b>Learning Outcomes</b>	The list of Learning outcomes issued for the Module by HKICPA, reference to the chapter in the Learning Pack within which coverage will be found and the Workshop in which the topic will be covered.
<b>Topic highlights</b> 	Summarise the key content of the particular section that you are about to start. They are also found within sections, when an important issue is introduced other than at the start of the section.
<b>Key terms</b> 	Definitions of important concepts. You really need to know and understand these before the exam, and understanding will be useful at the workshops too.
<b>Examples</b> 	Illustrations of particular techniques or concepts with a worked solution or explanation provided immediately afterwards.
<b>Case study</b> 	An example or illustration not requiring a solution, designed to enrich your understanding of a topic and add practical emphasis. Often based on real world scenarios and contemporary issues.
<b>Self-test questions</b> 	These are questions that enable <b>you</b> to practise a technique or test your understanding. You will find the answer at the end of the chapter.
<b>Formula to learn</b> 	You may be required to apply financial management formulae in Module B, Corporate Financing.
<b>Topic recap</b>	Reviews and recaps on the key areas covered in the chapter.
<b>Exam practice</b> 	A question at the end of the chapter to enable you to practise the techniques that you have learned. In most cases this will be a past HKICPA exam question, updated as appropriate. You will find the answers in a bank at the end of the Learning Pack entitled Answers to Chapter Questions.
<b>Further reading</b> 	In Modules B and D you will find references to further reading that will help you to understand the topics and put them into the practical context. The reading suggested may be books, websites or technical articles.
<b>Bold text</b>	Throughout the Learning Pack you will see that some of the text is in bold type. This is to add emphasis and to help you to grasp the key elements within a sentence or paragraph.

# Learning outcomes

HKICPA's Learning outcomes for the Module are set out below. They are cross-referenced to the chapter in the Learning Pack and the workshop session where they are covered.

## Fields of competency

The items listed in this section are shown with an indicator of the minimum acceptable level of competency, based on a three-point scale as follows:

- 1 Awareness  
To have a general professional awareness of the field with a basic understanding of relevant knowledge and related concepts.
- 2 Knowledge  
The ability to use knowledge to perform professional tasks competently without assistance in straightforward situations or applications.
- 3 Application  
The ability to apply comprehensive knowledge and a broad range of professional skills in a practical setting to solve most problems generally encountered in practice.

## Topics

		Competency	Chapter where covered
<b>LO1. Strategic management</b>			
<b>Analyse and advise upon an organisation's strategy</b>			
LO1.01	Strategy formulation process, including data gathering structures, SWOT analysis and PESTE analysis	3	
1.01.01	Describe the overall strategic planning process of an organisation		2
1.01.02	Apply various models in data gathering and analysing the organisation's market environment and position		2
1.01.03	Evaluate the likely consequences of strategic choices and recommend strategies to achieve organisation's strategic objectives		2
1.01.04	Understand and manage the ethical dilemma in strategy formulation process		1
LO1.02	Project appraisal techniques and process	3	
1.02.01	Apply various models in evaluating the value of a business		12
1.02.02	Select appropriate investment appraisal techniques given the objectives and circumstances of an organisation and apply them in order to evaluate a proposed investment project		12
1.02.03	Identify and calculate relevant cash flows and discount rates for investment appraisal purposes, taking into account inflation and tax		12

		Competency	Chapter where covered
1.02.04	Justify the selection of an appropriate discount rate in discounted cash flow analysis for investment appraisal purposes		12, 13
1.02.05	Advise on an appropriate investment strategy when capital is rationed		12
1.02.06	Advise on other non-financial considerations in project appraisal		12
LO1.03	Post-appraisal audit of projects	3	
1.03.01	Explain the role of a post-appraisal (or post-completion) audit in assessing the success of a project		12
1.03.02	Explain the steps in carrying out a post-appraisal audit		12
1.03.03	Evaluate an organisation's system for the post-appraisal audit of projects		12
1.03.04	Understand management behaviour in a post-appraisal audit		12
<b>LO2. Performance control</b>			
<b>Design, implement and review of performance measurement and control systems in organisations</b>			
LO2.01	Performance measurement systems	3	
2.01.01	Explain the role of performance measurement systems in managing strategy and monitoring the achievement of an organisation's strategic objectives		5
2.01.02	Explain the need to allow for external considerations in performance management and suggest ways in which such considerations could be allowed for		5
2.01.03	Evaluate the merits of multi-dimensional models of performance, such as the Balanced Scorecard, the Performance Pyramid and the Building Block model		5
2.01.04	Design and recommend an appropriate performance measurement system for a given organisation, including multi-national companies (MNCs)		5
2.01.05	Identify problems with an organisation's current system of performance measurement and recommend improvements		5
2.01.06	Explain the "management by exception" technique and its limitations		5

		Competency	Chapter where covered
LO2.02	Performance indicators and measures for organisational units	3	
2.02.01	Explain and demonstrate how appropriate financial and non-financial performance indicators can be used to monitor the performance of an organisation's strategic units, divisions or projects		5
2.02.02	Calculate financial, strategic and operational performance measures and understand the relationships between them		5
2.02.03	Describe, calculate and interpret appropriate financial performance indicators (FPIs) in both manufacturing and service businesses and suggest methods to improve the performance indicated by these measures		5
2.02.04	Identify and explain issues that may cause performance not meeting expectations		5
LO2.03	Cost measurement and analysis in service and manufacturing environments	2	
2.03.01	Explain and compare traditional costing approaches with more modern approaches such as Activity Based Costing (ABC)		4
2.03.02	Calculate costs for products/services using both traditional and Activity Based Costing (ABC) methodologies		4
2.03.03	Describe the factors that affect an organisation's pricing decisions and the different cost based pricing approaches		4
2.03.04	Explain the features of target costing and its implications for pricing, cost control and performance management		4
2.03.05	Identify the costs involved at different stages of the product/service cycle and explain the implications of life cycle costing for pricing, performance management and decision making		4
2.03.06	Explain the concept of customer profitability analysis and perform a customer profitability analysis from given data		4
2.03.07	Explain the relationship between cost and quality and be able to prepare and analyse a cost of quality report		4
LO2.04	Management of intra- and inter-organisational relationships	2	
2.04.01	Discuss the relative merits and performance measurement of centralisation vs decentralisation		6
2.04.02	Explain the concept and potential benefits of benchmarking performance measures against worldwide best practice		5

		Competency	Chapter where covered
2.04.03	Discuss the impact of transfer prices on divisional performance assessment and explain how transfer prices can distort performance assessment and decisions made		6
LO2.05	Behavioural and ethical aspects of control systems	3	
2.05.01	Explain the behavioural issues associated with capital budgeting and performance management and control systems		5, 12
2.05.02	Explain the causes and problems created by short-termism and financial manipulation of results and suggest approaches to performance measurement and control that encourage a long term view		5
2.05.03	Discuss considerations for sustainability and social corporate responsibility (CSR)		1
2.05.04	Explain the practical issues (including behavioural issues) that arise when an organisation implements changes to its control systems and recommend ways of dealing with these		5
2.05.05	Use ethical decision models, e.g. American Accounting Association (AAA) model or HKICPA Code of Ethics, to analyse ethical dilemmas and recommend proper action		1
2.05.06	Understand the code of conducts under Securities and Futures Ordinance (SFO)		15
<b>LO3. Financial analysis</b>			
<b>Analyse and advise upon an organisation's financial strategy</b>			
LO3.01	Business plans	2	
3.01.01	Explain the role and composition of business plans in helping an organisation achieve its objectives		3
3.01.02	Prepare a simple business plan for a given scenario which will achieve an organisation's stated objectives		3
3.01.03	Explain the general objectives of financial management and describe the financial strategy process for a business		3
3.01.04	Evaluate the financial strategy of the organisation and recommend financial actions that will add value to the organisation		3
LO3.02	Cash flow statements	3	
3.02.01	Describe the role of cash flow analysis in the evaluation of an organisation's strategic and operational plans		3
3.02.02	Prepare cash flow statements in order to analyse the financial strategy of an organisation		3

		Competency	Chapter where covered
	and to identify its short and medium term financial requirements		
	3.02.03 Explain how an organisation can use cash flow reporting systems to monitor and manage its financial strategy		3
LO3.03	Profitability projections	3	
	3.03.01 Explain how profitability projections can be used to examine the impact of an organisation's financial strategy		3
	3.03.02 Prepare projections of future profitability in order to evaluate an organisation's financial strategy		3
LO3.04	Liquidity and solvency positions	2	
	3.04.01 Analyse the impact of an organisation's financial strategy on its liquidity and solvency through the use of ratios and other techniques		3, 8
	3.04.02 Explain the problem of overtrading and describe the symptoms and remedies		8
LO3.05	Sensitivity analysis	3	
	3.05.01 Describe and discuss the difference between risk and uncertainty		12
	3.05.02 Recognise how the outcome of an organisation's decisions is affected by the accuracy of the data on which projections are based and factors which could not be included in any computational analysis		3, 12
	3.05.03 Explain the role of sensitivity analysis as a method of dealing with uncertainty in forecasting and be able to apply appropriate techniques		3, 12
	3.05.04 Apply sensitivity analysis and probability analysis to investment projects and discuss the usefulness of these techniques in assisting investment decisions		12
	3.05.05 Consider ethical issues in sensitivity analysis		12
<b>LO4. Short and medium term financial management</b>			
<b>Identify and evaluate the short and medium term financial requirements of an organisation</b>			
LO4.01	Cash management and forecasting	3	
	4.01.01 Identify and discuss the main factors to be taken into account when deciding upon the level of cash to be held by an organisation		8
	4.01.02 Describe and apply the processes that an organisation can use to monitor cash flows and manage cash		8
	4.01.03 Explain and illustrate how cash forecasts can be used to identify an organisation's short and medium term financial requirements		8

		Competency	Chapter where covered
4.01.04	Identify and discuss the range of short and medium term sources of finance available to an organisation		8, 9
4.01.05	Assess the suitability of different short and medium term financing options and advise on the appropriate finance package for a given business scenario		8
4.01.06	Assess the benefits and drawbacks of centralised treasury management and cash control		8
LO4.02	Financial markets	2	
4.02.01	Assess the impact of financial markets and other external factors on an organisation's financial strategy		16
4.02.02	Explain the nature and role of financial intermediaries, money and capital markets, both nationally and internationally		16
4.02.03	Outline the role of rating agencies and the ratings process		9
4.02.04	Comment on and interpret any current capital market trends (such as Basel rules and Dodd-Frank Act) which may affect an organisation's ability to raise finance and to use OTC derivatives to manage risk		16
4.02.05	Explain the concept of market efficiency and examine the implications of the Efficient Market Hypothesis for issuers and investors		16
LO4.03	Working capital management	3	
4.03.01	Describe the nature of working capital and discuss the role of working capital management in financial strategy		8
4.03.02	Calculate the level of working capital investment for a given situation and discuss the key factors that determine this level		8
4.03.03	Explain and apply relevant accounting ratios, including current ratio and quick ratio, inventory turnover ratio, average collection period and average payable period		8
4.03.04	Discuss, apply and evaluate the use of relevant techniques in managing inventory, accounts receivable, accounts payable and cash balances		8
4.03.05	Discuss the key factors in determining working capital funding strategies		8
<b>LO5. Treasury function</b>			
<b>Outline the objectives and operations of a treasury function in an organisation</b>			
LO5.01	Objectives and internal management	2	

		Competency	Chapter where covered
5.01.01	Explain the key objectives of treasury management		7
5.01.02	Explain the different approaches to structuring and managing treasury activities		7
LO5.02	Information systems – internal and external	2	
5.02.01	Advise on the main steps and issues to be considered in selecting an information system		7
5.02.02	Explain how an organisation can use information systems to identify the internal and external factors that will impact on financial management, the treasury function and risk management		7
LO5.03	Controls	2	
5.03.01	Explain how the performance of the treasury function can be controlled and measured		7
5.03.02	Recommend appropriate quantitative and qualitative measures of risk and performance that can be used to monitor treasury activities		7
LO5.04	Governance, audit and reporting	2	
5.04.01	Identify the key areas of treasury management that require board level decisions		7
5.04.02	Outline reporting information that can be used for monitoring and control purposes		7
5.04.03	Discuss the rationale for auditing treasury		7
LO5.05	Relationship management	2	
5.05.01	Identify the implications of external developments on the finance and treasury function and recommend appropriate actions for risk management		7
5.05.02	Explain the importance of two-way relationships between treasury and key external parties		7
<b>LO6. Long term financial management</b>			
<b>Identify and evaluate the long term financial management position of a business and advise on relevant sources of finance and funding methods</b>			
LO6.01	Capital structure	3	
6.01.01	Explain the relevance of gearing and discuss the problem of high level of gearing		14
6.01.02	Describe the traditional view of capital structure and discuss its assumptions		14
6.01.03	Describe the views of Miller and Modigliani (MM) on capital structure, both without and with corporate taxation, and discuss their assumptions		14
6.01.04	Compare the traditional and MM views of capital structure		14



		Competency	Chapter where covered
	6.01.05	Discuss the practical considerations in determining capital structure	14
LO6.02	Cost of capital		3
	6.02.01	Explain the term “cost of capital” and its importance in investment decision making	13
	6.02.02	Calculate the cost of equity using the dividend valuation model (DVM) and capital asset pricing model (CAPM)	13
	6.02.03	Calculate the cost of capital of a range of debt capital instruments, including irredeemable and redeemable debt, convertible debt, preference shares, bank debt (before and after tax)	13
	6.02.04	Calculate and interpret the overall weighted average cost of capital (WACC) of a company	13
LO6.03	Dividend decisions		3
	6.03.01	Explain the relationship between dividend policy and the financing decision	10
	6.03.02	Explain the relationship between dividend policy and shareholder wealth	10
	6.03.03	Discuss the theoretical approaches to, and the practical influences on, the dividend decision, including legal constraints, liquidity and shareholder expectations	10
	6.03.04	Demonstrate how dividend policy is selected and advise on an appropriate dividend policy for a given scenario	10
LO6.04	Raising finance		2
	6.04.01	Identify and discuss the range of long-term sources of finance available to businesses, including equity finance, debt finance, lease finance and venture capital	9
	6.04.02	Comment on the relative importance of key longer-term finance instruments in the Hong Kong market	9
	6.04.03	Explain the relevance of pecking order theory and FRICT framework to the selection of sources of finance	14
	6.04.04	Assess the suitability of different financing options and their implications for capital structure, gearing and reserves	9,14
	6.04.05	Evaluate the impact of sources of finance on financial position and financial risk using appropriate measures of gearing, interest cover and shareholder wealth	14
	6.04.06	Advise on the appropriate finance structure for a given business scenario	9

		Competency	Chapter where covered
LO6.05	Corporate debt securities	2	
6.05.01	Describe the main features of straight long-term loan capital, mortgages, convertible loans, subordinated loans, warrants, deep discount bonds and junk (high yield) bonds		9
6.05.02	Calculate the value of debt securities		9, 13, 17
6.05.03	Discuss the reasons for issuing each particular form of loan capital (e.g. how to improve an organisation's financing flexibility)		9
6.05.04	Distinguish between fixed and floating rates of interest		9
<b>LO7. Risk identification and management</b>			
<b>Identify risks which a business is exposed to and apply appropriate risk management strategies</b>			
LO7.01	Concept of financial risk and return	3	
7.01.01	Explain the concept of the risk/return trade-off and discuss the various attitudes to risk that may exist		11
7.01.02	Explain how the attitude to risk adopted by an organisation influences its approach to risk management		11
7.01.03	Discuss how Enterprise Risk Management (ERM) is applied to form an integral part of an organisation's governance system		11
LO7.02	Identification and evaluation of business and financial risk	3	
7.02.01	Identify the key financial, operational, political, legal and business risks facing a company and explain their potential impact		11
7.02.02	Explain how foreign exchange risk arises from exchange rate volatility		11
7.02.03	Outline the sources of interest rate risk and liquidity risk		11
LO7.03	Measurement of risk	2	
7.03.01	Demonstrate an understanding of key methods of assessing financial risk		11
7.03.02	Define financial risk exposures including interest rate, liquidity, foreign exchange, commodity, credit and capital risks and their potential impact upon the organisation		11
LO7.04	Risk management including the use of financial products, including derivatives	2	
7.04.01	Identify and discuss the main elements of a risk management process		11
7.04.02	Discuss the main benefits to be derived from implementing risk management processes		11

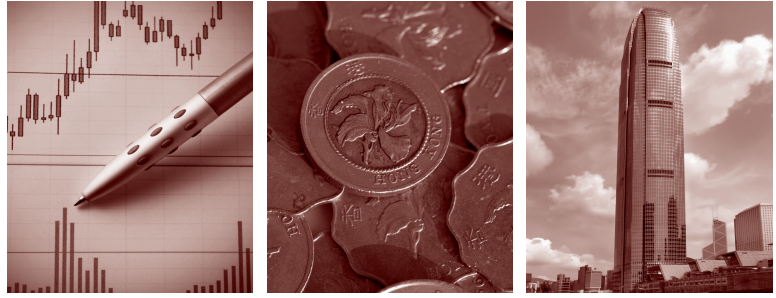
		Competency	Chapter where covered
7.04.03	Identify alternative strategies for managing and controlling financial risk		11
7.04.04	Explain and recommend appropriate methods for hedging foreign exchange risk, including derivative products		11
7.04.05	Outline procedures for the identification and management of interest rate risk		11
<b>LO8. Business valuations</b>			
<b>Perform calculations and provide advice relating to the valuation of businesses</b>			
LO8.01	Company valuations, Mergers and acquisitions and Disposals	2	
8.01.01	Identify and discuss occasions and reasons for valuing businesses and financial assets including IPO, mergers and acquisitions and disposals		17
8.01.02	Identify information requirements for valuation and discuss the limitations of different types of information		17
8.01.03	Understand and apply models for the valuation of shares, including asset-based valuation models, earnings-based valuation models, cash flow-based valuation models and comparable methods		17
8.01.04	Understand models for the valuation of debt and apply appropriately to irredeemable debt, redeemable debt, convertible debt and preference shares		17
8.01.05	Discuss the theoretical and practical limitations of the various valuation models		17
8.01.06	Recommend and justify an appropriate valuation/range of valuations for a given business scenario		17
<b>LO9. Business combinations</b>			
<b>Discuss possible reasons for business combinations and the perceived advantages and disadvantages</b>			
LO9.01	Regulation of takeovers and mergers	2	
9.01.01	Demonstrate an understanding of the principal factors influencing the development of the regulatory framework for mergers and acquisitions globally and in Hong Kong		18
9.01.02	Be able to compare and contrast the shareholder versus the stakeholder models of regulation		18
9.01.03	Identify the main regulatory issues which are likely to arise in the context of a given offer		18

		Competency	Chapter where covered
	9.01.04	Understand the structure and status of the Takeovers Code in Hong Kong and explain its ten "General Principles"	18
LO9.02	Due diligence		2
	9.02.01	Define due diligence and recognise when it is relevant	18
	9.02.02	Explain the key features of a due diligence process	18
	9.02.03	Explain the role of due diligence in reducing the risk associated with business combinations	18
	9.02.04	Discuss the link between due diligence and business valuation	18
LO9.03	Context of takeover bid		2
	9.03.01	Discuss the arguments for and against the use of acquisitions and mergers as a method of corporate expansion	18
	9.03.02	Evaluate the corporate and competitive nature of a given acquisition proposal	18
	9.03.03	Compare the various sources of financing available for a proposed acquisition	18
	9.03.04	Evaluate a given acquisition proposal, assess its impact on the reported financial position and performance of the acquirer and recommend the most appropriate offer to be made	18
	9.03.05	Assess whether an offer is likely to be in the shareholders' best interests	18
	9.03.06	Advise the directors of a target company on the most appropriate defence if a specific offer is to be treated as hostile	18
LO9.04	Role of the professional adviser		2
	9.04.01	Explain the need for and identify the different professional advisers that may be involved in a business combination	18
	9.04.02	Discuss the role and impact of the professional adviser at different stages in the transition	18
<b>LO10. Regulatory environment</b>			
<b>Discuss the regulatory environment and where appropriate apply ethical standards and professional and industry guidance</b>			
LO10.01	General		2
	10.01.01	Understand the roles of responsibilities and the relationship among regulatory authorities, e.g. HKICPA, HKEX, SFC, FRC, HKMA, OCI (Office of the Commissioner of Insurance), HKSI (Hong Kong Securities and Investment Institute), Companies Ordinance and SFO and other participants	15

		Competency	Chapter where covered
	10.01.02	Discuss the concept of ethics and ethical dilemmas and the different ethical stances that may be adopted by an organisation	1
LO10.02	The Institute's Code of Ethics for Professional Accountants		2
	10.02.01	Recognise situations where it is appropriate to apply ethical standards and professional guidance	1
	10.02.02	Understand and apply the relevant parts of the Institute's Code of Ethics for Professional Accountants in any given financial management or corporate finance situation	1
LO10.03	Industry codes of conduct		2
	10.03.01	Recognise situations where it is appropriate to apply ethical standards and industry guidance	1
	10.03.02	Demonstrate an understanding of the Corporate Finance Adviser Code of Conduct	1
LO10.04	Stock Exchange regulation and reporting requirements		2
	10.04.01	Understand the Listing Rules and Stock Exchange regulation on reporting requirements of listed companies, including listing on the HKEx Main Board and the GEM	15
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LO11.02	Common finance and treasury problem areas		2
	11.02.01	Identify key risk factors (e.g. breach of covenants, rating triggers) that create financial performance problems and recommend feasible solutions and preventive measures	20

	Competency	Chapter where covered
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LO11.03	Provision of basic advice on insolvency	2
11.03.01	Demonstrate an understanding of the key aspects of insolvency and/or bankruptcy	20
<b>LO12. Corporate reorganisation and change</b>		
<b>Identify and explain the key issues relating to methods of change to corporate structures</b>		
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12.01.01	Identify and explain the key reasons for divestment or demerger	19
12.01.02	Describe the various forms of unbundling available and evaluate their likely financial and other benefits	19
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LO12.02	Public to private (delisting)	2
12.02.01	Identify and explain the key issues related to going from a public company to a private company (leveraged buyout)	19
LO12.03	Management buy-out and mechanics	2
12.03.01	Discuss the advantages and disadvantages of a management buy-out (MBO) and buy-in (MBI)	19
12.03.02	Advise on the financial considerations relating to an MBO and MBI	19
12.03.03	Assess the financial implications of an MBO for the management team and the venture capitalist	19
LO12.04	Alterations to capital	2
12.04.01	Explain the key issues involved in financial reconstruction	19
12.04.02	Determine whether a financial reconstruction is the most appropriate strategy in a given company situation	19
12.04.03	Evaluate the impact of a proposed reconstruction scheme on the organisation and assess the likely response of the capital market	19
12.04.04	Recommend and justify a reconstruction scheme for a given business situation	19





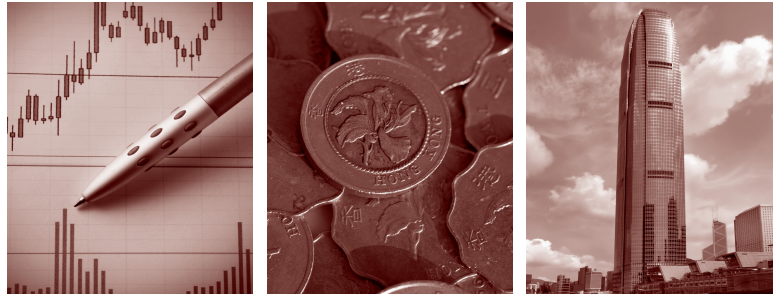
## Part A

# Ethics in business

The emphasis in this section is on professional ethics in business. The purpose of this section is to develop candidates' ability to recognise situations where possible ethical issues arise, to be aware of the perspectives of different stakeholders, and to apply commonly used ethical models to arrive at an appropriate decision.







## chapter 1

# Ethics in business

### Topic list

#### 1 Ethics in business

- 1.1 Do business and ethics go together?
- 1.2 Examples of unethical corporate strategies

#### 2 HKICPA Code of Ethics (COE)

- 2.1 Introduction
- 2.2 Overall view of ethics
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### Learning focus

As a result of recent corporate scandals and failures, many listed companies have acknowledged that it makes more business sense than ever before to be aligned with high standards of ethics and corporate governance. This chapter considers the ethical environment in which a business operates and deals with the identification and solution of a variety of ethical issues confronted by business today.

Morals and ethics involve doing the right thing. Ethical issues exist at the level of the individual, the business and at its widest corporate social responsibility. The desire to act ethically will affect the behaviour of individuals and the scope of strategies undertaken by a business.

A corporate finance professional may encounter a variety of situations which give rise to conflict between his professional obligations and the responsibilities to his employer or client. The nature of advice expected may change when the client becomes involved in or anticipates a particular transaction, such as a takeover bid or an issue of securities. At that point problems of independence and conflict of interest can arise or advisers may find themselves under inappropriate pressure to achieve a result.

This chapter examines the HKICPA's Code of Ethics for Professional Accountants, as it applies to professionals working in business, and the specific provisions affecting corporate finance advisers and insolvency practitioners. It also looks at the Industry Code of Conduct for corporate finance advisers issued by the Securities and Futures Commission.

As a result you should be able to recognise situations in practice where it is appropriate to apply ethical standards and professional and industry guidance.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Strategic management</b>		
Analyse and advise upon an organisation's strategy		
<b>1.01</b>	<b>Strategy formulation process</b>	3
1.01.04	Understand and manage the ethical dilemma in strategy formulation process	
<b>Performance control</b>		
Design, implement and review performance measurement and control systems in organisations		
<b>2.05</b>	<b>Behavioural and ethical aspects of control systems</b>	3
2.05.03	Discuss considerations for sustainability and corporate social responsibility (CSR)	
2.05.05	Use ethical decision models, e.g. American Accounting Association (AAA) model or HKICPA Code of Ethics, to analyse ethical dilemmas and recommend proper action	

<b>Regulatory environment</b>		
Discuss the regulatory environment and where appropriate apply ethical standards and professional and industry guidance		
<b>10.01</b>	<b>General</b>	2
10.01.02	Discuss the concept of ethics and ethical dilemmas and the different ethical stances that may be adopted by an organisation	
<b>10.02</b>	<b>The Institute's Code of Ethics for Professional Accountants</b>	2
10.02.01	Recognise situations where it is appropriate to apply ethical standards and professional guidance	
10.02.02	Understand and apply the relevant parts of the Institute's Code of Ethics for Professional Accountants in any given financial management or corporate finance situation	

# 1 Ethics in business



## Topic highlights

Ethical dilemmas involve situations concerning right and wrong where values are in conflict.

The problems that confront business executives are many. Some of the most complex and difficult involve situations concerning right and wrong where values are in conflict. These situations are called ethical dilemmas.

With corporate scandals and billion-dollar bankruptcies dominating headlines, ethics has almost become a hotter topic than earnings in the business world.

## 1.1 Do business and ethics go together?

It is sometimes argued that business and ethics do not go together. Succeeding in business may be seen as a way of advancing private interests – competing aggressively against others, with unlimited ambition for money, position and power. In contrast, morality focuses on duties to others – avoiding causing hurt (deliberately or accidentally), placing other people's interests equal with our own and treating others with dignity and respect.

Being scrupulously honest and caring in our business dealings with others can sometimes cost sales, deals, money and promotions. Refusing to go along with other people's unethical behaviour may even cost jobs. However, when taken too far in business, even healthy self-interest, competitiveness and ambition can turn into selfishness, aggression and greed – traits that are clearly at odds with morality.

It seems then that taking ethics seriously in business extracts a price, and may make success more difficult to come by. However, it is inconceivable that most people would ever freely endorse the idea that dishonesty, manipulation and taking advantage of other people were acceptable, fundamental traits of the basic mechanism by which society makes and distributes essential goods and services.

## 1.2 Examples of unethical corporate strategies

Many types of business strategy may be considered unethical by some or most people, while not always breaking the law of the country in which the organisation is operating.

Examples include:

- Unethical advertising: breaking advertising codes and standards
- Not telling customers about known risks associated with the company's products
- Lack of social responsibility: for example,
  - non-observance of human rights
  - subjecting employees to an unhealthy or unsafe working environment
  - use of child labour
  - discrimination against minorities
  - neglect of product safety, such as the tainted milk scandal in mainland China
- Lack of respect for the environment; short-term gains at the expense of long-term environmental damage
- Lack of accountability for actions: for example,
  - provision of minimum financial information to stakeholders
  - creative accounting, bordering on fraud
- Corruption: giving and receiving bribes to further business interests

The opportunities for unethical behaviour increase as new technologies emerge. For example, e-commerce has opened new ways in which unscrupulous organisations can make unfair gains.

## 2 HKICPA Code of Ethics (COE)



### Topic highlights

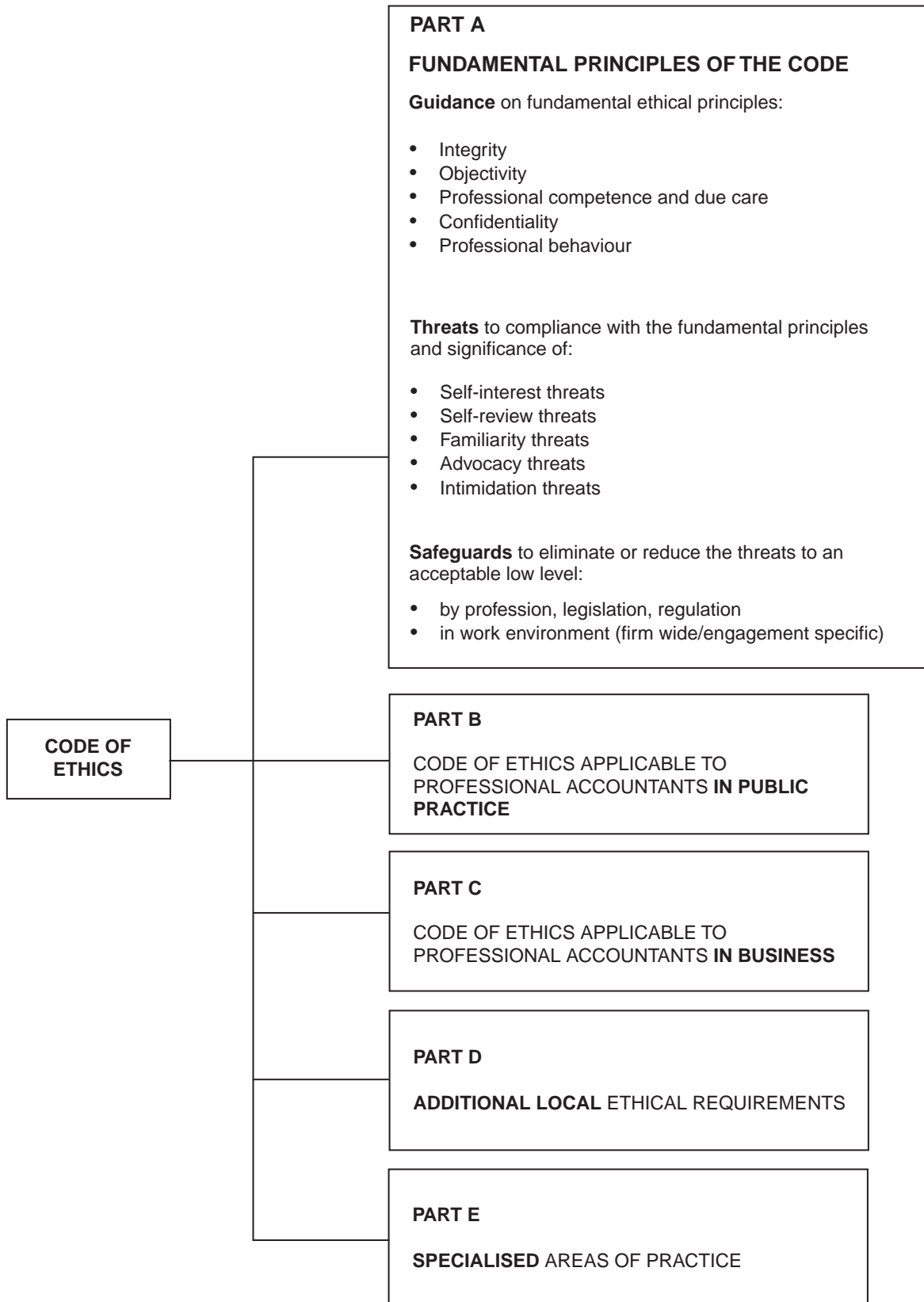
All HKICPA members are required to comply with the **Code of Ethics for Professional Accountants (COE)**. The COE provides **guidance on fundamental ethical principles**.

Professional accountants are required to apply this conceptual framework to **identify threats** to compliance with the fundamental principles, to **evaluate the significance** of such threats and to **apply safeguards** to eliminate them or reduce the threats to acceptable levels.

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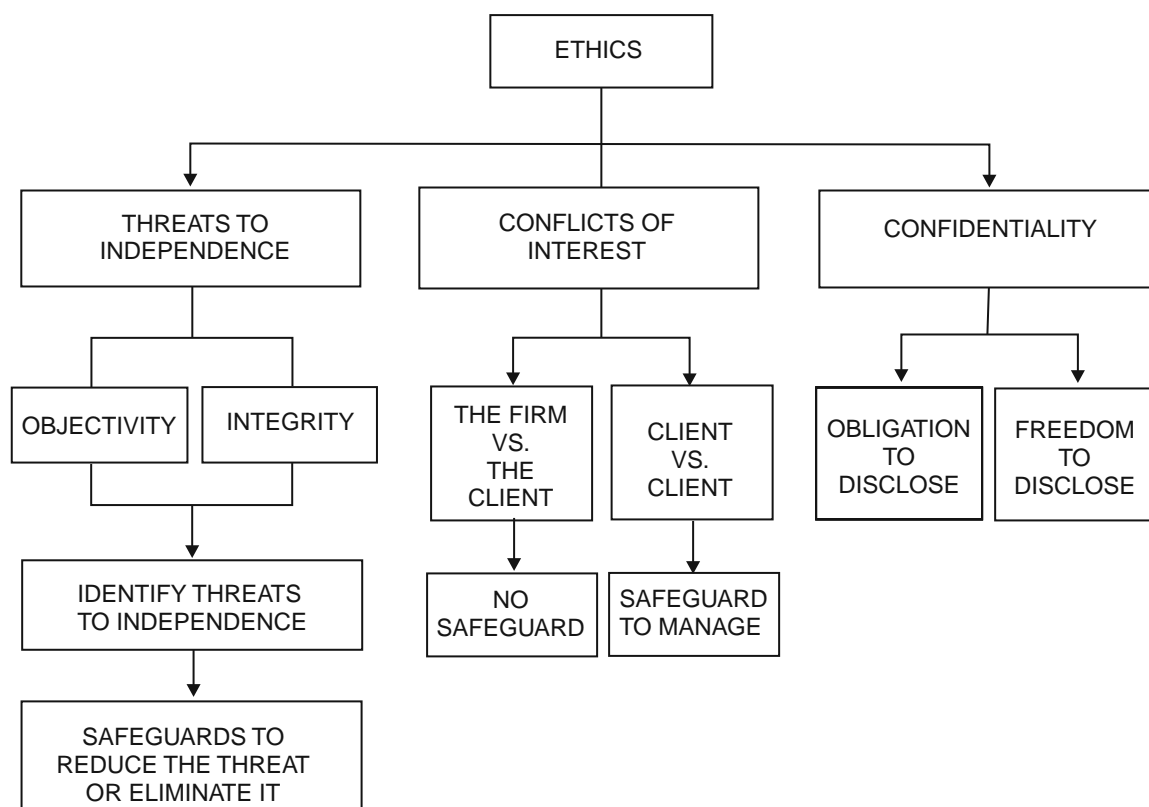
### 2.1 Introduction

The **Code of Ethics for Professional Accountants (COE)**, first introduced on 30 June 2006, was revised in 2012 and a fifth section added covering professional ethics in liquidation and insolvency. All HKICPA members are required to comply with the COE which is based on the IESBA's Code of Ethics for Professional Accountants, issued in July 2009. The COE is divided into five sections.



When reviewing this section, you should try to study it by sub-topics and should ensure you can distinguish the difference between each type of ethical issue. The following diagram may help.

## 2.2 Overall view of ethics



## 2.3 Part A: General application of the Code

Part A provides **guidance on fundamental ethical principles**. Professional accountants are required to apply this conceptual framework to **identify threats** to compliance with the fundamental principles, to **evaluate the significance** of such threats and to **apply safeguards** to eliminate them or reduce the threats to acceptable levels.

### 2.3.1 Fundamental principles of the Code (Section 100.2)

Accountants are expected to perform in accordance with the highest standards of professionalism as people rely on them and their expertise. The following are the fundamental principles for members within the ethical code:

- (a) **Integrity** (Section 110): A professional accountant should be **straightforward** and **honest** in all professional and business relationships. Integrity also implies **fair dealing** and **truthfulness**.  
Professional accountants should not be knowingly associated with information where they believe that information contains a materially false or misleading statement, has been furnished recklessly or omits information required to be included where such omission would be misleading.
- (b) **Objectivity** (Section 120): A professional accountant should not allow **bias, conflict of interest** or the **undue influence** of others to override professional or business judgment. In addition, they should avoid relationships that may impair objectivity.
- (c) **Professional competence and due care** (Section 130): A professional accountant should be competent to perform professional services and should **act diligently** in accordance with applicable technical and professional standards when providing professional services.

**Professional competence** requires both attainment and maintenance of professional competence which requires continuing awareness and understanding of relevant technical professional and business developments.

**Diligence** includes the responsibility to act in accordance with the requirements of an assignment, carefully, thoroughly and on a timely basis.

The professional accountant should have appropriate training and supervision. The professional accountant should make the client or users of a professional service aware of any inherent limitations in that service, to avoid a statement of opinion being misinterpreted as fact.

- (d) **Confidentiality** (Section 140): A professional accountant should respect the confidentiality of information acquired as a result of professional and business relationships and should not disclose any information to third parties without proper and specific authority unless there is a legal or professional right or duty to disclose.

Confidential information acquired as a result of professional and business relationships **should not be used for personal advantage** or for the advantage of any third parties.

There is a need to maintain confidentiality of information within the firm or employing organisation.

The duty of confidentiality continues even after the end of the relationship between the professional accountant and the client.

Disclosure of information is allowed only if it is:

- (i) permitted by law and if authorised by the client or employer.
  - (ii) required by law i.e. in the course of legal proceedings or to appropriate public authorities.
  - (iii) there is a professional duty or right to disclose, i.e. in order to:
    - comply with the quality review of a member body or professional body
    - respond to an inquiry or investigation by a member body or regulatory body
    - protect the professional interests of a professional accountant in legal proceedings
    - comply with technical standards and ethics requirements
- (e) **Professional behaviour** (Section 150): A professional accountant should comply with relevant laws and regulations and should avoid any action that discredits the profession.

In marketing and promoting themselves, professional accountants should not bring the profession into disrepute.

Professional accountants should not exaggerate claims for their services that they offer, the qualifications they possess or experience they have gained.

Professional accountants should not make disparaging references or unsubstantiated comparisons to the work of others.

### 2.3.2 Threats and safeguards (Sections 100.12 and .13)

Compliance with the fundamental principles may potentially be threatened by a broad range of circumstances. Many threats fall into the following categories:

- (a) **Self-interest** threats, which may occur if behaviour or judgment is inappropriately influenced as a result of the financial or other interests of a professional accountant or of an immediate or **close family** member.
- (b) **Self-review** threats, which may occur when a previous judgment needs to be re-evaluated by the professional accountant responsible for that judgment.



- (c) **Advocacy** threats, which may occur when a professional accountant promotes a position or opinion to the point that subsequent objectivity may be compromised.
- (d) **Familiarity** threats, which may occur when, because of a close relationship, a professional accountant becomes too sympathetic to the interests of others.
- (e) **Intimidation** threats, which may occur when a professional accountant may be deterred from acting objectively by threats, actual or perceived.

Safeguards that may eliminate or reduce such threats to an acceptable level fall into two broad categories:

- Safeguards created by the profession, legislation or regulation
- Safeguards in the work environment

See section 2.5.3.

## 2.4 Part B: Professional Accountants in Public Practice (PAIPP)

Part B of the Code illustrates how the conceptual framework contained in Part A is to be applied by professional accountants in public practice.

A professional accountant in public practice should not engage in any business, occupation or activity that impairs or might impair integrity, objectivity or the good reputation of the profession and as a result would be incompatible with the fundamental principles.

## 2.5 Part C: Professional Accountants in Business (PAIB)

A professional accountant in business has a responsibility to further the legitimate aims of their employing organisation. The COE does not seek to hinder a professional accountant in business from properly fulfilling that responsibility, but considers circumstances in which conflicts may be created with the absolute duty to comply with the fundamental principles contained in Part A of the COE.

Key sections are:

- Section 310 – Potential conflicts
- Section 320 – Preparation and reporting of information
- Section 330 – Acting with sufficient expertise
- Section 340 – Financial interests
- Section 350 – Inducements

Investors, creditors, employers and other sectors of the business community, as well as governments and the public at large, may rely on the work of professional accountants in business in the context of:

- the preparation and reporting of financial and other information
- providing effective financial management
- competent advice on a variety of business-related matters

The more senior the position held, the greater the ability and opportunity to influence events, practices and attitudes.

The Independent Commission Against Corruption, Hong Kong (ICAC) ([www.icac.org.hk](http://www.icac.org.hk)) has reported that among those prosecuted in fraud cases, a few involving listed companies, a substantial proportion were professionals and senior executives, including company chairmen and directors.

Professional accountants are encouraged, therefore, to establish an ethics-based culture in their employing organisations that emphasises the importance that senior management places on ethical behaviour.

Part C of the Code provides a framework to assist professional accountants in business to identify, evaluate and respond to threats to compliance with the fundamental principles.

### 2.5.1 The potential for conflict

The Code explains the possible existence of conflicts of interest as follows: "As a consequence of responsibilities to an employing organization, a professional accountant in business may be under pressure to act or behave in ways that could directly or indirectly threaten compliance with the fundamental principles. Such pressure may be explicit or implicit; it may come from a supervisor, manager, director or another individual within the employing organization."

Professional accountants may find themselves under pressure to act against ethical principles in the following ways:

- Act contrary to law or regulation.
- Act contrary to technical or professional standards.
- Facilitate unethical or illegal earnings management strategies.
- Lie to, or otherwise intentionally mislead (including by keeping silent) auditors, regulators or others.
- Issue, or otherwise be associated with, a financial or non-financial report that materially misrepresents the facts, including the financial statements, or statements in connection with tax compliance; legal compliance; or reports required by securities regulators.

### 2.5.2 Threats

The business environment in which professional accountants operate may give rise to specific threats to compliance with the fundamental principles. Many threats fall into the following categories:

- (a) **Self-interest** – financial interests, loans or guarantees; incentive compensation arrangements; inappropriate personal use of corporate assets; concern over employment security; commercial pressure from outside the employing organisation.
- (b) **Self-review** – business decisions or data being subject to review and justification by the same person responsible for making those decisions or preparing that data.
- (c) **Advocacy** – when furthering the legitimate goals and objectives of their employer professional accountants in business may promote the organisation's position, provided that any statements made are neither false nor misleading. Such actions generally would not create an advocacy threat.
- (d) **Familiarity** – a person in a position to influence financial or non-financial reporting or business decisions having an immediate or close family member who makes decisions that affect the entity's financial reporting; long association with business contacts influencing business decisions; acceptance of gifts or preferential treatment (unless the value is clearly insignificant).
- (e) **Intimidation** – threat of dismissal or replacement of the professional accountant in business or a close or immediate family member over a disagreement about the application of an accounting principle or the way in which financial information is to be reported; a dominant personality attempting to influence the decision-making process, for example with regard to the awarding of contracts.

### 2.5.3 Safeguards

To comply with the Code, professional accountants are required to evaluate the significance of any threats arising as a result of their actions or relationships, and where these are significant to apply safeguards to eliminate the threats or reduce them to an acceptable level.

Such safeguards may include the following:

- (a) Obtaining advice where appropriate from within the employing organisation, an independent professional adviser or a relevant professional body.
- (b) The existence of a formal dispute resolution process within the employing organisation.
- (c) Seeking legal advice.

If appropriate safeguards cannot be implemented, professional accountants should either refrain from performing the specific professional service involved or consider resigning from the employing organisation.

Safeguards fall into two broad categories:

- (a) Safeguards created by the profession, legislation or regulation (discussed in this chapter and also Chapter 15, Regulatory Environment).
- (b) Safeguards in the work environment.

**Safeguards in the work environment** include the following:

- (a) The employing organisation's systems of corporate oversight or other oversight structures.
- (b) The employing organisation's ethics and conduct programmes.
- (c) Recruitment procedures in the employing organisation emphasising the importance of employing high calibre, competent staff.
- (d) Strong internal controls.
- (e) Appropriate disciplinary processes.
- (f) Leadership that stresses the importance of ethical behaviour and the expectation that employees will act in an ethical manner.
- (g) Policies and procedures to implement and monitor the quality of employee performance.
- (h) Timely communication of the employing organisation's policies and procedures, including any changes to them, to all employees and appropriate training and education on such policies and procedures.
- (i) Policies and procedures to empower and encourage employees to communicate to senior levels within the employing organisation any ethical issues that concern them without fear of retribution.
- (j) Consultation with another appropriate professional accountant.

## 2.6 Part D: Additional ethical requirements

Part D sets out the additional ethical requirements on specific areas which are primarily derived from local legal or regulatory requirements. A key section in relation to Module B is s.431 which covers Corporate Finance.

### 2.6.1 Section 431 – corporate finance advice

The objective of Section 431 is to provide ethical guidance that will safeguard corporate finance clients by ensuring that they can rely on the objectivity and integrity of the advice given to them.

Section 431 recognises that the role and nature of advice expected may change in character when the client becomes involved in or anticipates a particular transaction, such as a takeover bid, issue of securities or acquisition or disposal of securities, in respect of which advice or an opinion is required from a member.

It is at that point that problems of independence and conflict of interest can arise.

Areas covered by s.431 include the following:

(a) **Objectivity and integrity**

Provided that a member maintains objectivity and integrity throughout, both in regard to the client and to other interested third parties, there can be no objection to a firm accepting an engagement which is designed primarily with a view to advancing the client's case.

(b) **Conflicts of interest**

It may be in the best interests of a client company for corporate finance advice to be provided by its auditor and there is nothing improper in the auditor supporting a client in this way. There are however a variety of situations in which conflict can arise. All reasonable steps should be taken to ascertain whether a conflict of interest exists or is likely to arise in the future between a firm and its clients, both in regard to new engagements and to the changing circumstances of existing clients, and including any implications arising from the possession of confidential information.

A firm should not accept or continue an engagement in which there is or is likely to be a significant conflict of interest between the firm and its clients, so as to affect the objectivity of the firm. Any material financial gain which accrues or is likely to accrue to the firm as a result of the engagement, otherwise than in the form of fees or other reward from the client for its services, or commission, etc. properly earned and declared will always amount to a significant conflict of interest.

Where it is clear that a material conflict of interest exists a firm should decline to act as corporate finance adviser.

(c) **Conflict between interests of different clients**

There is, on the face of it, nothing improper in a firm having two or more clients whose interests may be in conflict. In such a case however, the work of the firm should be so managed as to avoid the interests of one client adversely affecting those of another.

(d) **Confidentiality**

Information acquired in the course of professional work should not be disclosed except where consent has been obtained from the client, employer or other proper source, or where there is a public duty to disclose or where there is a legal or professional right or duty to disclose.

(e) **The Hong Kong Takeovers and Share Repurchase Codes (the Codes)**

A member who provides takeover services for clients is required to comply with the Codes which are expressly applied to professional advisers as well as to those engaged in the securities market.

(f) **The Stock Exchange of Hong Kong Limited's (Stock Exchange) Rules governing the Listing of Securities (Listing Rules)**

When a firm accepts the responsibilities of a sponsor set out in Chapter 3 of the Listing Rules in respect of a client where it acts as auditor or reporting accountant, it should adopt steps described in paragraph 431.22 and additionally set up procedures to review and to identify any potential conflicts of interest which could compromise the firm's objectivity.

(g) **Promoting an issue or sale to the public of shares or securities**

A firm should not promote an issue or sale to the public of shares or securities of a company on which it has reported or is to report. Neither should the firm undertake to accept nomination as auditor or reporting accountant of the company whose shares it is promoting to the public. Involvement of this kind would endanger the independence of the firm in the audit and/or reporting function.

(h) **Fees**

Where a member undertakes an engagement for a fee which is contingent upon the successful outcome of a transaction such as a bid, offer, purchase, sale or raising finance, the member should take particular care to ensure that the arrangements do not prejudice his independence and objectivity with regard to any other role which the member may have, notably as auditor or reporting accountant of either the bidder or the target.

(i) **Overseas transactions**

Members are required to apply the spirit of the guidance in s.431, subject to local legislation and regulation, to overseas transactions of a similar nature.

## 2.7 Part E: Specialised areas of practice

Part E of the COE consists of one section, s.500, which is applicable to and governs the standards of conduct of all insolvency practitioners, when undertaking or preparing to undertake liquidation and insolvency appointments. Section 500 supersedes “Section 432 – Integrity, Objectivity and Independence in Insolvency” with effect from 1 April 2012.

### 2.7.1 Section 500 – professional ethics in liquidation and insolvency

The practice of liquidation and insolvency is principally governed by statute and secondary legislation and in many cases is subject ultimately to the control of the court. Insolvency is covered as a separate topic in Chapter 20.

Key sections covered by s.500 include:

- Accepting or not accepting appointments
- Professional and personal relationships

#### Accepting or not accepting appointments

The general principle is that it is inappropriate for an insolvency practitioner to accept an appointment, where a threat to the fundamental principles exists or may reasonably be expected to arise during the course of the appointment, and where safeguards are not available to eliminate such a threat, or to reduce it to an acceptable level (see s.500.27).

Under s.500.4 “the appointments to which this section of the Code refers, include but are not limited to the following appointments, whether in insolvent or solvent estates:

- (a) liquidator, provisional liquidator, special manager, receiver (or receiver and manager), trustee in bankruptcy, provisional trustee in bankruptcy, nominee of an individual voluntary arrangement;
- (b) administrator, manager, adjudicator or any other similar role, however described in respect of a scheme of arrangement between a company and its creditors;
- (c) administrator under the Securities and Futures Ordinance (Cap. 571); and
- (d) examiner in bankruptcy cases under the Official Receiver's Office tender scheme.”

#### Professional and personal relationships

The principle of objectivity may be threatened if any individual within the practice, the close relative of an individual within the practice, or the practice itself, has or has had a professional or personal relationship which relates to the appointment being considered. Sections 500.81-500.91 outline some specific circumstances and professional or personal relationships that will create threats to compliance with the fundamental principles.

Some of the safeguards to reduce the threat created by a professional or personal relationship to an acceptable level are considered in paragraph 500.28 and include changing the members of the insolvency team, implementing procedures to prevent access to information and the use of confidentiality agreements. Other safeguards, set out in s.500.51 include:

- (a) withdrawing from the insolvency team
- (b) terminating (where possible) the financial or business relationship giving rise to the threat
- (c) disclosure of the relationship and any financial benefit received by the practice (whether directly or indirectly) to the entity or to those on whose behalf the insolvency practitioner would be appointed to act.

### 3 Corporate Finance Adviser Code of Conduct



#### Topic highlights

The Securities and Futures Commission (SFC) seeks to promote professional and ethical business conduct among corporate finance advisers in Hong Kong, via the Corporate Finance Adviser Code of Conduct. This sets out the recommended best practice and business conduct requirements for those providing corporate finance advice. This topic is covered in detail in Chapter 15, The Regulatory Environment, section 4.

### 4 Solving ethical dilemmas



#### Topic highlights

A three-step strategy may be applied to solve ethical dilemmas:

- Step 1:** Analyse the consequences
- Step 2:** Analyse the actions
- Step 3:** Make a decision

Broadly, there are two major approaches that philosophers use in handling ethical dilemmas. One approach focuses on the practical consequences of what we do; the other concentrates on the actions themselves.

The first school of thought basically argues “no harm, no foul”; the second claims that some actions are simply wrong. Thinkers have debated the relative merits of these approaches for centuries, but for the purpose of getting help with handling ethical dilemmas, think of them as complementary strategies for analysing and resolving problems. Here is a brief, three-step strategy that shows you how to combine them.

#### Step 1: Analyse the consequences

Assuming you are going to obey the law, what next? It's probably easiest to start by looking at the consequences of the actions you're considering. Assume you have a variety of options. Consider the range of both positive and negative consequences connected with each one.

- Who will be helped by what you do?
- Who will be hurt?
- What kind of benefits and harms are we talking about?

After all, some “goods” in life (health) are more valuable than others (a cash bonus). A small amount of “high quality” good can outweigh a larger amount of “lower quality” good.

By the same token, a small amount of “high quality” harm (the pain you produce if you betray someone's trust on a very important matter) can outweigh a larger amount of “lower quality” pain (the disappointment connected with waiting another few months for a promotion).

- How does the entire picture look over the long run as well as the short run?

After looking at all of your options, which one produces the best mix of benefits over harms?

### Step 2: Analyse the actions

Now consider all of your options from a completely different perspective. Don't think about the consequences. Concentrate instead strictly on the actions. How do they measure up against moral principles like honesty, fairness, equality, respecting the dignity of others, respecting people's rights, and recognising the vulnerability of individuals weaker or less fortunate than others?

Do any of the actions that you are considering "cross the line", in terms of anything from simple decency to an important ethical principle?

If there is a conflict between principles or between the rights of different people involved, is there a way to see one principle as more important than the others? What you are looking for is the option with the least problematic actions.

### Step 3: Make a decision

Now take both parts of your analysis into account and make a decision.

This strategy should give you at least some basic steps you can follow.

## 5 The American Accounting Association model



### Topic highlights

The American Accounting Association (AAA) uses a seven-step model which attempts to apply Aristotle's three aspects of human acts: Principles and Causes; Means; and Ends or Consequences.

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In 1990, the American Accounting Association (AAA) published a casebook, *Ethics in the Accounting Curriculum – Cases and Readings*. These cases reflect ethical issues that accountants may encounter in the context of their professional activities. Each case is analysed using a seven-step model. The seven-step decision-making model used in this Learning Pack was adapted from an eight-step model by Langenderfer and Rockness.

This model attempts to review Aristotle's three aspects of human acts:

- Principles and causes
- Means
- Ends or consequences

## 5.1 The American Accounting Association seven-step model

- (1) **Determine the facts**  
What? Who? Where? When? How?  
What do we know or need to know if possible, that will help define the problem?
- (2) **Define the ethical issue**  
List the significant stakeholders.  
Define the ethical issues. Make sure what precisely the ethical issue is (conflict involving rights, question over limits of an obligation, etc.).
- (3) **Identify the major principles, rules and values**  
Integrity, quality, respect for persons, profit.
- (4) **Specify the alternatives**  
List the major alternative courses of action, including those that represent some form of compromise or point to a choice between simply doing or not doing something.
- (5) **Compare values and alternatives – see if the decision is clear**  
Determine if there is one principle or value, or combination which is so compelling that the proper alternative is clear (e.g. correcting a defect that is almost certain to cause loss of life).
- (6) **Assess the consequences**  
Identify the short and long, positive and negative consequences for the major alternatives. The common short-run focus on gain or loss needs to be measured against the long-run considerations. This step will often reveal an unanticipated result of major importance.
- (7) **Make your decision**  
Balance the consequences against your primary principles or values and select the alternative that best fits.



### Example: Profit smoothing

John CPA was appointed as managing director of Huge Profits Ltd on 31 May 20X9. Huge Profits Ltd is a publicly listed company that has reported regular profits for the last five years. 20X9 has been an exceptionally profitable year with the company winning a number of overseas contracts. While the future for Huge Profits Ltd still appears favourable, some of these contracts were “one-offs”, and so reported profits for future years may not be as high as 20X9.

One of John's first tasks as managing director is to facilitate the completion of the company's financial statements for the year ended 30 June 20X9. While John is pleased with the exceptional profit recorded in the company's draft financial accounts, he is aware that the non-recurring nature of some of the contracts may result in a reduced profit for 20Y0. As this will be his first year at the helm of the company, a drop in profits may reflect poorly on his performance and his 20Y0 bonus. With that in mind, John is considering the possibility of raising a number of large provisions in 20X9 which would have the effect of “smoothing out” the profits over 20X9 and 20Y0.

These provisions are causing John some concern because the company has a profit incentive scheme for middle and top level managers. Any reduction in profit will directly correlate to a reduction in their bonuses.

#### *Required*

Using the AAA model, work through this situation to determine what John should do.

#### **Solution**

- (1) **Determine the facts**
  - John, a chartered accountant, has recently been appointed managing director of Huge Profits.



- John's appointment is just prior to the end of the financial year.
- The company has historically reported profit, however, this year it is likely to report large profits due to some one-off contracts.
- John has reviewed the preliminary profit figures and is considering raising a number of significant provisions.
- John is concerned that if profits fall in the following year, his performance as a managing director may be questioned. His bonus in 20Y0 will also be affected.
- Any reduction in profits will result in a reduction in bonuses paid to middle and top level management in 20X9 and their potential postponement until 20Y0.

(2) **Define the ethical issue**

Stakeholders:

- John
- The employees of the company (particularly middle level and top level managers)
- Shareholders of the company
- Potential investors
- The Hong Kong Institute of Certified Public Accountants
- John's integrity in the reporting of financial results versus personal self-interest (objectivity) in the evaluation of his own future performance and 20Y0 bonus
- John's obligation to employees, shareholders and potential investors versus maintenance of technical standards and competence and, accordingly, John's responsibility to conduct himself in a manner consistent with the good reputation of his profession
- John's obligation to employees, shareholders and potential investors versus personal self-interest

(3) **Identify the major principles, rules and values**

- **Objectivity**

John must not allow the judgment of his own performance to impact the preparation of the current year financial statements.

- **Integrity**

John has a responsibility to shareholders, employees and future investors to provide them with honest information concerning the performance of the company.

- **Technical standards/competence**

Preparation of the company's financial accounts must be complete in accordance with technical and professional standards.

(4) **Specify the alternatives**

The major alternatives are as follows:

- John can report the figures as they are.
- John can book the provisions.
- John can look for alternative means of disclosure.

(5) **Compare values and alternatives**

- By reporting the figures as they are, John will maintain his integrity and objectivity. However, this course of action may result in a personal cost.

- John can book the provisions which may impair his integrity, objectivity and result in a possible breach of technical standards/competence. Booking the provisions also raises moral and ethical considerations in relation to the payment of bonuses.
- By the use of alternative disclosures, e.g. Notes to the Accounts, John may be able to report the true result thereby maintaining his integrity, objectivity and technical standards; fulfil his moral obligations with respect to the payment of bonuses; and not detract from his own performance in the future.

(6) **Assess the consequences**

By reporting the actual figures, John will ensure shareholder and employee satisfaction. A drop in future profits may not only have an adverse effect on him personally, but on potential investors who invest in the company based on the current year's results. If these profits are not sustainable, then the reporting of lower profits in the future may result in losses to investors.

Booking provisions and effectively “smoothing out” profits may prove to be more palatable to John personally, and possibly potential investors. Current shareholders and certainly employees who will receive reduced bonuses/dividends in the current financial year will be disadvantaged.

Adopting alternative means of disclosure may result in a win/win situation. Detailed disclosure may provide an opportunity to report actual results for the current financial year and, therefore, benefit the relevant stakeholders. In addition, by disclosing that profits were the result of one-off contracts, any future profit reductions may not be judged adversely against John. Further potential investors may consider the current year in isolation when forming their investment strategies. This is based on the assumption that markets are efficient.

(7) **Make your decision**

Balance the consequences against your primary principles or values and select the alternative that best suits.

## 6 Strategy and ethics



### Topic highlights

The desire of a company's management to act ethically will affect the scope of its strategies. Management needs to consider the ethical consequences of decisions and operations. The legal and professional framework sets minimum standards that must be observed in pursuit of the goal of shareholder wealth maximisation.

### 6.1 Legal and professional framework

In free-market economies the over-riding legal obligation of all companies is to maximise shareholders' wealth. The legal and professional framework sets minimum standards that must be observed in pursuit of that goal. For example:

- (a) The Companies Ordinance, the Securities and Futures Ordinance and Corporate Governance Guidelines protect the interests of the shareholders and creditors. The regulatory framework for corporate finance activities in Hong Kong is discussed in Chapter 15.
- (b) Health, safety and employment laws protect the interests of employees.
- (c) Consumer legislation protects the interests of the customers.

A business can observe the letter of the law strictly but still attract allegations of unethical behaviour. Recent examples would include:

- excessive pay for directors.
- paying dividends while at the same time laying-off staff.
- selling tobacco, alcohol, weapons or other potentially harmful products.

One powerful American executive (now fallen from grace) once boasted that he would sell a legal product even if he knew that it was dangerous. His duty was to make money; it was up to the government to protect the consumer.

## 6.2 Ethical stance of an organisation

A range of possible stances can be adopted by an organisation:

- (a) Meet minimum legal obligations.
- (b) Manage relationships with other stakeholders in recognition of the fact that this will contribute to shareholder wealth in the long run (good corporate governance).
- (c) Adopt a position of corporate social responsibility which exceeds minimum legal and corporate governance requirements and considers issues such as sustainability. This may be a deliberate choice of the organisation in order to achieve a competitive advantage.

The fact that a lot of Hong Kong's international business is done by small and medium enterprises means that the ethical management of businesses in Hong Kong is very dependent, not just on the systems and institutions designed to promote ethical behaviour, but also on the strength of individual values and integrity.

## 6.3 Conflict between ethics and strategy

The desire of a company's management to act ethically will affect the scope of its strategies. Management needs to consider the ethical consequences of decisions and operation, and so ethics will affect:

- Relationships with stakeholders
- The formulation of objectives and mission statements
- The environment in which the business operates
- The culture of the organisation and the expectations of behaviour
- The extent to which the activities of the business are sustainable
- The choice between strategies, e.g. certain products or countries may be avoided for ethical reasons.

The potential exists for a conflict between ethics and business strategy in the following areas:

- (a) **Customer pricing** – powerful suppliers may collude to ensure market prices are kept high, meaning that certain customers may not be able to buy the product. This criticism is sometimes levelled at the pharmaceutical companies whose drugs may be prohibitively priced for poorer countries.
- (b) **Terms of trade with suppliers** – large organisations may use their position to force margins down or to demand long credit periods (a particular criticism of some of the large retail organisations).
- (c) **Labour contracts** – firms may exploit their position when jobs are scarce. This may range from unfair contract terms or labour practices to the use of child labour. The increased popularity for manufacturers to outsource production to low-labour cost countries has brought this issue to the fore.

- (d) **Use of confidential data** – the use of technology to collect information on customers, suppliers and staff may allow firms to discriminate, e.g. between customers based on their value, or staff based on their personal lives. Money can also be made by selling such data to others for marketing purposes. Firms need to ensure data does not fall into the wrong hands or is not put to unethical use.
- (e) **Relationships with government and legislators** – politics provides the potential for firms to lobby or apply pressure to persuade individuals to further their own personal interests at public expense.
- (f) In addition to the above, multinational companies operating cross cultural businesses need to be aware of the different **cultures and ethics** in operation in the local country of operation which may affect a variety of issues including appropriate business conduct, the treatment of staff, dress conventions and religious customs.

## 6.4 Ethics and operations

Marketing is an area that comes under particular scrutiny. The fundamental ethical issue surrounds whether marketing wastes resources by attempting to sell customers products and services that they do not need (the volume of junk-mail issued on a daily basis might support this argument). Promotion campaigns aimed at encouraging customers to replace rather than repair items impact on sustainability. Marketing has also been accused of stimulating greed and envy, e.g. in respect of particular branded products.

The counter argument is that proper target marketing may reduce waste, that the production of the goods and services concerned creates jobs and that marketing has a role to play in promoting ecologically sound products and a more sustainable way of life. Many would argue that it is a matter of personal choice and that providing the information about the content and effect of products is clear, the buyer can decide their own ethical priorities.

Organisations have a duty of care to ensure that production processes and products do not cause harm. This may require consideration of issues such as product testing, the use of hazardous materials and processes, the disposal of toxic waste, the environmental impact of production processes or the disposal of products at the end of their life.

## 6.5 The Independent Commission Against Corruption (ICAC)

The Independent Commission Against Corruption (ICAC) was established in 1974 to fight corruption in Hong Kong. It works in conjunction with a number of professional bodies, including HKICPA.

ICAC explains its origins as follows: “A level-playing field for business is the key to Hong Kong's success. To build up private sector's resistance to corruption and enhance business standards in Hong Kong, the Independent Commission Against Corruption (ICAC) launched a Campaign on Business Ethics in co-operation with major business associations and professional bodies in 1994.”

The ICAC has legal powers under three Ordinances:

- The Independent Commission Against Corruption Ordinance
- The Prevention of Bribery Ordinance
- The Elections (Corrupt and Illegal Conduct) Ordinance

ICAC's mission statement has been stated as follows:

“With the community, the ICAC is committed to fighting corruption through effective law enforcement, education and prevention to help keep Hong Kong fair, just, stable and prosperous”.

The Hong Kong Ethics Development Centre of the ICAC is a non-profit making organisation established in 1995 under the auspices of the Community Relations Department of the ICAC. It is committed to promoting business and related ethics in Hong Kong on a long-term basis. The following mission statement appears on its website:

## Integrity-based management – the best guarantee for Ethics

### Our Mission

Together with the business community, we strive to promote business and professional ethics on a long-term basis to sustain a level-playing field in Hong Kong.

### Strategies:

**Alliance:** We build strategic alliance with the business community to achieve best results

**Client-focused:** We offer pragmatic and client-focused services to cater for specific needs

**Enlightenment:** We draw on ICAC cases to heighten awareness of corruption risks and ethical dilemmas

*Source:* [www.icac.org.hk/hkedc/eng/about\\_1.htm](http://www.icac.org.hk/hkedc/eng/about_1.htm) (April 2013)



### Case study: Supplier rebates

The Managing Director of a US-based multinational fast food chain, who climbed up the corporate ladder from being a trainee, brought disgrace on himself for accepting US\$300,000 (over HK\$2.3 million) in illegal rebates. Sending him to jail for four years and five months, the judge condemned him for flagrantly breaching the trust that his employer had in him. He was also reprimanded for setting a very bad example to all those who worked with and under him, many of whom were youngsters.

Using his influential position in the company, the defendant had demanded from a Thai supplier rebates amounting to 10% of the sales volume of the corn supplied to the chain.

Lacking knowledge about the local anti-corruption laws, the supplier conceded to the demands and remitted the bribes to the defendant's bank accounts.

Investigation was undertaken by Hong Kong's ICAC with assistance from the Thai and Singaporean authorities. Investigation revealed that the defendant had asked the supplier to claim that the illegal rebates were for their joint property investment on mainland China.

The defendant was subsequently convicted of perverting the course of public justice on top of bribery offences.

*Source:* ICAC Post March 2010, Issue No.9 [www.icac.org.hk](http://www.icac.org.hk)

## 7 Sustainability and corporate social responsibility



### Topic highlights

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Corporate social responsibility (CSR) is operating a business in a manner that meets or exceeds the ethical, legal, commercial and public expectations that society has of business. It is the way in which organisations achieve sustainable development.

CSR is a strategic issue since by addressing the impact it has on society and the environment a business may improve its economic performance.

Sustainable development, according to the Brundtland Commission (more formally known as the World Commission on Environment and Development) is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

Business for Social Responsibility, a global, non-profit organisation, defines corporate responsibility (CSR) as “operating a business in a manner that meets or exceeds the ethical, legal, commercial and public expectations that society has of business”.

There is growing awareness of social and environmental issues in business, particularly among large international investors as well as the general public, but also among the board of directors of some major companies.

The scope of CSR varies from business to business and may be reflected in charitable donations, environmental initiatives, involvement in community activities, employee relations, supply chain management, corporate governance and/or sustainable development.

Environmental concerns are mainly about pollution, global warming and unsustainable use of the world's natural resources. Social concerns relate to employees of companies and also to communities in which companies operate: safety at work is a particular issue.

## 7.1 Why pursue CSR?

As consumers become increasingly conscious of the need to be more environmentally friendly, some firms use their ethical stance as a key tool in establishing competitive advantage.

Increasingly, companies are acknowledging that CSR is good not only for their reputation but for the bottom-line as well. CSR is a strategic issue since by addressing the impact it has on society and the environment a business may improve its economic performance.

Potential benefits of pursuing CSR include:

- Opportunities to attract ethical customers and investors. Customers may be attracted by “green” products whose production and use do not cause damage to the environment. Some investors may choose to invest in companies with sustainable business development policies.
- Increased staff loyalty and morale. Employees may demonstrate greater loyalty to an employer that has enlightened social and environmental policies and practices.
- Protection or enhancement of reputation. Companies that demonstrate enlightened social and environmental policies are more likely to benefit from a favourable reputation with the general public and government, as well as customers, investors and employees.

For many companies, the potential **commercial benefits** are the main reason for CSR policies.

- As energy, water and other resources become more expensive and more scarce, there are commercial opportunities for new products and production methods that use less energy and less water. The ability to exploit new product opportunities or new environmentally-friendly technology may help to give a company competitive advantage over its rivals.
- Lower costs from water efficiency and energy efficiency. Companies must pay for the disposal of waste that they produce. Production methods that consume less energy, produce less waste or that recycle the waste may help to reduce costs.

Many firms seek to fulfil their own corporate social responsibility (CSR) commitments by demanding similar commitments from their suppliers. This gives rise to ethical procurement policies covering issues such as the human rights of workers, health and safety standards, environmental protection, fair contract terms and conditions, transparency of negotiation, bribes and inducements, fraud and corruption.

## 7.2 Reporting on CSR policies and performance

Most companies with CSR strategies choose to publish reports (at least annually) about their strategies and on their progress towards achieving the strategic objectives.

- It is important to recognise that currently CSR reporting is voluntary in most countries.
- Some countries have laws or regulations that require the disclosure of some aspects of environmental performance, such as carbon dioxide (CO<sub>2</sub>) emissions, but they do not require companies to publish CSR reports.
- CSR reporting is currently more common in countries where institutional investors are major shareholders. It is less common in countries where many large companies are family-owned or family-controlled, so that shareholder pressure for CSR reporting is much less.

### 7.2.1 What should CSR reports contain?

Corporate social responsibility reports are voluntary and there are no rules about what they should contain or what their format should be.

- CSR reports may contain quantified measures of social and environmental performance, but many reports are mainly narrative with a few quantified measurements.
- Companies may choose to report the favourable aspects of their social and environmental performance, but exclude the unfavourable aspects of performance. For example, a company may report on its success in reducing its emissions of carbon dioxide (CO<sub>2</sub>) but fail to report a large increase in accidents and deaths among employees at work.
- Without external auditing, there is no way of judging whether the performance figures in a CSR report are true or false. For this reason, many companies now arrange for an independent external organisation to carry out an audit of their social and environmental performance figures and provide a certification of their reliability in the CSR report.

The environmental concerns of companies can differ widely, according to the nature of their business. For example, the environmental concerns of a bank and a coal mining company or chemicals company are very different. This means that the information provided in CSR reports will differ according to the nature of the industry in which the company operates.

There are also different ways of measuring environmental performance. For example, CO<sub>2</sub> emissions can be measured by the amount of energy a company consumes, the volume of gas emissions at its manufacturing sites or the amount of fuel consumed by its motor vehicles. A method of simplifying measures of performance is required, to make comparisons between companies easier.

There has been some progress towards standardisation of CSR reports, so that reports of different companies can be compared more easily – especially reports of companies in the same industry. The Global Reporting Initiative (GRI) has developed reporting standards based on triple bottom line reporting (economic, environmental and social performance – see section 7.2.3).



### Case study: sustainability policies and sustainability reporting

A number of Hong Kong companies produce CSR reports/sustainability reports. One of these is the energy company CLP Group, which publishes online sustainability reports based on the Global Reporting Initiative. These reports are mainly narrative in form, but also contain quantified performance statistics on economic, environmental and social performance that are independently verified by an external auditing agency.

CLP Group is a major company with operations in many countries in the Asia-Pacific region, and it is aware of differing expectations about the social and environmental aspects of its operations in the different countries where it operates. For example, industry in China and India still relies heavily on the use of coal for energy, even though the use of coal creates large emissions of CO<sub>2</sub>, but Australia is a country where concerns about the use of coal have been increasing. Many people in

the Asia-Pacific region do not yet have any access to electricity, and providing them with electricity will have implications for the future – providing important social benefits but at the same time creating environmental damage.

CLP Group recognises that it needs to plan for the company's future as well as its short-term success, and that it also needs to find a balance between the economic, environmental and social aspects of its business. Its 2012 sustainability report commented: 'Not only should we report fully on the way in which we have delivered economic value to our shareholders (which is the main theme of the Annual Report) but also the social and environmental value that we create through generating and supplying power to the communities we serve in an environmentally responsible way (which is the main theme of this Sustainability Report).'

### Examples of CSR policies

CSR policies (sustainability policies) and goals vary between companies according to their circumstances and business environment. The CSR goals of CLP Group, set out in its 2012 Sustainability Report, are fairly typical of a company in a high-polluting industry. They include:

- Supplying energy reliably
- Zero injuries
- Support a healthy work force
- Earn and maintain community acceptance
- Operate our business ethically
- Move towards zero emissions
- Move towards a more sustainable rate of resource use
- Move towards no net loss of biodiversity.

## 7.2.2 CSR performance measures

When targets can be quantified for CSR policies, it should also be possible to quantify actual performance and compare this with the target. Users of a CSR report/sustainability report can then assess the success of the company in achieving progress over time towards its policy targets. Many companies that produce sustainability reports state their policy targets for a year in the future (say, 2020) and report each year on progress towards the target.

Quantified environmental performance measures may therefore include figures for:

- CO<sub>2</sub> emissions (compared with target or previous year)
- emissions of other toxic gases and chemicals
- the amount of waste produced in operations (toxic and non-toxic waste) and the amount of waste recycled
- the amount of water used/water recycled.

Social performance measures relating to employment may include:

- the number of accidents at work and the number of fatalities
- training days
- employee numbers

## 7.2.3 Sustainability reporting: global initiatives

There are a number of global initiatives to foster sustainable development and reporting on performance:

- (a) The Global Reporting Initiative (GRI), founded in 1997, is the world-wide standard-setter in sustainability reporting. Its mission is "to make sustainability reporting standard practice for all organisations". It defines sustainability reporting as "the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organisational performance



towards the goal of sustainable development”. The GRI's reporting guidelines are a global voluntary code which provide a standard framework for organisations to report on sustainability. The GRI format for sustainability reporting is a “triple bottom line” approach to reporting on economic, environmental and social performance:

- Economic – concerns the organisation's impacts on the economic conditions of its stakeholders and on economic systems at local, national, and global levels.
  - Environmental – concerns an organisation's impacts on living and non-living natural systems, including ecosystems, land, air, and water.
  - Social – concerns the impacts an organisation has on the social systems within which it operates.
- (b) The two leading global Socially Responsible Investment (SRI) indices are the Dow Jones Sustainability Index World (DJSI World) and the FTSE4Good Global.

The **Dow Jones Sustainability Indexes** (DJSI) were first published in 1999. There is a DJSI World Index and various regional indexes, including one for the Asia-Pacific region.

The DJSI is based on an analysis of the economic, environmental and social performance, of companies.

- Each Index measures and compares the sustainability performance of companies on the Index. The Indexes can be used by investors who want to include considerations of sustainability in their investment decisions.
  - The analysis of sustainability includes analysis of issues such as planning for climate change, energy consumption, corporate governance, risk management, supply chain standards and labour/employee policies and practices. Companies are selected for inclusion in an Index, and each year some companies are rejected from each Index and new companies are added.
- (c) The Hang Seng Corporate Sustainability Index Series, launched in 2010, measures the share price performance of large listed companies in Hong Kong and Mainland-listed A shares, for companies that perform well with respect to in corporate sustainability. This relatively new index series is intended to meet growing interest in sustainability investment, provide more transparent information to investors and contribute to the development of corporate sustainability in the region.

Companies listed on the DJSI, the FTSE4 Good Global Index and the Hang Seng Corporate Sustainability Index include Hang Seng Bank, HSBC, Hysan Development Company and MTR Corporation.



### Case study: The importance of sustainability to MTR Corp.

In its 2011 Sustainability Report, MTR Corporation commented:

‘As an organisation that operates with the perspective of a 100+ years in rail asset life, we think and plan in generations. We steward the company to meet the needs of the present without compromising the ability of future generations to meet theirs. This commits us to being transport at its best.

In fulfilling this commitment, we plan, build and operate our transport network to respond to evolving societal aspirations. At the same time we work to establish ourselves as a cornerstone of the sustainable development of the societies and institutions of tomorrow. We recognise and embrace the responsibilities this brings and actively seek a leading role in them.’

It states its mission as follows.

- Enhance customers' quality of life and anticipate their needs
- Actively engage in communities we serve
- Foster a company culture that staff can learn, grow and take pride in

- Provide sustainable returns to investors
- Set ourselves new standards through innovation and continuous improvement
- Grow in Hong Kong and mainland China and capture opportunities in Europe by extending our core competencies.

Source: [www.mtr.com.hk/eng/sustainability/index.html](http://www.mtr.com.hk/eng/sustainability/index.html)

### 7.3 Sustainable development in Hong Kong

The Council for Sustainable Development was established as one of the initiatives to promote sustainability in Hong Kong. The Council advises the government on environmental strategies for issues such as solid waste management, renewable energy and urban living space and has a fund to support initiatives that encourage sustainable practices.

In simple terms, sustainable development for Hong Kong means:

- finding ways to increase prosperity and improve the quality of life while reducing overall pollution and waste
- meeting our own needs and aspirations without doing damage to the prospects of future generations
- reducing the environmental burden we put on our neighbours and helping to preserve common resources

(Source: "1999 Policy Address")

It has been said that one barrier preventing Hong Kong companies from green reporting is the family-dominated structure of many of the territory's top listed companies.

"One of the biggest pressures back in Europe is actually coming from investors and stakeholders who are getting very worried about the risks associated with climate change. In Hong Kong, we have a lot of companies where dominant shares are still owned by families. Although they are listed companies, they are still operating in the same way as private companies." (Welford, CSR Asia)

### 7.4 The Environmental, Social and Governance Reporting Guide

In 2012, the Hong Kong Exchange announced an amendment to its main board Listing Rules to include a rule (Rule 13.91) whereby companies are 'encouraged' to produce an environmental, social and governance (ESG) report annually, either as a separate report or as part of the annual report. Where the report is published separately, the reporting period should ideally be the same period as in the annual report and accounts.

An Appendix to the Listing Rules contains an **Environmental, Social and Governance Reporting Guide**. This sets out subject areas, relevant aspects for each subject area, general disclosures and key performance indicators (KPIs) that may be included in the report, but companies are encouraged to identify subject areas and KPIs that are relevant to their business.

Companies 'may consider' offering assurance on the report.

The Environmental, Social and Governance Reporting Guide is divided into four subject areas:

- Workplace quality
- Environmental protection
- Operating practices
- Community involvement.

Corporate governance is not included because this is dealt with separately in a different part of the Listing Rules.

The Guide divides each of the four subject areas into aspects. For each aspect, the Guide indicates in general terms what the disclosures should cover, and presents a list of suggested KPIs. The aspects and general disclosures are shown in the following table.

Subject area and aspect	General disclosures
<b>A: Workplace quality</b>	
Working conditions	Information on compensation and dismissal, recruitment and promotion, working hours, equal opportunity, diversity, welfare. Also information on compliance and material non-compliance with relevant regulations.
Health and safety	Information on a safe working environment. Also information on compliance and material non-compliance with relevant regulations.
Development and training	Policy on improving employees' knowledge and skills. Description of training activities.
Labour standards	Policies on preventing child labour or forced labour; compliance and material non-compliance with relevant regulations.
<b>B: Environmental protection</b>	
Emissions	Policies on air and greenhouse gas emissions, discharges into water and land, generation of hazardous and non-hazardous wastes. Compliance and material non-compliance with relevant regulations.
Use of resources	Policies on efficient use of resources, including energy, water and raw materials.
The environment and natural resources	Policies on minimising the impact of the company's operations on the environment and natural resources.
<b>C: Operating practices</b>	
Supply chain management	Policies on managing the environmental and social risks of the supply chain, such as practices relating to the engagement of suppliers.
Product responsibility	Policies on health and safety, advertising, labelling products, privacy matters relating to services provided, methods of redress. Compliance and material non-compliance with relevant regulations.
Anti-corruption	Policies on bribery, extortion, fraud and money laundering. Compliance and material non-compliance with relevant regulations.
<b>D: Community investment</b>	
Community involvement	Policies on community engagement to understand the community's needs where the company operates and to ensure that the company's activities take into consideration the community's interests.

The new Rule 'encouraging' main board companies to produce an annual ESG report applies to companies with financial years ending after 31 December 2012.

## 8 Corporate governance



### Topic highlights

Corporate governance refers to the rules, systems and processes by which a company is directed and controlled. A variety of stakeholder groups have the power to influence a company's policies. It is the directors' duty to balance the conflicting demands of these stakeholders, while at the same time preserving the interests of the shareholders.

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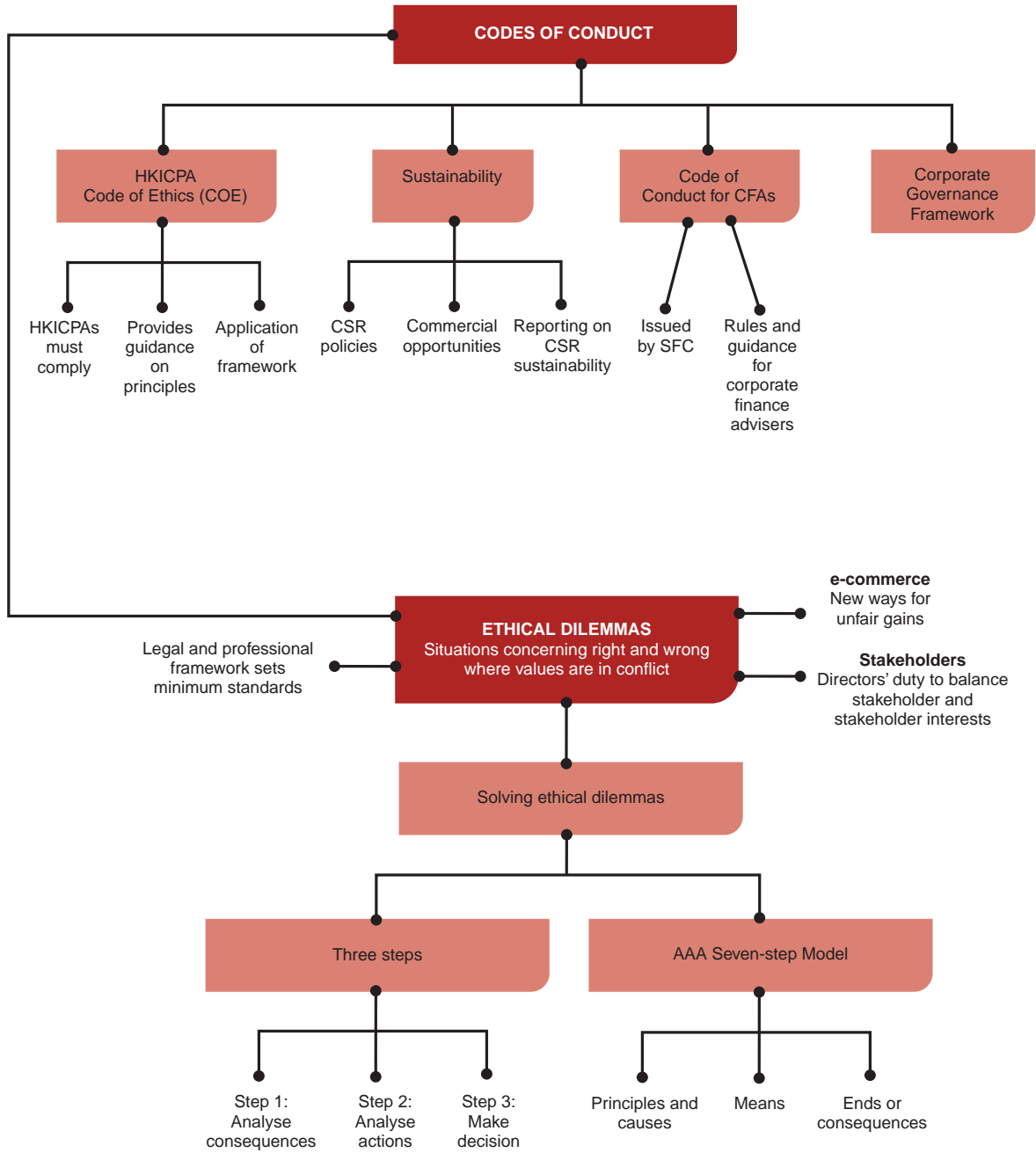
Corporate governance refers to the rules, systems and processes by which a company is directed and controlled. It influences the way in which a company deals with its stakeholders – shareholders, customers, employees and society at large. In the wake of financial scandals such as Enron, WorldCom, and the Asian financial crisis in the late 1990s, more emphasis has been placed on making sure that there are controls in place to monitor the way businesses operate and to prevent those in authority, such as the directors, from abusing their power.

The current framework of corporate governance in Hong Kong consists of both statutory requirements and non-statutory requirements.

Hong Kong's corporate governance standards are based on principles, as is also largely the case in other countries such as the UK and Canada. Directors have more discretion than under the rule-based approach adopted in the US which specifies expected behaviour (Sarbanes-Oxley Act). Statutory requirements cover matters such as fundamental shareholder rights, set out in the Companies Ordinance; and the disclosure of interests and insider trading (an illegal offence) in the Securities and Futures Ordinance.

The corporate governance framework is described in more detail in Chapter 15.

Topic recap



## Exam practice



## Yanah Petroleum

27 minutes

Sean is an associate in a professional accounting firm, Topadvice, which provides accounting and financial advisory services to their clients. Sean received his Degree in Finance four years ago and has recently qualified as a CPA. In his leisure time, he is fond of learning all kinds of technical and charting techniques for analysing the stock market. Sean always takes pride in his investment performance as the aggregate return over the last three years is now sufficient for the down payment of his 400-square-foot apartment. For this purchase, Sean is particularly grateful to his elder sister as she lent Sean \$50,000 to make his first investment in the stock market.

In Sean's recent research, Yanah Petroleum is his top pick as he has found that all the technical indicators support a forthcoming rally in the share price of Yanah. A potential return of 30% is almost beyond doubt – at least he believes so. Sean purchases the share at \$5. He learns from many other intelligent investors that placing a stop-loss order is a wise move to protect his investment. Hence, he requested his broker to keep a close eye on Yanah's share price and sell the shares without the need to get further instruction from him whenever the price drops below \$4.3. As usual, Sean called up his sister and told her his view on Yanah. He knew that his sister has followed him in the investment in Yanah and placed the same stop-loss order at \$4.3.

Last month, the vice-president of Topadvice asked Sean to join a team responsible for Project “Sunrise”, a merger and acquisition assignment. In the first working meeting, Sean realised that his firm was appointed by the Board of Yanah to provide independent advice on a takeover offer from a Chinese oil refinery company which was also a client of the firm for some capital structure advice. At the end of the meeting, the team leader reminded the members that the company policy forbids employees to trade the clients' shares. Sean believed that his investment in Yanah was made before the firm's appointment by Yanah, so he was in compliance with the policy as long as he does not sell the shares.

After a few weeks' work on the valuation of Yanah assets and several meetings with the senior management of the company, Sean has learnt about certain non-public information about the financial and operating position of Yanah. There was one piece of information that surprised Sean. In an internal Yanah memorandum that came to Sean's notice by accident, it was stated that the newly located oil field in Russia had a much lower oil reserve level than that which Yanah mentioned to the media earlier. In addition, the underground pressure of the oil reservoir was low which would require the use of some higher-cost extraction methods. Sean knew that if this information became public, Yanah's share price would fall through the critical support level on his technical chart. He was fully aware that it was a breach of company policy and professional ethical requirements if he sold his shares. Therefore, he stayed put on his own investment and only called up his sister to suggest that she might raise her stop-loss order to \$4.8.

*Required*

By reference to the HKICPA Code of Ethics for Professional Accountants, highlight the ethical issues in the case and suggest the appropriate actions that should be taken. **(15 marks)**

HKICPA February 2009

## Further reading



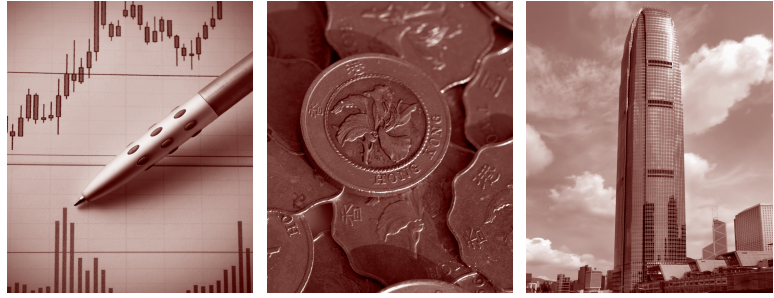
Corporate governance:

*Good Governance and Internal Control – A Corruption Prevention Guide for Listed Companies:*

[www.icac.org.hk/filemanager/en/Content\\_1031/listed\\_comp.pdf](http://www.icac.org.hk/filemanager/en/Content_1031/listed_comp.pdf)

Sustainability reporting:

<http://app1.hkicpa.org.hk/APLUS/0904/Five%20stories/Sustainability.pdf>



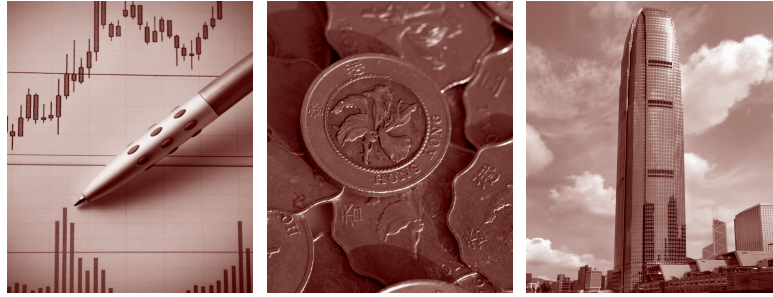
## Part B

# Executive management

The emphasis in this section is on setting the strategic direction of an organisation. The purpose of this section is to develop the candidates' ability to understand the overall strategic planning process, and to apply various models in the data gathering and analysis. After studying this section candidates should have tools at their disposal to evaluate the market environment and position, to evaluate the likely consequences of strategic choices and be able to recommend strategies to achieve strategic objectives.







## chapter 2

# Strategy formulation and choice

### Topic list

- 1 What is strategy?**
  - 1.1 Defining strategy
  - 1.2 Characteristics of strategic decisions
  - 1.3 Purpose of strategic management
  - 1.4 Overviews of steps involved in formulating strategies
- 2 Mission, goals and objectives**
  - 2.1 Mission statements
  - 2.2 Mission and planning
  - 2.3 Goals, objectives and targets
  - 2.4 A hierarchy of objectives
  - 2.5 Stakeholders
- 3 Levels of strategy**
  - 3.1 Definitions (based on the definitions used by JS&W)
  - 3.2 Levels of strategy in an organisation
- 4 Elements of strategic management**
  - 4.1 Strategic position
  - 4.2 Strategy into action (implementation)
- 5 A rational model**
- 6 Corporate appraisal: environmental analysis**
  - 6.1 The organisation in its environment
  - 6.2 Analysing the environment
  - 6.3 Environmental uncertainty
  - 6.4 PESTEL
  - 6.5 Scenario building
- 7 Corporate appraisal: Porter's five forces**
  - 7.1 The threat of new entrants (and barriers to entry to keep them out)
  - 7.2 The threat from substitute products
  - 7.3 The bargaining power of customers
  - 7.4 The bargaining power of suppliers
  - 7.5 The rivalry among current competitors in the industry
  - 7.6 Summary
  - 7.7 The sixth force
- 8 Corporate appraisal: resources and limiting factors**
  - 8.1 Resources
  - 8.2 Limiting factors
- 9 Corporate appraisal: position audit**
  - 9.1 SWOT analysis
  - 9.2 Gap analysis
  - 9.3 Value chain analysis
  - 9.4 Critical success factors
- 10 Corporate appraisal: product/service portfolio models**
  - 10.1 The product life cycle
  - 10.2 The Boston Consulting Group (BCG) matrix
- 11 Strategic choice: Ansoff matrix**
  - 11.1 The importance of market share
  - 11.2 Product – market mix (Ansoff matrix)
- 12 Strategic choice: Porter's generic strategies**
  - 12.1 The choice of competitive strategy
  - 12.2 Cost leadership
  - 12.3 Differentiation
  - 12.4 Generic strategies and the five forces
  - 12.5 Focus (or niche) strategy
  - 12.6 Which strategy?
  - 12.7 Conceptual difficulties with generic strategy
- 13 Strategic choice: industry life cycle**
- 14 Strategy evaluation and selection**
  - 14.1 Which strategy?
  - 14.2 Evaluation criteria
  - 14.3 Strategy development in uncertain times
- 15 Strategy implementation: relationship between strategic planning and budgeting**
  - 15.1 Strategy implementation
  - 15.2 Relationship between budgets and strategic planning

**Learning focus**

This chapter deals with the topic of business strategy (the long-term direction and development of an organisation). It covers the spectrum of business strategy from an internal and external analysis of an organisation's current position, through the strategic choices available to it and then the agreed strategy selection and implementation.

Modern strategic decisions are made in a world of complexity and uncertainty. If a strategy is to be successful, it must be appropriate to the organisation's situation and if an organisation is to be successful it must be able to adapt to its environment.

A range of models and techniques are covered in this chapter including PESTE, Porter's five forces, the value chain, SWOT, BCG matrix, product life cycle, Ansoff matrix and Porter's generic strategies. These can be used:

- to analyse and interpret a situation in order to identify key issues facing an organisation
- to generate ideas for future strategies or possible solutions for resolving problems
- as a framework for providing advice to clients.

**Learning outcomes**

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Strategic management</b>		
Analyse and advise upon an organisation's strategy		
<b>1.01</b>	<b>Strategy formulation process, including data gathering structures, SWOT analysis and PESTE analysis</b>	3
1.01.01	Describe the overall strategic planning process of an organisation	
1.01.02	Apply various models in data gathering and analyse the organisation's market environment and position	
1.01.03	Evaluate the likely consequences of strategic choices and recommend strategies to achieve an organisation's strategic objectives	

# 1 What is strategy?



## Topic highlights

**Strategy** is the direction and scope of an organisation over the long term, which achieves advantage in a changing environment through its configuration of resources and competencies with the aim of fulfilling stakeholder expectations. Strategic decisions are made under conditions of complexity and uncertainty; they have wide impact on the organisation and often lead to major change.

## 1.1 Defining strategy

Johnson, Scholes and Whittington (JS&W) explore the significance of strategy by considering the subject matter of strategic decisions. They discern six general areas for decision making that will normally be regarded as strategic.

- The organisation's **long-term direction**: no specific timescale is envisaged, but you should think in terms in excess of one year and more probably of about five years or more.
- The **scope** of an organisation's activities: this will include both the overall roles and purposes the organisation accepts for itself and the activities it undertakes in pursuit of them. Strategic planning considers the whole organisation.
- For commercial organisations and for many not-for-profit organisations too, strategy will be about gaining some kind of **advantage in competition**.
- Strategic management in some organisations will take the form of **adapting** their activities to **fit the business environment**. In its simplest form, this will involve adapting products and services to gradually changing customer requirements.
- A contrasting approach will be to **exploit unique resources** and the organisation's special **competencies** in particular. This approach sees the business environment as something that can be changed by the organisation's own actions.
- Strategic decisions are affected by the values and expectations of all of the organisation's **stakeholders**. Stakeholders are people who have a legitimate interest in what the organisation does.

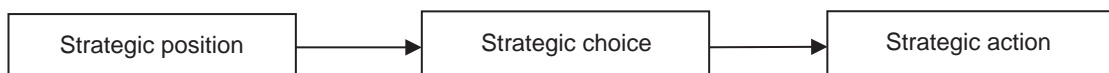
These six considerations lead JS&W to suggest the definition of strategy given below.



### Key term

**Strategy** is the direction and scope of an organisation over the long term, which achieves advantage in a changing environment through its configuration of resources and competencies with the aim of fulfilling stakeholder expectations.

If you look at this definition alongside this:



you should get some idea of the context of strategic decisions.

## 1.2 Characteristics of strategic decisions

Having defined the matters that require decisions of a strategic nature, JS&W go on to describe some important characteristics of the strategic decisions themselves.

- (a) Decisions about strategy are likely to be complex since there are likely to be a number of significant factors to take into consideration and a variety of possible outcomes to balance against one another.
- (b) There is likely to be a high degree of uncertainty surrounding a strategic decision, both about the precise nature of current circumstances and about the likely consequences of any course of action.
- (c) Strategic decisions have extensive impact on operational decision making; that is, decisions at lower levels in the organisation.
- (d) Strategic decisions affect the organisation as a whole and require processes that cross operational and functional boundaries within it. An integrated approach is therefore required.
- (e) Strategic decisions are likely to lead to change within the organisation as resource capacity is adjusted to permit new courses of action. Changes with implications for organisational culture are particularly complex and difficult to manage.

### 1.3 Purpose of strategic management

Strategic management enables all of the following through

- (a) providing a framework for the organisation which states clear long-term goals and ensures harmony of objectives (goal congruence);
- (b) creating milestones to assess the achievement of goals and to monitor progress;
- (c) detecting and responding to changes in market and environmental forces in order to improve performance;
- (d) improving relationships with and perceptions of stakeholders;
- (e) developing the potential of future management and aid succession planning.

### 1.4 Overviews of steps involved in formulating strategies

- Step 1** Conduct a corporate appraisal (assess the internal and external environment of the organisation).
- Step 2** Set mission and objectives – the long-term aims of the organisation may be broken down into shorter-term, more measurable targets.
- Step 3** Gap analysis – compare forecast performance with strategic objectives to expose “gaps” which need to be filled by new or different strategies.
- Step 4** Strategic choice – generate options and evaluate them to decide on which ones have the potential to succeed.
- Step 5** Strategy implementation – carry out the strategy at corporate, business and functional level.

Each of these will be considered in more detail as we progress through the chapter.

## 2 Mission, goals and objectives



### Topic highlights

Strategies are developed in order to achieve desired outcomes. These are inherent in the organisation's mission or defining purpose. Mission guides strategic decisions and provides values and a sense of direction.

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## 2.1 Mission statements

Mission statements are formal documents that state the organisation's mission. They are published within organisations in order to promote desired behaviour, support for strategy and purpose, adherence to core values and adoption of policies and standards of behaviour.

Some, however, are suspicious of mission statements, stating that they are often:

- public relations exercises rather than an accurate portrayal of the firm's actual values
- full of generalisations that are impossible to tie down to specific strategic implications
- ignored by the people responsible for formulating or implementing strategy.

## 2.2 Mission and planning

The mission statement can play an important role in the strategic planning process in the following ways:

- (a) Inspires and informs planning. Plans should further the organisation's goals and be consistent with its core values.
- (b) Screening. Mission acts as a yardstick by which plans are judged.
- (c) Mission also affects the implementation of a planned strategy in terms of the ways in which the firm carries out its business and the culture of the organisation.

## 2.3 Goals, objectives and targets



### Topic highlights

A structure of goals and objectives derive from mission and support it. All the parts of this structure should be mutually supportive.

An understanding of the organisation's mission is invaluable for setting and controlling the overall functioning and progress of the organisation. However, it is possible for an organisation to operate reasonably effectively even if most of the people within it have only an intuitive or vague understanding of its purpose. Most people's work is defined in terms of far more specific and immediate things to be achieved: if these things are related in some way to the wider purpose, the organisation will function.

Loosely speaking, these "things to be achieved" are the goals, objectives and targets of the various departments, offices, and individuals that make up the organisation. In more effective organisations goal congruence will be achieved: all these disparate goals, objectives and targets will be consistent with one another and will operate together to support progress with the mission.

## 2.4 A hierarchy of objectives

A simple model of the relationship between the various goals, objectives and targets is a pyramid analogous to the traditional organisational hierarchy. At the top is the overall mission. This is supported by a small number of wide-ranging goals, which may correspond to overall departmental or functional responsibilities. For a business, a primary, corporate objective will be the return offered to shareholders, however this is measured. There may be other primary objectives and there will certainly be supporting objectives for costs, innovation, markets, products and so on.

Each of the high level goals is supported in turn by more detailed, subordinate goals. These may correspond, perhaps, to the responsibilities of the senior managers in the function concerned. A more modern pattern is for the hierarchy (and indeed many other aspects of the organisation) to be based on major value-creating processes rather than on functional departments. In any event, the pattern is continued downwards until we reach the work targets of individual members of the organisation.

Objectives should be SMART. This acronym originally stood for the qualities listed below:

Specific	Measurable	Achievable	Realistic	Time-related
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Today, 'realistic' is often replaced with 'results-focused', for two reasons:

- (a) The current pursuit of innovation as a route to competitive advantage makes it very important that management attention is directed towards achieving results rather than just administering established processes.
- (b) 'Realistic' means much the same thing as 'achievable'.

## 2.5 Stakeholders



### Topic highlights

Goals and objectives are often set with **stakeholders** in mind. For a business, adding value for shareholders is a prime corporate objective, but other stakeholders need to be satisfied. There is no agreement as to the extent of the **social** or **ethical** responsibilities of a business.

As discussed in Chapter 1 **public opinion** and attitudes, and **legal and political pressures**, mean that organisations can **no longer concentrate solely on financial corporate objectives**. Environmental and social obligations now play a part in shaping an organisation's objectives.



### Key term

**Stakeholders** are groups of people or individuals who have a legitimate interest in the activities of an organisation. They include customers, employees, the community, shareholders, suppliers and lenders.

There are three broad types of stakeholder in an organisation:

- **Internal** stakeholders (employees, management)
- **Connected** stakeholders (shareholders, customers, suppliers, financiers)
- **External** stakeholders (the community, government, pressure groups)

The stakeholder approach suggests that **corporate objectives** are, or should be, **shaped** and **influenced** by **those** who have **sufficient involvement or interest** in the organisation's operational activities.

### 2.5.1 Internal stakeholders: employees and management

Because employees and management are so **intimately connected** with the company, their objectives are likely to have a **strong influence** on how it is run. They are interested in the following issues:

- (a) The **organisation's continuation and growth**. Management and employees have a special interest in the organisation's continued existence.
- (b) Managers and employees have **individual interests** and goals which can be harnessed to the goals of the organisation.
  - Jobs/careers
  - Money
  - Benefits
  - Satisfaction
  - Promotion

For managers and employees, an organisation's social obligations will include the provision of safe working conditions and anti-discrimination policies.

### 2.5.2 Connected stakeholders

**Increasing shareholder value** should assume a **core role** in the strategic management of a business. If **management performance** is **measured and rewarded by reference to changes in**

**shareholder value** then shareholders will be happy, because managers are likely to **encourage long-term share price growth**.

Connected stakeholder	Interests to defend
<b>Shareholders (corporate strategy)</b>	<ul style="list-style-type: none"> <li>• Increase in shareholder wealth, measured by profitability, P/E (price/earnings) ratios, market capitalisation, dividends and yield</li> <li>• Risk</li> </ul>
<b>Bankers (cash flows)</b>	<ul style="list-style-type: none"> <li>• Security of loan</li> <li>• Adherence to loan agreements</li> </ul>
<b>Suppliers (purchase strategy)</b>	<ul style="list-style-type: none"> <li>• Profitable sales</li> <li>• Long-term relationship</li> <li>• Payment for goods</li> </ul>
<b>Customers (product market strategy)</b>	<ul style="list-style-type: none"> <li>• Goods as promised</li> <li>• Future benefits</li> </ul>

Even though **shareholders** are deemed to be interested in return on investment and/or capital appreciation, many also want to **invest in ethically-sound** organisations.

### 2.5.3 External stakeholders

External stakeholder groups – the government, local authorities, pressure groups, the community at large, professional bodies – are likely to have quite diverse objectives.

External stakeholder	Interests to defend
<b>Government</b>	<ul style="list-style-type: none"> <li>• Jobs, training, tax</li> </ul>
<b>Interest/pressure groups/charities/“civil society”</b>	<ul style="list-style-type: none"> <li>• Pollution</li> <li>• Rights</li> <li>• Other</li> </ul>

It is external stakeholders in particular who **induce social and ethical obligations**.

## 3 Levels of strategy



### Topic highlights

There are three levels of strategy in an organisation.

- **Corporate:** the general direction of the whole organisation.
- **Business:** how the organisation or its SBUs tackle particular markets.
- **Operational/functional:** specific strategies for different departments of the business.

(Hofer and Schendel)

The field of business strategy has its own vocabulary that you must become familiar with. Unfortunately, there is no generally accepted list of definitions and you may encounter a variety of usages. JS&W provide a very useful list.

### 3.1 Definitions (based on the definitions used by JS&W)



#### Key terms

**Mission.** The organisation's overriding purpose; it reflects the values or expectations of stakeholders and answers the question “what business are we in?”.

**Vision or strategic intent.** The future state desired by the organisation's strategists: they aim to guide the organisation's collective aspiration toward it.



A **goal**. Statement of a general aim or purpose that supports the mission. It may be qualitative in nature.

An **objective**. A more specific aim or purpose and will probably be quantified.

**Strategic capability**. Flows from resources and competencies. Unique resources and core competencies create competitive advantage.

A **business model**. Describes the structure of product, service and information flows between the parties involved.

**Strategic control**. Has two parts, first monitoring the effectiveness of strategies and actions and second taking corrective action when required.

## 3.2 Levels of strategy in an organisation

Hofer and Schendel refer to three levels of strategy:

- (a) **Corporate**: the general direction of the whole organisation
- (b) **Business**: how the organisation or its SBUs tackle particular markets
- (c) **Operational/functional**: specific strategies for different departments of the business.

Any level of the organisation can have objectives and devise strategies to achieve them. The strategic management process is multi-layered.

The distinction between corporate and business strategy arises because of the development of the divisionalised business organisation, which typically has a corporate centre and a number of **strategic business units** (SBUs) dealing with particular markets. Corporate HQ allocates resources and exercises overall financial control while SBUs are each responsible for their own product-market strategies. Operational strategies are then developed for component parts of SBUs.

### 3.2.1 Corporate strategies

Corporate strategy is concerned with the overall purpose and scope of the organisation and how value will be added to the different parts (business units) of the organisation.

#### Defining aspects of corporate strategy (JS&W)

Characteristic	Comment
<b>Scope of activities</b>	Strategy and strategic management impact upon the whole organisation: all parts of the business operation should support and further the strategic plan.
<b>Expectations of stakeholders</b>	There may be a mission statement, but in any case, stakeholder expectations must be prioritised and managed.
<b>Resources</b>	Strategy involves choices about allocating or obtaining corporate resources now and in the future.

### 3.2.2 Business-level strategy

Business strategy is about how to compete successfully in particular markets (JS&W). Business-level strategy is about the particular and distinct combination of products and markets dealt with by one business unit.

A business unit might be a small, independent organisation or part of a larger one. In the first case, business and corporate strategy merge with one another; in the second, SBU level strategies must be co-ordinated with corporate strategy and with each other.

### 3.2.3 Operational strategies

Operational strategies are concerned with how the component parts of an organisation deliver effectively the corporate- and business-level strategies in terms of resources, processes and people (JS&W).

Much operational strategy is created by individual business functions and delivered by them.

Functional area	Comment
<b>Marketing</b>	Devising products and services, pricing, promoting and distributing them, in order to satisfy customer needs at a profit. Marketing and corporate strategies are interrelated.
<b>Production</b>	Factory location, manufacturing techniques, outsourcing and so on.
<b>Finance</b>	Ensuring that the firm has enough financial resources to fund its other strategies by identifying sources of finance and using them effectively.
<b>Human resources management</b>	Secure personnel of the right skills in the right quantity at the right time, and to ensure that they have the right skills and values to promote the firm's overall goals.
<b>Information systems</b>	A firm's information systems are becoming increasingly important, as an item of expenditure, as administrative support and as a tool for competitive strength. Not all information technology applications are strategic, and the strategic value of IT will vary from case to case.
<b>R&amp;D</b>	New products and techniques.



### Illustration: Levels of strategy

Boruc Corporation sells widgets. The finance director says: “We plan to issue more shares to raise money for new plant capacity – we don't want loan finance – which will enable us to compete better in the vital and growing widget markets of Latin America. After all, we've promised the shareholders 5% profit growth this year, and trading is tough”.

What are the corporate, business and functional strategies in the above statement?

- The corporate objective is profit growth.
- The corporate strategy is the decision that entering new markets, rather than producing new products will achieve this.
- The business strategy suggests that those markets include Latin America.
- The operational or functional strategy involves the decision to invest in new plant (the production function), which is to be financed by shares rather than loans (the finance function).

## 4 Elements of strategic management



### Topic highlights

JS&W suggest a three-part structure for thinking about strategy.

- (1) Strategic **position**
- (2) Strategic **choices**
- (3) Strategy into action (**implementation**)

This is known as the rational planning model.

### 4.1 Strategic position

The strategic managers must attempt to understand the organisation's strategic position. There are three main groups of influences to consider: the **environment**, **strategic capability** and the **expectations of stakeholders**.

### 4.1.1 The environment

The environment of business includes wider political, economic, social, technological, environmentally conscious and legal forces as well as the more immediate pressures of business competition. It is both complex and subject to constant change, to an extent that probably precludes complete understanding. However, if the more salient aspects of the environment can be identified and described, they may be diagnosed into opportunities and threats.

### 4.1.2 Strategic capability

The organisation's resources and competencies make up its strategic capability. This may be analysed into strengths and weaknesses; these influence, enable or constrain possible future strategic choices.

### 4.1.3 Stakeholders' expectations

Strategy is made in order to achieve the organisation's purpose. This may have a formal, even legal, definition and corporate governance may be a relevant issue. Consideration must also be given to the expectations of stakeholder groups that have a less formal relationship with the organisation. Stakeholder power and interest influence the direction in which strategy evolves, as do ethical issues.

### 4.1.4 Strategic choices

Strategic choices are made at both the corporate and business unit level. At the level of the business unit, these choices are about how to achieve competitive advantage and are based on an understanding of customers and markets. At the corporate level, strategy is primarily about scope: this is concerned with the overall product/business portfolio, the spread of markets and the relationship between business units and the corporate centre.

Strategic choices must also be made about the direction and method of development.

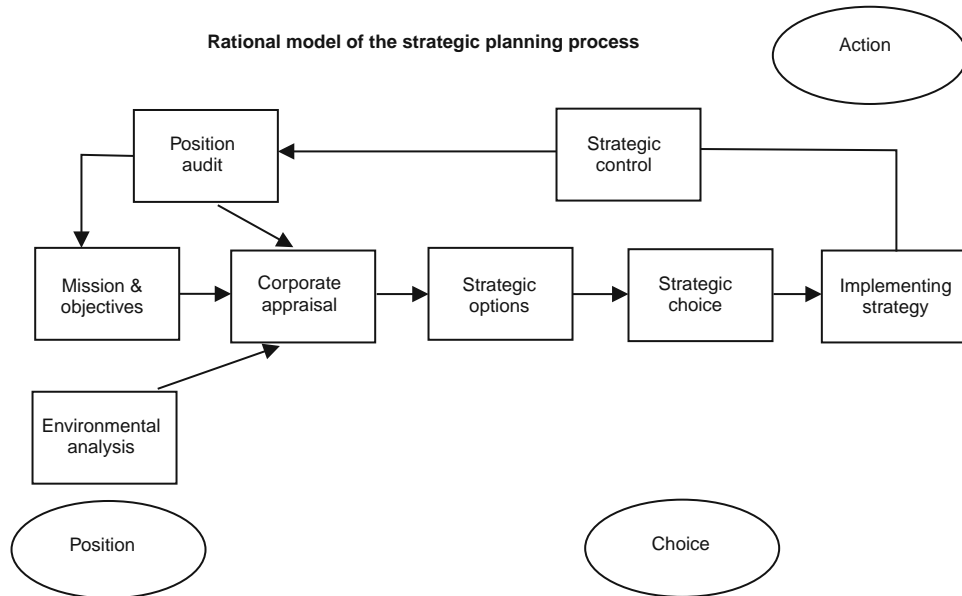
## 4.2 Strategy into action (implementation)

Strategies must be made to work in practice. Major issues here include structuring, enabling and change.

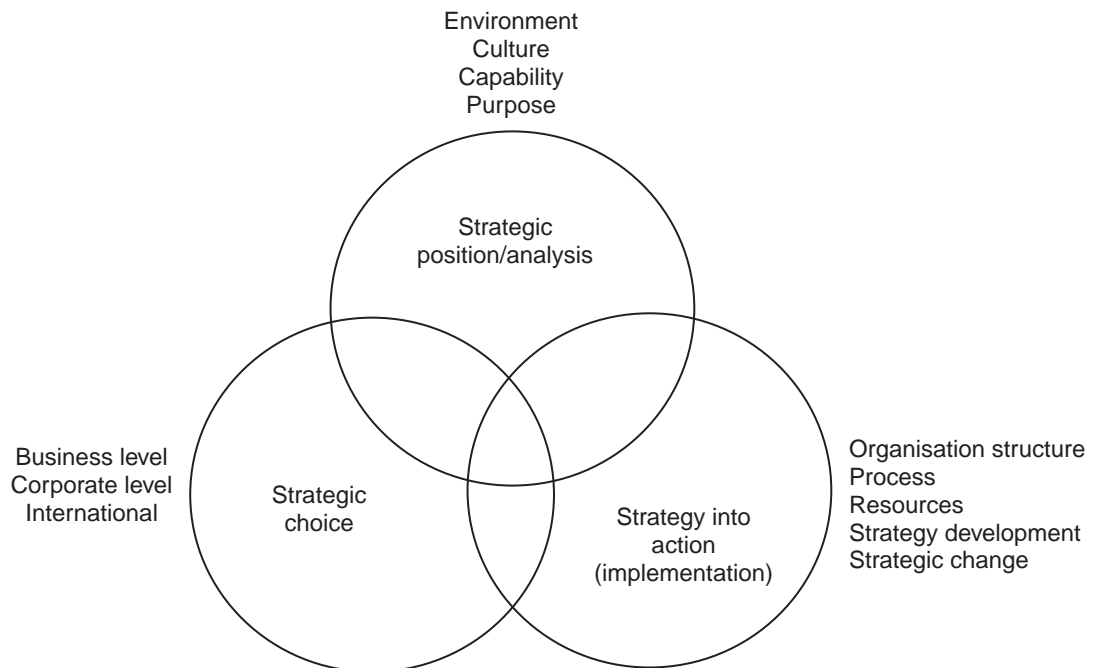
- (a) Structuring includes processes, relationships, organisation structure and how these elements work together.
- (b) Enabling is the complex two-way process by which the organisation's resources are managed to both support and to create strategies.
- (c) Change is a very common feature of strategic development and the management of change is a most important feature of strategic implementation.

## 5 A rational model

JS&W's model for thinking about strategy is a rational model, as illustrated below.



However, whereas the rational model is usually presented as a linear model, JS&W also recognise the interdependencies between analysis, choice and implementation.



## 6 Corporate appraisal: environmental analysis



### Topic highlights

Strategic position may involve an internal and/or external analysis of the business using models such as PESTEL, SWOT and Porter's five forces.

## 6.1 The organisation in its environment

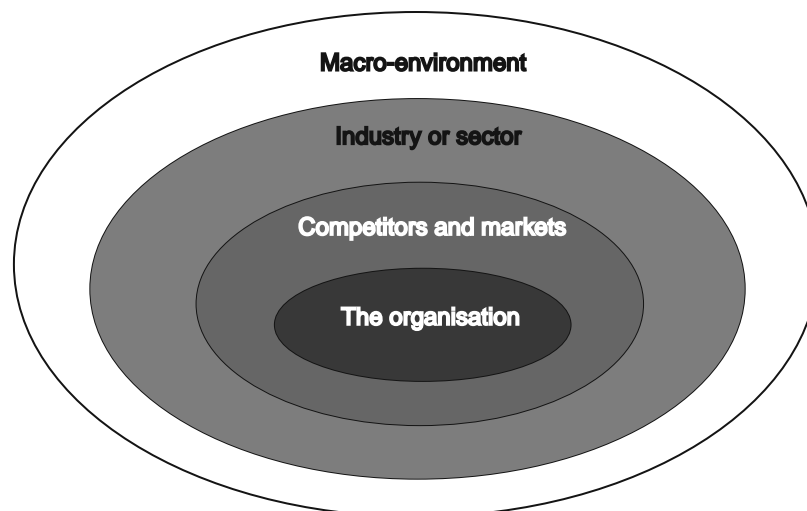
All organisations are open systems, i.e. they exist within a complex environment and have a variety of interchanges with that environment, both receiving inputs from it and providing outputs to it. Organisations try to control the nature of their outputs, but very few of them can control more than a few of the inputs they receive. Understanding the nature of the business environment and the changes taking place within it is therefore a vital part of business analysis.

## 6.2 Analysing the environment

The environment may be divided for convenience into three concentric layers:

- **Macro-environment**
- **Industry** or sector
- **Competitors and markets**

The layers and the elements within them all interact with one another. We will divide the environment into a variety of components in order to explain it. The environmental influences affecting an organisation do not come in neatly labelled packages however, and there are complex interactions between the elements.



## 6.3 Environmental uncertainty

Environmental uncertainty depends on the degree of **complexity** and the degree of **stability** present. A large part of business strategy consists of making the organisation's interaction with its environment as efficient as possible. In the context of strategic management, therefore, the degree of uncertainty in the environment is of great importance. The greater the uncertainty, the greater the strategic challenge.

Uncertainty depends on complexity and stability: the more complex or dynamic the environment is, the more uncertain it is.

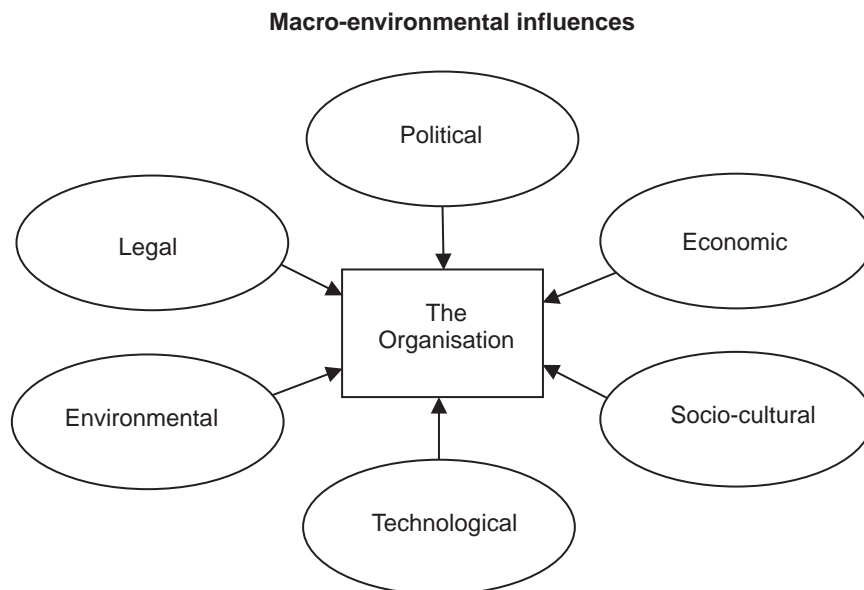
- (a) An uncomplicated, stable environment can be dealt with as a matter of routine. The security and efficiency of a mechanistic or bureaucratic approach to management can be exploited. Since the future is likely to resemble the past, extrapolation from history is a satisfactory way of preparing for future events.
- (b) Where the environment is dynamic, the management approach must emphasise response to rapid change. Scenario planning, intuition and a learning approach are all valid features of such a response.
- (c) Complexity makes an environment difficult to understand. Diversity of operations and technological advance contribute to complexity. Complexity is difficult to analyse. It may be that it is best dealt with by a combination of experience and extensive decentralisation.

## 6.4 PESTEL

The macro-environment may be analysed into five or six segments using the PESTE or PESTEL framework. Using the six segments of PESTEL, the analysis of the macro-environment is commonly based on breaking it down into a handful of major aspects:

- **P**olitical
- **E**conomic
- **S**ocio-cultural
- **T**echnological
- **E**nvironmental protection
- **L**egal

The difference between the PESTE and PESTEL is that the legal aspect is incorporated with political aspect.



“PESTEL” is a useful checklist for general environmental factors, but remember in the real world these factors are often interlinked. Any single environmental development can have implications for all six PESTEL aspects. In particular, political, legal, social and economic affairs tend to be closely related. Do not spend too much time in the exam trying to categorise whether a factor is political, social, economic or so on. The important thing is that you recognise the relevant factors, not whether you get them in the right category.

**Note.** As noted above, the acronym PESTEL is sometimes replaced by PESTE; SLEPT, in which the environmental protection aspect is folded into the other five; or even by STEEPLE, where the extra “E” stands for ethics.

Remember, though, that PESTEL is only concerned with the external environment, not the internal capabilities of an organisation.

### 6.4.1 The political environment

Government is responsible for providing a stable framework for economic activity and, in particular, for maintaining and improving the physical, social and market infrastructure. Public policy on competition and consumer protection is particularly relevant to business strategy.

Government policy affects the whole economy, and governments are responsible for enforcing and creating a stable framework in which business can be done. A report by the World Bank indicated that the quality of government policy is important in providing three things:

- (1) Physical infrastructure (for example, transport)
- (2) Social infrastructure (education, a welfare safety net, law enforcement, equal opportunities)

## (3) Market infrastructure (enforceable contracts, policing corruption)

Political change complicates the planning activities of many firms. Here is a checklist which shows a sequence of considerations:

Consideration	Example
<b>Possibility of political change</b>	Effect on economic policies
<b>Likely nature of impact</b>	Change in taxes and interest rates
<b>Consequences</b>	Cash flow and availability of resources
<b>Coping strategies</b>	Cash flow planning
<b>Influence on decision making</b>	Lobbying and publicity

Companies may try to anticipate changes in the law. The governing party's election manifesto should be a guide to its political priorities, even if these are not implemented immediately. Also, the government often publishes advance information about its plans for consultation purposes.

The political risk in a decision is the risk that political factors will invalidate the strategy and perhaps severely damage the firm. Examples are wars, political chaos, corruption and nationalisation.

Jeannot and Hennessey outlined a political risk checklist. Companies should ask the following:

- How stable is the host country's political system?
- How strong is the host government's commitment to specific rules of the game, such as ownership or contractual rights, given its ideology and power position?
- How long is the government likely to remain in power?
- If the present government is succeeded, how would the specific rules of the game change?
- What would be the effects of any expected changes in the specific rules of the game?
- In light of those effects, what decisions and actions should be taken now?

## 6.4.2 The economic environment



### Topic highlights

The economic environment is an important influence at local and national level.

The economic environment affects firms at national and international level, both in the general level of economic activity and in particular variables, such as exchange rates, interest rates and inflation.

Factor	Potential impacts
<b>Overall growth or fall in gross domestic product</b>	Increased/decreased demand for goods (for example, dishwashers) and services (for example, holidays)
<b>Local economic trends</b>	Type of industry in the area, office/factory rents, labour rates, property prices
<b>Inflation</b>	Low in most countries, distorts business decisions, wage inflation compensates for price inflation
<b>Interest rates</b>	How much it costs to borrow money affects cash flow, some companies carry a high level of debt, consumer spending is affected by rises in interest rates
<b>Tax levels</b>	Corporate tax affects how much firms can invest or return to shareholders, income tax affects how much consumers have to spend therefore affects demand
<b>Government spending</b>	Suppliers to the government (for example, construction firms) are affected by spending

Factor	Potential impacts
<b>The business cycle</b>	Economic activity is always punctuated by periods of growth followed by decline, simply because of the nature of trade. Government policy can cause, exacerbate or mitigate such trends, but cannot abolish the business cycle. (Industries that prosper when others are declining are called counter-cyclical industries.)

The forecast state of the economy will influence the planning process for organisations that operate within it. In times of boom and increased demand and consumption, the overall planning problem will be to identify the demand. Conversely, in times of recession, the emphasis will be on cost-effectiveness, continuing profitability, survival and competition.

#### Impact of international factors on the economic environment

Factor	Potential impacts
<b>Exchange rates</b>	Cost of imports, selling prices and value of exports; cost of hedging against fluctuations
<b>Characteristics of overseas markets</b>	Desirable overseas markets (demand) or sources of supply (cheap imports?)
<b>International capital markets</b>	Generally, advanced economies accept that supply and demand set the value of their currencies, using interest rates only to control inflation
<b>Large multinational companies (MNCs)</b>	MNCs have huge turnovers and significant political influence because of governments' desire to attract capital investment
<b>Government policy on trade/protection</b>	Cost of barriers to trade, effect on supplier interests of free trade, erection of reciprocal barriers, possibility of dumping

Fairly obviously, there is constant and large-scale interaction between government and the economy through the various aspects of government economic policy.

### 6.4.3 The socio-cultural environment

The social and cultural environment features long-term social trends and people's beliefs and attitudes.

Factor	Comment
<b>Growth</b>	The rate of growth or decline in a national population and in regional populations
<b>Age</b>	Changes in the age distribution of the population. In some countries, there will be an increasing proportion of the national population over retirement age. In developing countries there are very large numbers of young people
<b>Geography</b>	The concentration of population into certain geographical areas
<b>Ethnicity</b>	A population might contain groups with different ethnic origins from the majority
<b>Household and family structure</b>	A household is the basic social unit and the number of children might determine its size, whether elderly parents live at home and so on
<b>Social structure</b>	The population of a society can be broken down into a number of subgroups, with different attitudes and access to economic resources. Social class, however, is hard to measure (as people's subjective perceptions vary)
<b>Employment</b>	In part, this is related to changes in the workplace. Many people believe that there is a move to a casual flexible workforce; factories will have a group of core employees, supplemented by a group of insecure peripheral employees, on part-time or temporary contracts, working as and when required. Some research indicates a "two-tier" society split between "work-rich" (with two wage earners) and "work-poor". However, despite some claims, most employees are in permanent, full-time employment



Factor	Comment
<b>Wealth</b>	Rising standards of living lead to increased demand for certain types of consumer good. This is why developing countries are attractive as markets

#### 6.4.4 The technological environment



##### Topic highlights

Technological developments can affect all aspects of business, not just products and services.

Technology contributes to overall economic growth. There are three ways in which technology can increase total output:

- Gains in productivity (more output per units of input)
- Reduced costs (for example, transportation technology)
- New types of product

##### Possible effects of technological change on organisations

- The type of products or services that are made and sold.
- The way in which products are made (for example, process automation, new raw materials).
- The way in which goods and services are sold. For example, the growth of direct selling via the Internet has had a significant impact on business strategy.
- The way in which markets are identified. Database systems make it much easier to analyse the market place.
- The way in which firms are managed. IT encourages de-layering of organisational hierarchies (reducing the number of levels in the management hierarchy), home-working, and better communication. Technology has also enabled greater integration between buyers and suppliers via the use of extranets.
- The means and extent of communications with external clients. The financial sector is rapidly going electronic, with continuing developments for example in online banking and electronic cash.

#### 6.4.5 Environmental protection



##### Topic highlights

Environmental protection is now a key aspect of corporate social responsibility. Pressure on businesses for better environmental performance is coming from many quarters.

The physical environment is important for logistical reasons, as a source of resources, and because of increasing regulation.

- **Resource inputs.** Managing physical resources successfully (for example, oil companies, mining companies) is a good source of profits.
- **Logistics.** The physical environment presents logistical problems or opportunities to organisations. Proximity to road and rail links can be a reason for placing a warehouse in a particular area.
- **Government.** The physical environment is under government influence (for example, with rules where a building and necessary infrastructure can be sited or regulations about some of the organisation's environmental interactions).
- **Disasters.** In some countries, the physical environment can pose a major threat to organisations. For example, a major earthquake struck the Sichuan province in China in May 2008, three months before the Beijing Olympics. More recently, a major earthquake and

tsunami devastated the Japanese economy in March 2011 and prompted global concern about the safety of nuclear energy.

The impact of business activity on the physical environment is now a major concern. Companies are under pressure to incorporate measures to protect the environment into their plans. This presents both challenges and opportunities, since some measures will impose costs, but others will allow significant savings. There is also a new range of markets for goods and services designed to protect or have minimum impact on the environment.

Pressures on businesses for environmental action are increasing. Factors to consider include those listed below:

- (a) Consumer demand for products that appear to be environmentally friendly (for example, wood from sustainable forests)
- (b) Demand for less pollution from industry
- (c) Greater regulation by government (for example, recycling targets)
- (d) Demand that businesses be charged with the external cost of their activities
- (e) Scarcity of non-renewable resources (for example, the need to find alternative fuels to replace oil when current reserves run out)
- (f) Opportunities to develop products and technologies that are environmentally friendly
- (g) Taxes (for example, some sort of tax on landfill or excess packaging or similar)

Companies with poor environmental performance may face increased cost of capital because investors and lenders demand a higher risk premium. Also, pressure group campaigns can cause damage to reputation and/or additional costs.

#### 6.4.6 The legal environment

The following list highlights possible legal factors affecting all companies.

Factor	Example
<b>General legal framework: contract, tort, agency</b>	Basic ways of doing business, negligence proceedings, ownership, rights and responsibilities, property
<b>Criminal law</b>	Theft, insider dealing; bribery, deception, industrial espionage
<b>Company law</b>	Directors and their duties, reporting requirements, takeover proceedings, shareholders' rights, insolvency
<b>Employment law</b>	Trade Union recognition, minimum wage, unfair dismissal, redundancy, maternity
<b>Health and safety</b>	Fire precautions, safety procedures
<b>Data protection</b>	Use of information about employees and customers
<b>Marketing and sales</b>	Laws to protect consumers (for example, refunds and replacement, "cooling off" period after credit agreements), what is or isn't allowed in advertising
<b>Environment</b>	Pollution control, waste disposal
<b>Tax law</b>	Corporate tax payment, collection of income tax
<b>Competition law</b>	General illegality of cartels

Some legal and regulatory factors affect particular industries, if the public interest is served. This is for either of two reasons:

- The industries are, effectively, monopolies
- Large sums of public money are involved

## 6.5 Scenario building

The past is not necessarily a good guide to the future. It may be so in simple static conditions, but more complex or dynamic environments require sophisticated techniques such as the use of leading indicators and scenarios.

Forecasting attempts to reduce the uncertainty managers face. In simple and static conditions, the past is a relatively good guide to the future, though, of course, this is not the case in dynamic or complex conditions.

- (a) Time series analysis uses past data to distinguish seasonal and other cyclical fluctuations from long-term underlying trends.
- (b) Regression analysis is a quantitative technique to check any underlying correlations between two variables (for example, sales of ice cream and the weather). The relationship between two variables may only hold between certain values. (You would expect ice cream consumption to rise as the temperature becomes hotter, but there is probably a maximum number of ice creams an individual can consume in a day, no matter how hot it is.)

Econometric models are used for medium-term forecasting. Econometrics is the study of economic variables and their interrelationships.

- (a) Leading indicators are indicators that change before market demand changes. For example, a sudden increase in the birth rate would be an indicator of future demand for children's clothes.
- (b) The ability to predict the span of time between a change in the indicator and a change in market demand is important. Change in an indicator is especially useful for demand forecasting when they reach their highest or lowest points (when an increase turns into a decline or *vice versa*).

### 6.5.1 Scenarios

Macro scenarios are used to consider possible future environmental conditions overall. Industry scenarios deal with an individual industry in more detail. Because the environment is so complex, it is easy to become overwhelmed by the many factors. Firms therefore try to model the future and the technique is scenario building.



#### Key term

A **scenario** is a detailed and consistent view of how the business environment of an organisation might develop in the future (JS&W).

Scenarios are built with reference to key influences and change drivers in the environment. They inevitably deal with conditions of high uncertainty, so they are not forecasts. They are, rather, internally consistent views of potential future conditions.

Macro scenarios use macro-economic or political factors, creating alternative views of the future environment (for example, global economic growth, political changes, interest rates).

## 7 Corporate appraisal: Porter's five forces



### Topic highlights

Porter's five forces considers the competitive forces in an organisation's industry.

Porter's "five forces" is one of the most important and influential models in the field of strategy.

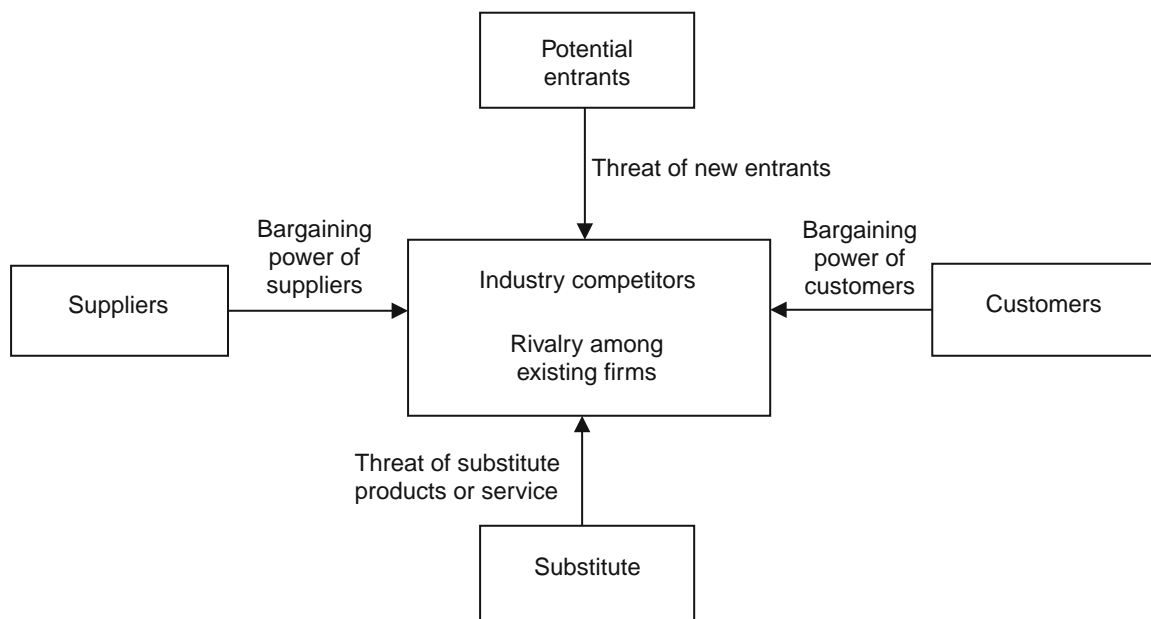
In discussing competition, Michael Porter (*Competitive Strategy*) distinguishes between factors that characterise the nature of competition.

- In one industry compared with another (for example, in the chemicals industry compared with the clothing retail industry, some factors make one industry as a whole potentially more profitable than another i.e. yielding a bigger return on investment).
- Factors within a particular industry lead to the competitive strategies that individual firms might select.

Five competitive forces influence the state of competition in an industry, and collectively determine the profit potential of the industry as a whole:

- (1) The threat of new entrants to the industry
- (2) The threat of substitute products or services
- (3) The bargaining power of customers
- (4) The bargaining power of suppliers
- (5) The rivalry amongst current competitors in the industry.

Where any of these competitive forces is strong, the potential for any company to make large profits in the industry is restricted. This consideration should therefore affect strategic planning for the future.



## 7.1 The threat of new entrants (and barriers to entry to keep them out)

A new entrant into an industry will bring extra capacity and more competition (and so could, in turn, drive down profits). The strength of this threat is likely to vary from industry to industry and depends on two things:

- The strength of the barriers to entry (barriers to entry discourage new entrants)
- The likely response of existing competitors to the new entrant

Barriers to entry include the following:

- Scale economies.** High fixed costs often imply a high breakeven point, and a high breakeven point depends on a large volume of sales. If the market as a whole is not growing, the new entrant has to capture a large slice of the market from existing competitors. This is expensive (although Japanese companies have done this in some cases).
- Product differentiation.** Existing firms in an industry may have built up a good brand image and strong customer loyalty over a long period of time. A few firms may promote a large number of brands to crowd out the competition.

- (c) **Capital requirements.** When capital investment requirements are high, the barrier against new entrants will be strong, particularly when the investment would possibly be high-risk. For example, there are only three manufacturers of engines for large airliners in the world: General Electric, Pratt & Whitney and Rolls-Royce. Such is the nature of the technology, the cost of entry for a new competitor would be tens of billions of dollars.
- (d) **Knowledge requirements.** As well as high capital requirements, knowledge and know-how are also a barrier to entry. It is much more difficult to enter an industry which requires significant specialist knowledge and skills than an industry where no specialist skills are required.
- (e) **Switching costs.** Switching costs refer to the costs (time, money, convenience) that a customer would have to incur by switching from one supplier's products to another's. Although it might cost a consumer nothing to switch from one brand of frozen peas to another, the potential costs for the retailer or distributor might be high.
- (f) **Access to distribution channels.** Distribution channels carry a manufacturer's products to the end-buyer. New distribution channels are difficult to establish, and existing distribution channels are hard to gain access to.
- (g) **Cost advantages of existing producers,** independent of economies of scale, include patent rights, experience and know-how, government subsidies and regulations as well as favoured access to raw materials.

Entry barriers might be lowered by the impact of change, for example:

- Changes in the environment
- Technological changes (including the Internet)
- New distribution channels for products or services (again, including the Internet)
- The general impact of e-commerce and the Internet, because they have enabled new business models to be established.

## 7.2 The threat from substitute products

A substitute product is a good or service produced by another industry, which satisfies the same customer needs. Substitutes are always present, but they can be easy to overlook because they may be very different from the industry's product. For example, videoconferencing could be a substitute for business travel.

It is very easy to misunderstand the nature of substitute products in Porter's model: while they provide competition, they are not goods or services produced by competitors in the same industry.

When the threat of substitutes is high, industry profitability suffers. Substitute products or services limit an industry's profit potential by placing a ceiling on prices (because buyers will switch to the substitute if it offers a better value alternative).

The threat of a substitute is high if:

- it offers an attractive alternative to the industry's product in terms of price and performance
- the buyer's cost of switching to the substitute is low.

## 7.3 The bargaining power of customers

Customers want better quality products and services at a lower price. Satisfying this want might force down the profitability of suppliers in the industry. Just how strong the position of customers will be depends on a number of factors:

- (a) How much the customer buys
- (b) How many buyers there are: if there are relatively few buyers but each is large relative to the supplier, then the buyers will be powerful

- (c) How critical the product is to the customer's own business (if the customer is completely reliant on a product this will reduce the customer's bargaining power)
- (d) Switching costs (i.e. the cost of switching supplier)
- (e) Whether the products are standard items (hence easily copied) or specialised
- (f) The customer's own profitability: a customer who makes low profits will be forced to insist on low prices from suppliers
- (g) Customer's ability to bypass the supplier (or take over the supplier)
- (h) The skills of the customer purchasing staff, or the price-awareness of consumers
- (i) When product quality is important to the customer, the customer is less likely to be price-sensitive, and so the industry might be more profitable as a consequence.

## 7.4 The bargaining power of suppliers

Suppliers can exert pressure for higher prices. The ability of suppliers to get higher prices depends on several factors:

- (a) Whether there are just one or two dominant suppliers to the industry, able to charge monopoly or oligopoly prices
- (b) The threat of new entrants or substitute products to the supplier's industry
- (c) Whether the suppliers have other customers outside the industry, and do not rely on the industry for the majority of their sales
- (d) The importance of the supplier's product to the customer's business
- (e) Whether the supplier has a differentiated product which buyers need to obtain
- (f) Whether switching costs for customers would be high.

## 7.5 The rivalry among current competitors in the industry

The intensity of competitive rivalry within an industry will affect the profitability of the industry as a whole. Competitive actions might take the form of price competition, advertising battles, sales promotion campaigns, introducing new products for the market, improving after-sales service or providing guarantees or warranties. Competition can stimulate demand, expanding the market, or it can leave demand unchanged, in which case individual competitors will make less money, unless they are able to cut costs.

### Factors determining the intensity of competition

- (a) **Market growth:** Rivalry is intensified when firms are competing for a greater market share in a total market where growth is slow or stagnant.
- (b) **Cost structure:** High fixed costs are a temptation to compete on price, as in the short run any contribution from sales is better than none at all. A perishable product produces the same effect.
- (c) **Switching:** Suppliers will compete if buyers can, and do, switch easily (for example, Coke v Pepsi).
- (d) **Capacity:** A supplier might need to achieve a substantial increase in output capacity, in order to obtain reductions in unit costs.
- (e) **Uncertainty:** When one firm is not sure what another is up to, there is a tendency to respond to the uncertainty by formulating a more competitive strategy.
- (f) **Strategic importance:** If success is a prime strategic objective, firms will be likely to act very competitively to meet their targets.

- (g) **Exit barriers:** These make it difficult for an existing supplier to leave the industry and take many forms:
- (i) Non-current assets with a low break-up value (for example, there may be no other use for them, or they may be old)
  - (ii) The cost of redundancy payments to employees
  - (iii) If the firm is a division or subsidiary of a larger enterprise, the effect of withdrawal on the other operations within the group
  - (iv) The reluctance of managers to admit defeat, their loyalty to employees and their fear for their own jobs
  - (v) Government pressures on major employers not to shut down operations, especially when competition comes from foreign producers rather than other domestic producers.

## 7.6 Summary

The five forces are critical to industry profitability because they influence the prices, costs, and required investment in an industry.

As the collective strength of the five forces increases, the profitability of the industry declines and *vice versa*. For example:

- (1) The threat of new organisations entering the market limits the prices that can be charged for products, and also means that investment is required to deter new entrants.
- (2) Intensity of rivalry between existing competitors is a major influence on both prices and costs. This may be determined by many factors, including level of industry growth, differences between products and brand identities.
- (3) The size of the market for a product is reduced by the emergence of substitute products.
- (4) Powerful customers can drive down prices but also demand a more costly (and hence less profitable) service.
- (5) The bargaining power of suppliers determines the cost of raw materials and other inputs.

## 7.7 The sixth force

Porter's framework has been criticised by some strategists because of the following assumptions:

- Uncertainty is low so it is possible to plan for and respond to competitive behaviour.
- Structural advantage (creating barriers to entry) is a key source of value.
- Buyers, competitors and suppliers are unrelated and do not interact or collude.

### 7.7.1 Complementors

In the mid 1990s Brandenburger and Nalebuff added the concept of a sixth force: **complementors** to explain the reasoning behind strategic alliances.

Complementors are organisations that have products or services that make an organisation's products more competitive (and *vice versa*), e.g. Microsoft Windows and McAfee's anti-virus software. In essence, they are an alternative to substitutes.

Complementors offer great potential for strategy since their interests are likely to be closely aligned with those of the organisation concerned.

Strategies include:

- (a) Provide the complements individually
- (b) Subsidise the provision of complements by others
- (c) Be subsidised to provide the complement
- (d) Form a jointly funded complement provider

Complementors may mean that firms in a competitive industry co-operate with each other, e.g. tobacco companies providing funding for a research institute.

Without the right complementors, strategy may fail, e.g. the development of Internet retail organisations requires consumers to have high-speed connections.

### 7.7.2 Political and social context

Others argue that the sixth force includes government and/or the pressure applied by the public interest. Government regulation and intervention can drastically change the dynamics of an industry, and some industries are more exposed than others (e.g. pharmaceuticals, tobacco, defence).

Similar to government, the public (in the form of pressure groups, lobbyists, trends and so on) can play an important role in the dynamics of an industry.

Public pressure may reduce the price that companies are able to charge, increase costs as a result of having to respond in a certain way (e.g. to environmental concerns) and may even result in a company having to change its investment strategy (e.g. avoid producing in certain countries due to concerns over the exploitation of labour).

The argument is that as the public interest increasingly becomes an economic one, firms cannot ignore this in their decision making.



#### Example: Porter's five forces

McDonald's Corporation is a well known fast food chain which operates in many countries around the world. The McDonald's chain has been operating in Hong Kong since 1975, when the first restaurant was opened in Paterson Street, Causeway Bay. Today there are over 200 McDonald's restaurants in Hong Kong, and more than 10,000 McDonald's staff (including part-time staff). In recent years, the company has opened a chain of McCafe restaurants, in a bid to appeal to a different type of customer, seeking a more relaxed café experience and food.

The challenge for McDonald's Corporation is truly global – to be the world's best quick-service restaurant experience. This vision is supported by five global strategies:

- (1) Develop the organisation's people, beginning in its restaurants
- (2) Foster innovation in menu, facilities, marketing, operations and technology
- (3) Share best practices and leverage best people resources around the world
- (4) Continue to implement change in the McDonald's organisation, and
- (5) Re-invent the quick-service restaurant category and develop other business and growth opportunities

Decades ago, McDonald's changed the restaurant business dramatically with its emphasis on quality food and fast service in a clean store environment. Founder Ray Kroc had a feeling this type of setting would be a big hit with the American public. He was right. With over 30,000 stores in over 120 countries, the McDonald's store operating model has now set the standard in the industry.

Knowing its position is challenged daily, management at McDonald's in Hong Kong has placed its stores in convenient locations. When people are hungry, McDonald's wants to be there when the first hunger pangs strike. Once in the restaurant, employee focus is directed at making each customer's experience one of quality, all the way from hassle-free service to the perception of value and store cleanliness.

There are many factors that affect the company's ability to maintain its position in the industry and fulfil its vision. These factors focus on financial performance, customers, employees and store operational execution. Success in all areas is critical because they are all interrelated. If performance is poor in one area, such as customer satisfaction, it could trigger poor performance in another, such as lower sales. Likewise, if employees are not committed or satisfied, it could result in poor customer satisfaction.



*Required*

Based on the brief scenario above and your personal knowledge of McDonald's, carry out the following:

- (1) Analyse the competitive environment of McDonald's using Porter's five forces industry analysis, together with the sixth force – complementarity.
- (2) Comment on which force appears to be the strongest, and which appears to be the weakest.

**Solution**

- (1) *Analysis of five forces, plus the sixth force*

**Competitors:** There are numerous competitors in the quick service restaurant category, from large corporations such as Burger King and KFC, to small local establishments in each community where McDonald's has a store. It is easy to copy a new product or match a price change, keeping competition fierce.

**Potential entrants:** Barriers to entry in the restaurant business are relatively low. Labour and food are the largest recurring costs in store operations. The cost of facilities is not so great as to discourage new entrants. (Your own local community may bear this out – how often do new restaurants open?) At the corporate level, managers are not so concerned with new entrants since McDonald's has so many stores (around 30,000) in communities of all sizes around the globe. Also, in Hong Kong, with over 200 restaurants, McDonald's is in a strong position.

**Equivalent products:** Customers can choose to cook meals at home or buy supermarket take-out meals instead of visiting a restaurant. If you also consider impulse food purchases outside of regular meal times, any outlet offering food could be considered equivalent. Market food stalls, convenience stores and petrol station outlets would fit in this category. McDonald's acknowledges that few people plan a meal out at one of their stores, so they try to locate them in high-traffic areas. When hunger strikes – McDonald's want to be the choice.

**Bargaining power of customers:** This can be viewed from two perspectives – consumers and business partners. Customers have tremendous bargaining power since they have so many food choices available. Making customers happy is critical to the company's continued success. The bargaining power of business partners, on the other hand, depends on the partner. For example, in the US, McDonald's has entered into agreements with Wal-Mart stores to put smaller, scaled-down restaurants in some of its stores. Wal-Mart exerts considerable bargaining power over its suppliers. Alternatively, a shopping mall may strongly desire McDonald's presence in its food court, and therefore, may offer concessions and very favourable terms in order to attract them.

**Bargaining power of suppliers:** With over 30,000 stores in about 120 countries, including 200 in Hong Kong, McDonald's is in a good position to negotiate its terms with suppliers. And the suppliers get to add McDonald's name to their client list. In the past, the company has gone so far as to literally buy the farm to vertically integrate its food supply chain. If you consider labour (employees) in this category, the analysis changes to some degree. For example, in periods of low unemployment, it may be difficult to attract qualified workers. McDonald's must take action to keep employees happy and committed to their jobs so they remain with the company for a reasonable period.

**Complementarity:** There are a number of complementary businesses which supply products to McDonald's Hong Kong. Perhaps the two main ones would be the suppliers of the specialty buns for the hamburgers, and also the suppliers of the ground beef. The fortunes of these suppliers are dependent on the success of McDonald's.

- (2) *Strongest and weakest forces*

This may be an interesting debate. It might be argued that customers are the strongest force since, arguably they drive store success. Without them, there would be no McDonald's.

As to the weakest force, there may again be debate. It is worth noting that corporate management has indicated that they are not all that concerned about the threat of new entrants, due to their size.

It may be instructive to revisit the McDonald's scenario and consider which strategy the company seems to be pursuing in Hong Kong; cost leadership, differentiation, or focus.

When questioned about this topic in the USA, McDonald's management agreed that it was not a focus strategy. However, they were hesitant to make a choice between differentiation and cost leadership. Several of the company's strategies point to product differentiation through product innovation. Perhaps you can name some examples of product innovation – the McDLT, pizza and pasta (people didn't want to wait for a pizza at McDonald's), Happy Meals and Value Meals are just a few. Also the opening of the McCafes may be seen as a form of product innovation, although some may see it as a competitive response to an existing trend.

Cost leadership is also apparent in McDonald's actions. There is constant pressure to drive costs out of operations. Restaurant food waste is tracked, and standards exist for the preparation of each food item on the menu. Special dispensers deliver the precise amount of soft drink for each cup size, and in many stores scales are used to weigh french fry portions. Their products could be considered similar to competitors' offerings, so lower selling prices rather than unique products or services provide a measure of competitive advantage.

On balance, it would seem that cost leadership dominates.

## 8 Corporate appraisal: resources and limiting factors

### 8.1 Resources



#### Topic highlights

Resource audits identify human, financial and material resources and how they are deployed.



#### Key term

A **resource audit** is a review of all aspects of the resources the organisation uses.

The **9Ms model** categorises the resources/factors as follows:

Resource	Example
<b>Machinery</b>	Age. Condition. Utilisation rate. Value. Replacement cost. Technologically up-to-date?
<b>Make-up</b>	Culture and structure. Patents. Goodwill. Brands.
<b>Management</b>	Size. Skills. Loyalty. Career progression. Structure.
<b>Management information</b>	Ability to generate and disseminate ideas. Innovation. Information systems.
<b>Markets</b>	Products and customers. Specialised or general. Regional, national, international?
<b>Materials</b>	Source. Suppliers and partnering. Waste. New materials. Cost. Availability. Future provision.
<b>Men and women</b>	Number. Skills. Efficiency. Industrial relations. Adaptability. Innovatory capacity. Wage costs (as proportion of total costs?). Labour turnover.
<b>Methods</b>	How are activities carried out? Outsourcing, JIT, Quality (Six Sigma; TQM).
<b>Money</b>	Credit and turnover periods. Cash surpluses/deficits. Short-term and long-term finance. Gearing levels. Bad debts.

**Unique resources** are particularly valuable and an important source of competitive advantage.



### Key term

A **unique resource** is one which is both better than its equivalent employed by competitors and difficult to imitate.

Resources are of no value unless they are organised into systems, and so a resource audit should go on to consider how well or how badly resources have been utilised, and whether the organisation's systems are effective and efficient.

## 8.2 Limiting factors

Every organisation operates under resource constraints.



### Key term

A **limiting factor** or key factor is a factor which at any time or over a period may limit the activity of an entity, often one where there is shortage or difficulty of supply.

Examples might include:

- a shortage of production capacity
- a limited number of key personnel, such as salespeople with technical knowledge
- a restricted distribution network
- too few managers with knowledge about finance, or overseas markets
- inadequate research design resources to develop new products or services
- a poor system of strategic intelligence
- lack of money
- a lack of adequately trained staff

Once the limiting factor has been identified, the planners should do two things:

- (1) In the short term, make best use of the resources available
- (2) Try to reduce the limitation in the long term.

## 9 Corporate appraisal: position audit



### Topic highlights

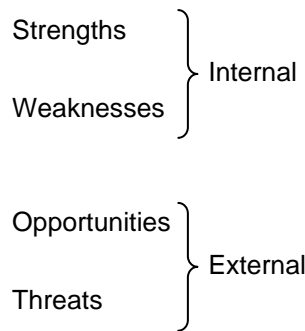
Strategic position may involve an internal and/or external analysis of the business using models such as PESTEL, SWOT and Porter's five forces.

### 9.1 SWOT analysis



#### Key terms

**Corporate appraisal** could be defined as “a critical assessment of the strengths and weaknesses, opportunities and threats (**SWOT analysis**) in relation to the internal and environmental factors affecting an organisation in order to establish its condition prior to the preparation of a long-term plan”. Such a definition places SWOT analysis at the heart of any corporate review.



By focusing attention on broad strategic issues, SWOT analysis ensures that senior managers have to forget about daily operational issues. SWOT analysis is concerned with both internal and external changes and where these are rapid, failure to address the need for matching organisational changes can lead to stagnation and decline. SWOT analysis provides a stimulus and a framework for broader planning issues.

SWOT analysis is a systematic method for detailing the strengths, weaknesses, opportunities and threats to an organisation. It attempts to provide a picture of the organisation's position relative to the impact of important internal and external factors and is therefore a useful part of the first step in formulating strategies. The issues that are typically considered in preparing a SWOT analysis are:

- financial performance
- competitiveness
- market impact
- environmental factors

The analysis should explicitly consider the extent to which the objectives of the organisation, as set out in the mission statement and business plan, are being achieved. The SWOT analysis may result in the modification of some objectives due to the gap between the objectives and what is practically attainable.

How can we start a SWOT analysis? One approach is to follow these four steps:

- Step 1** List the key factors for success.
- Step 2** Outline the major outside influences and their impact on our business.
- Step 3** Give an assessment of our company versus our competitors. Highlight the differential strengths and weaknesses.
- Step 4** Give an explanation for good or bad performance.

A potential problem with SWOT analysis is the development of a long list of unweighted factors. If the situation review is to be of assistance to strategic planning, these factors must ultimately be ranked in order of priority to the organisation. This allows for greater focus when developing specific strategies.

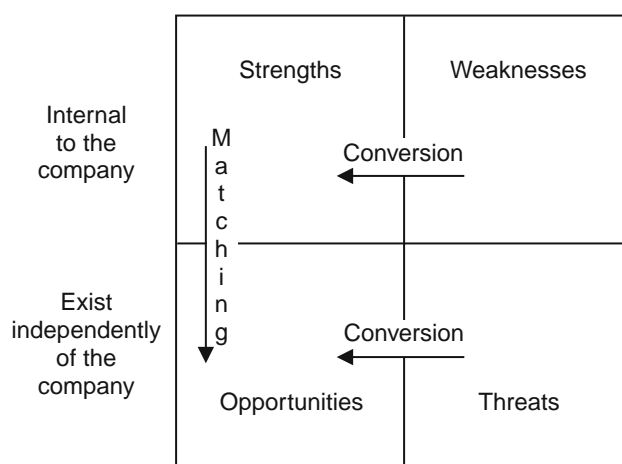
A way of organising the four factors is in a table, as follows:

Strengths	Weaknesses
Opportunities	Threats

Some examples that might be uncovered by an in-depth SWOT analysis:

Strengths (Internal)	Weaknesses (Internal)
Market dominance	Share weakness
Core strengths	Few core strengths, low on key skills
Economies of scale	Old plant with higher costs than competition
Low cost position	Weak finances and poor cash flows
Leadership and management skills	Management skills and leadership lacking
Financial and cash resources	Poor record on innovation
Manufacturing ability and age of equipment	Weak organisation with poor architecture
Innovation processes and results	Poor quality products
Architecture network	Weak reputation
Reputation	Products not differentiated
Differentiated products	Dependent on few products
Products or service quality	Share weakness
Opportunities (External)	Threats (External)
Competitor weakness	New market entrants
New takeover or partnership opportunities	Increased competition
New market and segments	Increased pressure from customers
New products	Increased pressure from suppliers
Market growth	Substitutes
Diversification opportunities	Low market growth
Strategic space	Economic downturn
Change in political environment	Technological threat
Change in economic environment	Change in political environment
Demographic and social change	Change in economic environment
Economic upturn	Demographic change
International growth	New international; barriers to trade

Internal/external analysis and SWOT/PESTEL provide useful tools to evaluate a business's current position and to assist in guiding strategy formulation.



**Example: SWOT analysis**

The Hong Kong Jockey Club is one of the largest racing organisations in the world. Horse racing is the most popular spectator sport in Hong Kong and through its subsidiaries, the Club is the only authorised operator of horse racing. It also operates the Mark Six lottery and under Government authority offers betting on football matches held outside Hong Kong.

The Club is the largest single taxpayer in Hong Kong – it accounts for about 7% of all taxes collected by the Government's Inland Revenue Department. A unique feature of the Club, much admired worldwide, is its not-for-profit business model whereby its surplus goes to charity. Over the past decade, the Club has donated an average of one billion Hong Kong dollars every year to

hundreds of charities and community projects. Today, the Club ranks alongside organisations such as the Rockefeller Foundation as one of the biggest charity donors in the world.

The Club is also one of the largest employers in Hong Kong, with some 5,500 full-time and 21,000 part-time staff.

The racing arm of the Hong Kong Jockey Club operates two thoroughbred race tracks in Hong Kong – at Happy Valley and Sha Tin. Racing is held at Happy Valley on Wednesdays mostly in the evenings, and at Sha Tin on Sundays mostly in the daytime.

Racing facilities in Hong Kong are among the finest in the world. Happy Valley's historic race track at Happy Valley, with its spectacular cityscape setting, offers racegoers a truly electric atmosphere, especially during night meetings.

Sha Tin Racecourse, opened in 1978, boasts some of the world's most sophisticated racing facilities and plays host to Hong Kong's major international events. Its high-resolution diamond vision screen is the longest TV display in the world, while the covered Parade Ring sets new standards of comfort and access for racing fans with its unique, retractable paddock roof.

### *Required*

Access the website of the Hong Kong Jockey Club ([www.hkjc.com/english/](http://www.hkjc.com/english/)) and address the following issues:

- (1) Outline the Vision and Mission of the Hong Kong Jockey Club.
- (2) Carry out a brief SWOT analysis of the Hong Kong Jockey Club. In this identify at least four items under each category. (**Note:** It is recognised that there may be more than four possible items under each category, and that acceptable answers may vary in content.)

### **Solution**

- (1) *Vision and Mission*

Vision – To be a world leader in the provision of horse racing, sporting and betting entertainment, and Hong Kong's premier charity and community benefactor.

Mission – To provide total customer satisfaction through meeting the expectations of all Club customers and stakeholders – the racing and betting public; lottery players; Club Members; charities and community organisations; Government; and ultimately, the people of Hong Kong and thereby be one of Hong Kong's most respected organisations.

- (2) *SWOT analysis*

(**Note:** This list of strengths, weaknesses, opportunities and threats is not exhaustive. Some candidates may list alternative or additional items, and still produce an acceptable answer.)

#### **Strengths** (Internal)

- Very strong brand recognition as one of the premier thoroughbred racing organisations in the world
- Strong financial position
- Excellent race track, especially at Sha Tin
- Attracts high quality horses, trainers, jockeys and administrators from overseas
- Strong government support, enhanced by high tax revenues for government
- Recognised as largest charity donor in Hong Kong

#### **Weaknesses** (Internal)

- Reliance on overseas horse stocks – that is, there is no local breeding operation, due to environmental and climatic conditions
- Heavy reliance on overseas trainers and jockeys

- Limited land for expansion – none at Happy Valley
- As a corollary of limited land, there is pressure on training facilities
- Possible perception that racing is not for young people

**Opportunities** (External)

- Expansion of racing product into mainland China
- Expansion of wagering to casino operations in Hong Kong, as a challenge to Macau
- Strategic alliances with other racing organisations in the Pacific Rim, including Japan, Australia, New Zealand and California
- Establish own breeding operations in Pacific Rim countries
- Increase usage of racecourse facilities for functions, catering and conferences on non-race days

**Threats** (External)

- Alternative forms of wagering (e.g. Macau casinos, online betting)
- Political interference, either overtly or in the form of increased taxation of wagering
- Equine disease – this happened in Australia in 2008-2009 and curtailed racing in a major market for six months
- Erosion of wagering income due to rise in popularity of other forms of gambling
- Lack of clarity about who are the primary stakeholders of the Club

## 9.2 Gap analysis



**Key term**

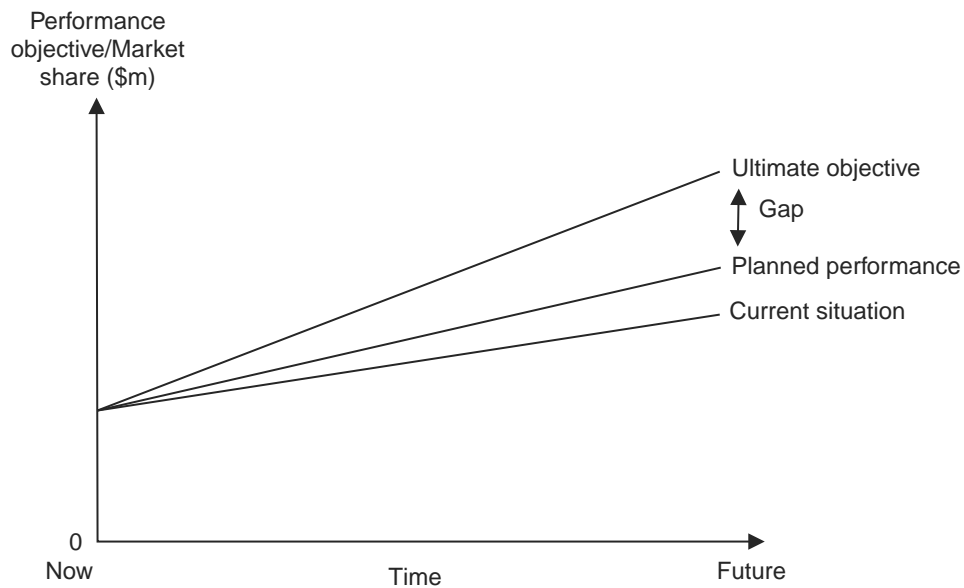
**Gap analysis** is an approach that measures and analyses the gap between the planned objectives of the company and its extrapolated existing performance. It is, therefore, the gap between the planned achievement and where the business will be if it does nothing.

Although the gap is usually expressed in quantitative terms, such as profits or earnings, subjective elements could be equally important.

Momentum lines are projections of pursuing an existing strategy without major changes.

A strategic gap is the shortfall between the targeted performance and the current forecast of the firm's future performance (i.e. the projected momentum line), at a specific point of time in the future.

### Identifying the gap



The current forecast of the firm's future performance (i.e. the momentum line for future planned projections) is based on two assumptions:

- That no changes are made to existing strategies
- That the firm will continue to react to external events in the same way as it has in the past.

What is the value in having a momentum line for the ultimate objective if it is unlikely to be a realistic estimate of future performance?

- It helps to forecast the need for new strategies.
- Standing still may be better than changing just for the sake of it.
- Incorporating new strategies would make accuracy even more difficult.
- Simple momentum lines remove some of the complexity of real-life situations.
- The work on preparing momentum lines highlights the important indicators.
- It can highlight the speed and size of recent change.

## 9.3 Value chain analysis



### Topic highlights

The **value chain** describes those activities of the organisation that add value to purchased inputs. Primary activities are involved in the production of goods and services. Support activities provide necessary assistance. Linkages are the relationships between activities.

The value chain model of corporate activities offers a bird's eye view of the firm and what it does. Competitive advantage arises out of the way in which firms organise and perform activities to add value.

#### 9.3.1 The value chain



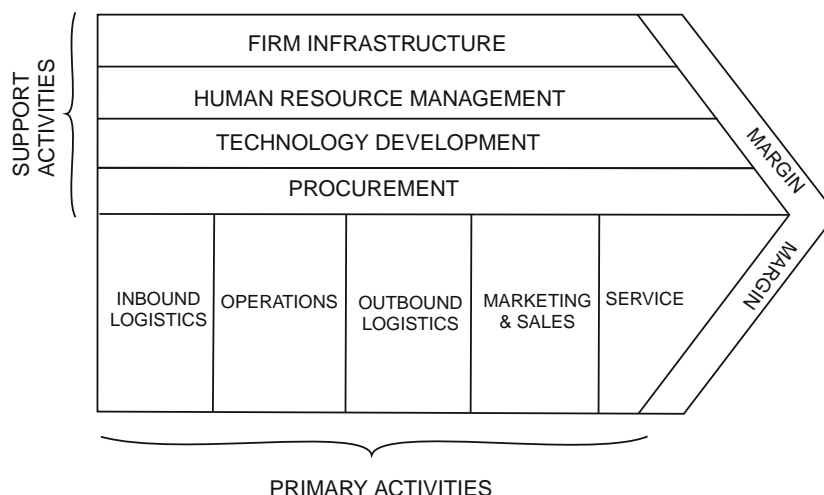
##### Key term

**Value activities** are the means by which a firm creates value in its products. Activities incur costs, and, in combination with other activities, provide a product or service that earns revenue.

Activities throughout the organisation should add value. (If they do not add value, they have no purpose.)



Porter (*Competitive Advantage*) grouped the various activities of an organisation into a value chain.



The margin on the right-hand side of this diagram is the difference between the price that the customer is prepared to pay and the cost to the firm of obtaining resource inputs and providing its value activities. It represents the value created by the value activities themselves and by the management of the linkages between them.

The value chain diagram is an excellent basic description of how an organisation works. It is also very useful as a checklist for brainstorming suggestions for dealing with business problems. Work your way through the various activities asking yourself what could the organisation do about each one, if anything.

Primary activities are directly related to production, sales, marketing, delivery and service.

Activity	Comment
<b>Inbound logistics</b>	Receiving, handling and storing inputs to the production system: warehousing, transport, stock control and so on
<b>Operations</b>	Converting resource inputs into a final product: resource inputs are not only materials. People are a resource, especially in service industries
<b>Outbound logistics</b>	Storing the product and its distribution to customers: packaging, testing, delivery and so on; for service industries, this activity may be more concerned with bringing customers to the place where the service is available; an example would be front of house management in a theatre
<b>Marketing and sales</b>	Informing customers about the product, persuading them to buy it, and enabling them to do so: advertising, promotion and so on
<b>After-sales service</b>	Installing products, repairing them, upgrading them, providing spare parts and so forth

Support activities provide purchased inputs, human resources, technology and infrastructural functions to support the primary activities. It may seem an obvious point that support activities need to support the primary activities, but do not overlook it. For example, staff recruitment and training need to be appropriate for the product being produced in the operations.

Activity	Comment
<b>Procurement</b>	All of the processes involved in acquiring the resource inputs to the primary activities (for example, purchase of materials, subcomponents equipment)
<b>Technology development</b>	Product design, improving processes and resource utilisation
<b>Human resource management</b>	Recruiting, training, managing, developing and rewarding people; this activity takes place in all parts of the organisation, not just in the HRM department
<b>Firm infrastructure</b>	Planning, finance, quality control, the structures and routines that make up the organisation's culture

Linkages connect the activities of the value chain.

- (a) Activities in the value chain affect one another. For example, more costly product design or better quality production might reduce the need for after-sales service.
- (b) Linkages require co-ordination. For example, Just in time requires smooth functioning of operations, outbound logistics and service activities such as installation.

The value chain concept is an important tool in analysing the organisation's strategic capability, since it focuses on the overall means by which value is created rather than on structural functions or departments.

### 9.3.2 The value chain, core competencies and outsourcing

Core competencies are the basis for the creation of value; activities from which the organisation does not derive significant value may be outsourced.

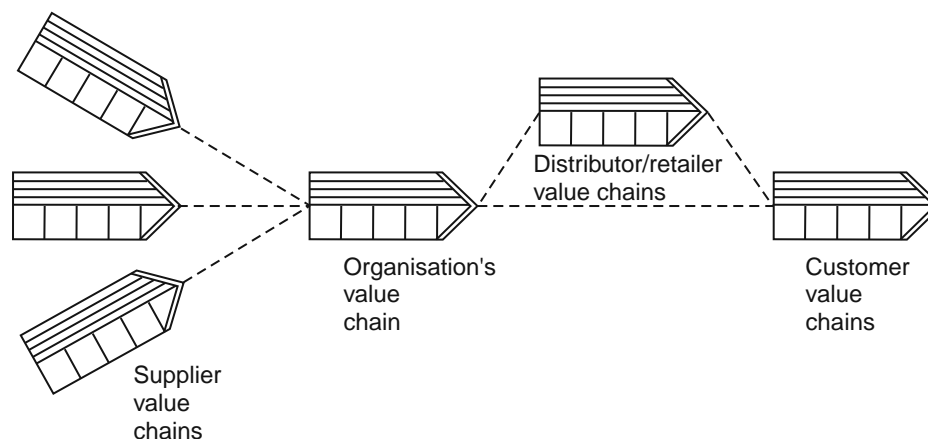
The purpose of value chain analysis is to understand how the company creates value. It is unlikely that any business has more than a handful of activities in which it outperforms its competitors. There is clear link here with the idea of core competencies: a core competency will enable the company to create value in a way that its competitors cannot imitate. These value activities are the basis of the company's unique offering.

There is a strong case for examining the possibilities of outsourcing non-core activities so that management can concentrate on what the company does best.

### 9.3.3 The value network

Activities and linkages that add value do not stop at the organisation's boundaries. The value network joins the organisation's value chain to those of its suppliers and customers.

The value network is the set of inter-organisational links and relationships that are necessary to create a product or service (JS&W).



The diagram illustrates the similarities between the value network and a supply chain. However, whereas a supply chain shows the system of organisations, people, technology or activities involved in transforming a product or service from its raw materials to a finished product to be delivered to the end user customer, the value network places an emphasis on the value-creating capability within the supply chain processes.

In this respect, understanding value networks can be helpful when looking at supply chain management. It may be possible to capture the benefit of some of the value generated both upstream and downstream in the value network. One way to do this is by vertical integration through the acquisition of suppliers and customers.

It is possible for large and powerful companies to exercise less formal power over suppliers and customers by using their bargaining power to achieve purchase and selling prices that are biased in their favour. A more subtle advantage is gained by fostering good relationships that can promote innovation and the creation of knowledge.

## 9.4 Critical success factors



### Key term

JS&W define **critical success factors (CSFs)** as “Those product features that are particularly valued by a group of customers and, therefore, where the organisation must excel to outperform the competition”.

An alternative view is that CSFs represent a small number of key goals vital to the success of the organisation.

How can a firm identify its critical success factors (CSFs) or key performance indicators (KPIs)? Here are some characteristics, which CSFs (KPIs) should have:

- (a) The CSF should be essential to the successful completion of the organisation's objective(s). For example, a CSF for a university's accounting department might be “to receive an adequate number of student applications per year seeking enrolment in the commerce undergraduate degree”. If the student demand for the university department's product is not strong, the number of students declines and the department's survival is threatened.
- (b) The CSF should be expressed as an action. For example, a manufacturer of dairy products may have as one CSF: “if a major competitor introduces a new yoghurt product we will respond by launching a competing product in the market within four months”.
- (c) The number of CSFs should be kept to a minimum for better control and ideally should be no more than 10.

Some ways to identify products/services that should have CSFs include:

- (a) Those products/services that have the greatest growth potential. For example, a television manufacturer currently training the employees of its repairs division in the repair and maintenance of digital televisions is likely to experience significant growth in demand for that division's services in the coming years. CSFs will need to be developed with that service in mind along the lines of quality, profitability, service and so on.
- (b) Those products/services that contribute the most to profit, i.e. high gross margin products/services.

## 10 Corporate appraisal: product/service portfolio models

### 10.1 The product life cycle



### Key term

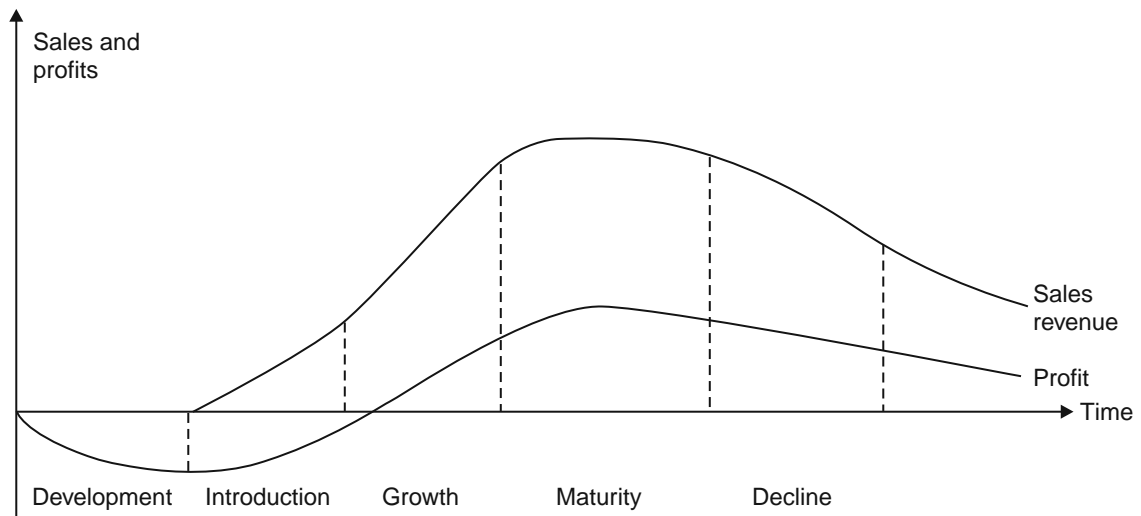
The **product life cycle concept** holds that products have a life cycle, and that a product demonstrates different characteristics of profit and investment at each stage in its life cycle.

The life cycle concept is a model, not a prediction, as not all products pass through each stage of the life cycle. It enables a firm to examine its portfolio of goods and services as a whole.

The profitability and sales of a product can be expected to change over time. The product life cycle is an attempt to recognise distinct stages in a product's sales history. Marketing managers distinguish between different aspects of the product:

- (a) **Product class:** this is a broad category of product, such as cars, washing machines, newspapers (also referred to as the generic product).
- (b) **Product form:** within a product class there are different forms that the product can take, for example five-door hatchback cars or two-seater sports cars; twin tub or front loading automatic washing machines; national daily newspapers or weekly local papers and so on.
- (c) **Brand:** the particular type of the product form (for example, for cars – Volkswagen Golf, Toyota Avensis or for newspapers – *South China Morning Post*, *China Daily* etc.).

The product life cycle applies in differing degrees to each of the three cases. A product-class for example, may have a long maturity stage, and a particular make or brand might have an erratic life cycle or not. Product forms however tend to conform to the classic life cycle pattern.



### 10.1.1 Introduction

A new product takes time to find acceptance by would-be purchasers and there is a slow growth in sales.

Unit costs are high because of low output and expensive sales promotion.

There may be early teething troubles with production technology.

The product for the time being is a loss-maker.

### 10.1.2 Growth

If the new product gains market acceptance, sales will eventually rise more sharply and the product will start to make profits.

Competitors are attracted.

As sales and production rise, unit costs fall.

### 10.1.3 Maturity

The rate of sales growth slows down and the product reaches a period of maturity, which is probably the longest period of a successful product's life.

Most products on the market will be at the mature stage of their life.

Profits are good.

### 10.1.4 Decline

Eventually, sales will begin to decline so that there is over-capacity of production in the industry. Severe competition occurs, profits fall and some producers leave the market.

The remaining producers seek means of prolonging the product life by modifying it and searching for new market segments.

Many producers are reluctant to leave the market, although some inevitably do because of falling profits.

### 10.1.5 The relevance of the product life cycle to strategic planning

In reviewing outputs, planners should assess products in three ways:

- (a) The stage of its life cycle that any product has reached.
- (b) The product's remaining life, i.e. how much longer the product will contribute to profits.
- (c) How urgent the need is to innovate, to develop new and improved products.

### 10.1.6 Difficulties of the product life cycle concept

**Recognition:** How can managers recognise where a product stands in its life cycle?

**Not always true:** The theoretical curve of a product life cycle does not always occur in practice. Some products have no maturity phase, and go straight from growth to decline. Some never decline if they are marketed competitively.

**Changeable:** Strategic decisions can change or extend a product's life cycle.

**Competition** varies in different industries: The financial markets are an example of markets where there is a tendency for competitors to copy the leader very quickly, so that competition has built up well ahead of demand.

## 10.2 The Boston Consulting Group (BCG) matrix

The Boston classification classifies business units or products/services in terms of their capacity for growth within the market and the market's capacity for growth as a whole. The Boston Consulting Group (BCG) developed a matrix based on empirical research that assesses businesses in terms of potential cash generation and cash expenditure requirements. SBUs are categorised in terms of market growth rate and relative market share (with market share being defined as "one entity's sale of a product or service in a specified market expressed as a percentage of total sales by all entities offering that product or service").

#### Market growth rate

Assessing rate of market growth as high or low depends on the conditions in the market. No single percentage rate can be set, since new markets may grow explosively while mature ones grow hardly at all. High market growth rate can indicate good opportunities for profitable operations. However, intense competition in a high growth market can erode profit, while a slowly growing market with high barriers to entry can be very profitable.

#### Relative market share

Relative market share is assessed as a ratio. It is market share compared with the market share of the largest competitor. Therefore, a relative market share greater than unity indicates that the SBU is the market leader. BGG settled on market share as a way of estimating costs and thus profit potential, because both costs and market share are connected with production experience: as experience in satisfying a particular market demand for value increases, market share can be expected to increase also, and costs to fall.

		Relative market share	
		High	Low
Market growth	High	Stars	Question marks
	Low	Cash cows	Dogs

The portfolio should be balanced, with cash cows providing finance for stars and question marks and a minimum of dogs.

- (a) **Stars** are high-growth, high-share businesses or products. In the short term, stars require capital expenditure in excess of the cash they generate, in order to maintain their position in their competitive growth market, but promise high returns in the future. **Strategy: build.**
- (b) **Cash cows** are low-growth, high-share businesses or products. In due course, stars will become cash cows. Cash cows need very little capital expenditure, since mature markets are likely to be quite stable, and they generate high levels of cash income. Cash cows can be used to finance the stars. They produce a lot of cash that the company uses to pay its bills and to support other SBUs/products or services that need investment. Some experts suggest that when a market's annual growth rate falls to less than 10% the star becomes a cash cow if it still has the largest relative market share. **Strategy: hold or harvest if weak.**
- (c) **Question marks** are high-growth, low-share businesses or products. Question marks must be assessed as to whether they justify considerable capital expenditure in the hope of increasing their market share, or should they be allowed to die quietly as they are squeezed out of the expanding market by rival products. They require a lot of cash to hold their share, let alone increase it. Management has to think hard about which question marks it should try to build into stars and which should be phased out. **Strategy: build or harvest.**
- (d) **Dogs** are low-growth, low-share businesses and products. Dogs may be ex-cash cows that have now fallen on hard times. Although they will show only a modest net cash outflow, or even a modest net cash inflow, they are cash traps, which tie up funds and provide a poor return on investment. However, they may have a useful role, either to complete a product range or to keep competitors out. There are also many smaller niche businesses in markets that are difficult to consolidate that would count as dogs but which are quite successful. **Strategy: divest or hold.**

The BCG matrix must be used with care, as it may be difficult to define “high” and “low” on both axes of the matrix.

## 11 Strategic choice: Ansoff matrix



### Topic highlights

Ansoff's matrix and Porter's generic strategies can be used to make strategic choices. Ansoff's product-market strategies involve determining which products should be sold in which markets, by market penetration, market development, product development and diversification.

Diversification is assumed to be risky, especially diversification that is entirely unrelated to current products and markets. Alliances of various kinds are a possible approach to diversification. Withdrawal may be a valid option.

Product-market mix is a short-hand term for the products and services a firm sells (or a service which a public sector organisation provides) and the markets it sells them to.

### 11.1 The importance of market share

Like some of the portfolio matrix tools the PIMS framework (PIMS stands for Profit Impact of Marketing Strategy) regards competitive strength and market attractiveness as important determinants of profitability. The concept originated in a 1960s General Electric project to compare the profitability of GE SBUs. An extensive PIMS database of strategic actions and results is now administered by the American Strategic Planning Institute). However, perhaps the single most significant factor to emerge from the PIMS data is the link between profitability and relative market share. You will recall that relative market share was one of the axes of the BCG matrix.

There is a definite, observable correlation between market share and return on investment. This is probably the result of lower costs resulting from economies of scale. Economies of scale due to increasing market share are particularly evident in purchasing and the utilisation of non-current assets.

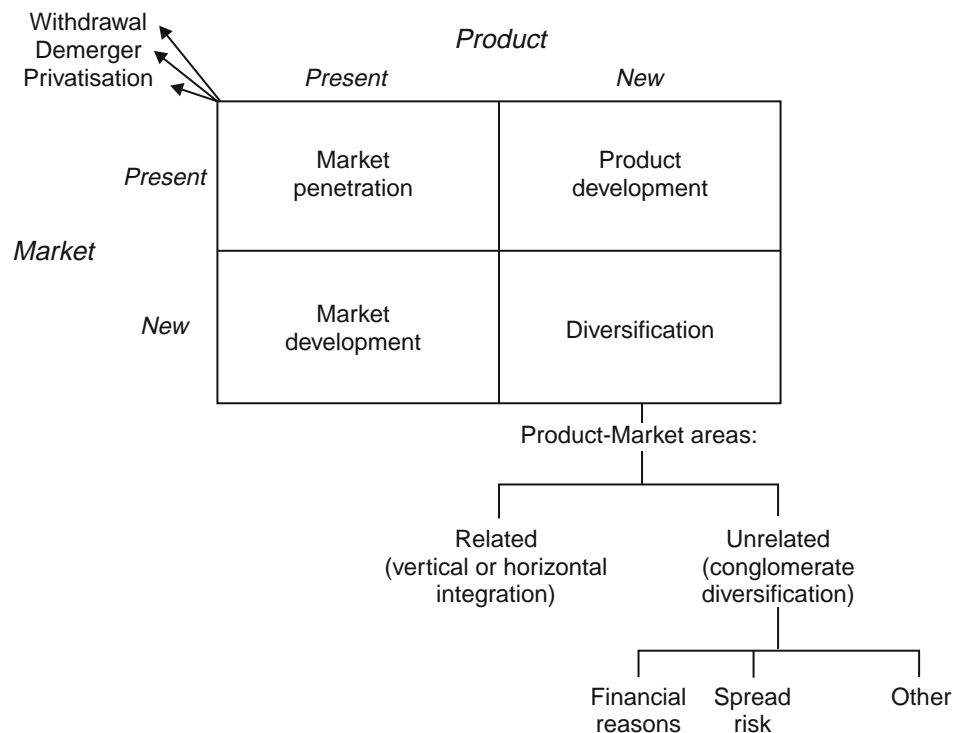
## 11.2 Product – market mix (Ansoff matrix)



### Key term

**Ansoff** drew up a **growth vector matrix**, describing how a combination of a firm's activities in current and new markets, with existing and new products can lead to growth.

Ansoff's original model was a four-cell matrix based on product and market, shown as the heart of the diagram below. It can be enhanced by adding the external options shown in the diagram. Withdrawal, demerger and privatisation are discussed at the end of this section.



### 11.2.1 Current products and current markets: market penetration

The firm seeks to do four things:

- (1) Maintain or to increase its share of current markets with current products, for example through competitive pricing, advertising, sales promotion.
- (2) Secure dominance of growth markets.
- (3) Restructure a mature market by driving out competitors.
- (4) Increase usage by existing customers (for example, loyalty cards).

This is a relatively low risk strategy since it requires no capital investment. As such it is attractive to the unadventurous type of company.

Consolidation is seeking to maintain current market share. This may be an appropriate strategy when the firm is already the market leader; if availability of funds is limited; or when an owner-manager is approaching retirement or wishes to avoid the loss of personal control that is a likely consequence of growth. Also, if it seems that profitability does not correlate with market share, consolidation may be a sensible option.

- (a) Consolidation does not mean neglect. It is unlikely that competitors will halt their efforts, so the firm must continue to enhance its market offer in order to maintain its relative position.
- (b) PIMS data indicates that high product quality is important if a consolidation strategy is to succeed. It can compensate to some extent for both a low market share and a low level of marketing expenditure.

### 11.2.2 Present products and new markets: market development

Market development is the process by which the firm seeks new markets for its current products. There are many possible approaches. Here are some examples.

- (a) New geographical areas and export markets (for example, a radio station building a new transmitter to reach a new audience).
- (b) Different package sizes for food and other domestic items so that both those who buy in bulk and those who buy in small quantities are catered for.
- (c) New distribution channels to attract new customers (for example, organic food sold in supermarkets not just specialist shops).
- (d) Differential pricing policies to attract different types of customer and create new market segments. For example, travel companies have developed a market for cheap long-stay winter breaks in warmer countries for retired couples.

This approach to strategy is also low in risk since it also requires little capital investment.

### 11.2.3 New products and present markets: product development

Product development is the launch of new products to existing markets. This has several advantages:

- (a) The company can exploit its existing marketing arrangements such as promotional methods and distribution channels at low cost.
- (b) The company should already have good knowledge of its customers and their wants and habits.
- (c) Competitors will be forced to respond.
- (d) The cost of entry to the market will go up.

This strategy is riskier than both market penetration and market development since it is likely to require major investment in the new product development process and, for physical products, in suitable production facilities.

### 11.2.4 New products: new markets (diversification)

Diversification occurs when a company decides to make new products for new markets. It should have a clear idea about what it expects to gain from diversification.

- (a) Growth. New products and new markets should be selected which offer prospects for growth, which the existing product-market mix, does not.
- (b) Investing surplus funds not required for other expansion needs, bearing in mind that the funds could be returned to shareholders. Diversification is a high-risk strategy, having many of the characteristics of a new business start-up. It is likely to require the deployment of new competencies.
- (c) Synergy combined results produce a better rate of return than would be achieved by the same resources used independently. Synergy is used to justify diversification. It is probably difficult to achieve in practice when one company takes over another. All too often, the expectations of synergy that help to justify a business combination fail to materialise.



### 11.2.5 Withdrawal strategy

Withdrawal may be an appropriate strategy under certain circumstances:

- (a) Products may simply disappear when they reach the end of their life cycles.
- (b) Underperforming products may be weeded out.
- (c) Sale of subsidiary businesses for reasons of corporate strategy, such as finance, change of objectives, lack of strategic fit.
- (d) Sale of assets to raise funds and release other resources.

Exit barriers, however, often make this difficult:

- (a) Cost barriers include redundancy costs and the difficulty of selling assets.
- (b) Managers might fail to grasp the idea of decision-relevant costs (“we’ve spent all this money, so we must go on”).
- (c) Political barriers include government attitudes. Defence is an example.
- (d) Marketing considerations may delay withdrawal. A product might be a loss-leader for others, or might contribute to the company’s reputation for its breadth of coverage.
- (e) Psychology. Managers hate to admit failure, and there might be a desire to avoid embarrassment.
- (f) People might wrongly assume that carrying on is a low risk strategy.

### 11.2.6 Divestment, demerger and privatisation

Divestment and demerger in the private sector and privatisation in the public sector have become more common as companies and governments seek to reverse the strategies they once pursued.

For a commercial business, there may be several reasons for this:

- (a) To rationalise a business as a result of a strategic appraisal, perhaps as a result of portfolio analysis. Another reason might be to concentrate on core competencies and synergies.
- (b) To sell off subsidiary companies at a profit, perhaps as an exit route after managing a turnaround.
- (c) To allow market valuation to reflect growth and income prospects. Where a low growth, steady income operation exists alongside a potentially high growth new venture, the joint Price/Earnings ratio is likely to be too high for the cash cow and too low for the star. The danger is that a predator will take over the whole operation and split the business in two, allowing each part to settle at its own level.
- (d) Satisfy investors: diversified conglomerates are unfashionable. Modern investment thinking is that investors prefer to provide their own portfolio diversification.
- (e) To raise funds to invest elsewhere or to reduce debt.
- (f) A demerger can realise underlying asset values in terms of share valuation.

In the public sector, privatisation has been pursued by governments all over the world to:

- Raise funds
- Improve performance
- Transform culture.



#### Self-test question 1

Green Roof Company specialises in roof repairs and new roofing. It operates in the North Town area of a major city. The company has been successful. The success is due largely to growing market demand for new and better roofing, due to the increasing regularity of strong winds and gales at various times of the year.

The company has two owner-managers who want to grow the business organically. They are considering several strategies for doing this.

The following information is relevant to their strategic thinking:

- (1) The company's market share of the business for new roofs and roof repairs in North Town is estimated to be 25%.
- (2) There is a strong local demand for the installation of new solar panels that have recently been introduced to the market. These are normally built on the rooftops of houses and other buildings.
- (3) The owner-managers know that there is a severe shortage of firms that provide office cleaning services in the North Town area. Until two years ago, a senior manager of Green Roof Company worked as an administration manager in an office cleaning firm in a different part of the city.

*Required*

Four different product-market strategies are market penetration, product penetration, market development and diversification. Suggest an appropriate strategy for each of these four product-market categories that Green Roof Company could select as a way of developing its business.

**(The answer is at the end of the chapter)**

## 12 Strategic choice: Porter's generic strategies

Business unit strategy involves a choice between being the lowest cost producer (**cost leadership**) or making the product different from competitors' products in some way (**differentiation**) or specialising on a segment of the market (**focus**, by addressing that segment by a strategy of cost leadership or differentiation). Porter believes that a firm must choose one of these or be stuck-in-the-middle.



### Key terms

**Competitive advantage** is anything that gives one organisation an edge over its rivals. Porter argues that a firm should adopt a competitive strategy intended to achieve competitive advantage for the firm.

**Competitive strategy** means "taking offensive or defensive actions to create a dependable position in an industry, to cope successfully with ... competitive forces and thereby yield a superior return on investment for the firm. Firms have discovered many different approaches to this end, and the best strategy for a given firm is ultimately a unique construction reflecting its particular circumstances". (Porter)

### 12.1 The choice of competitive strategy



#### Topic highlights

Porter believes there are three generic strategies for competitive advantage.

- (1) **Cost leadership** means being the lowest cost producer in the industry as a whole.
- (2) **Differentiation** is the exploitation of a product or service that the industry as a whole believes to be unique.
- (3) **Focus** involves a restriction of activities to only part of the market (a segment).
  - (a) Providing goods and/or services at lower cost (cost-focus)
  - (b) Providing a differentiated product or service (differentiation-focus).

Cost leadership and differentiation are industry-wide strategies. Focus involves segmentation but also the pursuit, within the chosen segment only, of a strategy of cost leadership or differentiation.

Porter's generic strategy model is one of a handful of truly vital theories that you absolutely must master for your exam. Study this section with great care and understand the implications of each strategy for the companies that might adopt them. Understanding this area of theory will not only equip you to make sensible suggestions in your answers to many questions, it will also enable you to appreciate important background detail in a wide range of question scenarios.

## 12.2 Cost leadership

A cost leadership strategy seeks to achieve the position of lowest-cost producer in the industry as a whole. By producing at the lowest cost, the manufacturer can compete on price with every other producer in the industry, and earn the higher unit profits, if the manufacturer so chooses.

How to achieve overall cost leadership:

- (a) Set up production facilities to obtain economies of scale.
- (b) Use the latest technology to reduce costs and/or enhance productivity (or use cheap labour if available).
- (c) In high technology industries, and in industries depending on labour skills for product design and production methods, exploit the learning curve effect. By producing more items than any other competitor, a firm can benefit more from the learning curve, and achieve lower average costs.
- (d) Concentrate on improving productivity.
- (e) Minimise overhead costs.
- (f) Get favourable access to sources of supply.

## 12.3 Differentiation

A differentiation strategy assumes that competitive advantage can be gained through particular characteristics of a firm's products.

Products may be divided into three categories:

- (a) Breakthrough products offer a radical performance advantage over competition, perhaps at a drastically lower price.
- (b) Improved products are not radically different from their competition but are obviously superior in terms of better performance at a competitive price.
- (c) Competitive products derive their appeal from a particular compromise of cost and performance. For example, cars are not all sold at rock-bottom prices, nor do they all provide immaculate comfort and performance. They compete with each other by trying to offer a more attractive compromise than rival models.

How to differentiate:

- (a) Build up a brand image (for example, Pepsi's blue cans are supposed to offer different "psychic benefits" to Coke's red ones).
- (b) Give the product special features to make it stand out (for example, a kettle that incorporates a new kind of element, which boils water faster).
- (c) Exploit other activities of the value chain (for example, quality of after-sales service).

## 12.4 Generic strategies and the five forces

Competitive force	Advantages		Disadvantages	
	Cost leadership	Differentiation	Cost leadership	Differentiation
<b>New entrants</b>	Economies of scale raise entry barriers	Brand loyalty and perceived uniqueness are entry barriers		
<b>Substitutes</b>	Firm is not so vulnerable as its less cost-effective competitors to the threat of substitutes	Customer loyalty is a weapon against substitutes		
<b>Customers</b>	Customers cannot drive down prices further than the next most efficient competitor	Customers have no comparable alternative. Brand loyalty should lower price sensitivity.		Customers may no longer need the differentiating factor. Sooner or later customers become price sensitive.
<b>Suppliers</b>	Flexibility to deal with cost increases	Higher margins can offset vulnerability to supplier price rises	Increase in input costs can reduce price advantages	
<b>Industry rivalry</b>	Firm remains profitable when rivals go through excessive price competition	Unique features reduce direct competition	Technological change will require capital investment, or make production cheaper for competitors. Competitors learn via imitation. Cost concerns ignore product design or marketing issues.	Imitation narrows differentiation

## 12.5 Focus (or niche) strategy

In a focus strategy, a firm concentrates its attention on one or more particular segments or niches of the market, and does not try to serve the entire market with a single product.

- A **cost focus strategy**: aim to be a cost leader for a particular segment. This type of strategy is often found in the printing, clothes manufacture and car repair industries.
- A **differentiation focus strategy**: pursue differentiation for a chosen segment. Luxury goods suppliers are the prime exponents of such a strategy.

Porter suggests that a focus strategy can achieve competitive advantage when “broad-scope” businesses fall into one of two errors:

- Under-performance occurs when a product does not fully meet the needs of a segment and offers the opportunity for a differentiation focus player.
- Over-performance gives a segment more than it really wants and provides an opportunity for a cost focus player.

**Advantages of a focus strategy:**

- A niche is more secure and a firm can insulate itself from competition.
- The firm does not spread itself too thinly.
- Both cost leadership and differentiation require superior performance – life is easier in a niche, where there may be little or no competition.

**Drawbacks of a focus strategy:**

- The firm sacrifices economies of scale that would be gained by serving a wider market.
- Competitors can move into the segment, with increased resources (for example, the Japanese moved into the luxury car market, to compete with Mercedes and BMW).
- The segment's needs may eventually become less distinct from the main market.

## 12.6 Which strategy?

Although there is a risk with any of the generic strategies, Porter argues that a firm must pursue one of them. A stuck-in-the-middle strategy is almost certain to make only low profits. “This firm lacks the market share, capital investment and resolve to play the low-cost game, the industry-wide differentiation necessary to obviate the need for a low-cost position, or the focus to create differentiation or a low-cost position in a more limited sphere”.

It is also important that both cost leadership and differentiation require superior performance. Therefore, most businesses should pursue some form of focus strategy, as it is easier to dominate a niche than a complete market.

## 12.7 Conceptual difficulties with generic strategy

In practice, it is rarely simple to draw hard and fast distinctions between the generic strategies as there are conceptual problems underlying them.

### 12.7.1 Cost leadership

**Internal focus.** Cost refers to internal measures, rather than the market demand. It can be used to gain market share: but it is the market share that is important, not cost leadership as such.

**Only one firm.** If cost leadership applies cross the whole industry, only one firm will pursue this strategy successfully. However, the position is not clear-cut.

- (a) More than one firm might aspire to cost leadership, especially in dynamic markets where new technologies are frequently introduced.
- (b) The boundary between cost leadership and cost focus might be blurred.
- (c) Firms competing market-wide might have different competencies or advantages that confer cost leadership in different segments.

Higher margins can be used for differentiation. Having low costs does not mean you have to charge lower prices or compete on price. A cost leader can choose to “invest higher margins in R&D or marketing”. Being a cost leader arguably gives producers more freedom to choose other competitive strategies.

### 12.7.2 Differentiation

Porter assumes that a differentiated product will always be sold at a higher price.

- (a) However, a differentiated product may be sold at the same price as competing products in order to increase market share.
- (b) Choice of competitor. Differentiation from whom? Who are the competitors? Do they serve other market segments? Do they compete on the same basis?

- (c) Source of differentiation. This can include all aspects of the firm's offer, not only the product. Restaurants aim to create an atmosphere or “ambience”, as well as serving food of good quality.

### 12.7.3 Focus

Focus probably has fewer conceptual difficulties, as it ties in very neatly with ideas of market segmentation. In practice, most companies pursue this strategy to some extent, by designing products/services to meet the needs of particular target markets.

“Stuck-in-the-middle” is therefore what many companies actually pursue quite successfully. Any number of strategies can be pursued, with different approaches to price and the perceived added value (i.e. the differentiation factor) in the eyes of the customer.

## 13 Strategic choice: industry life cycle



### Topic highlights

The appropriate choice of strategy will be influenced by the relevant stage of the industry life cycle.

The last key strategy concept to be examined is that of the industry life cycle. We saw in section 10.1 that all products must go through a product life cycle of introduction, growth, maturity and decline and likewise so must all industries. It is better to think of an industry as being a living ecosystem rather than a static snapshot because your best strategy for today will not necessarily still be valid tomorrow. This concept was introduced in the BCG matrix.

Using a very traditional product life cycle approach, Dess and Lumpkin (2003) created the following table to link Porter's generic strategies to the industry life cycle.

	Introduction	Growth	Maturity	Decline
<b>Generic strategies</b>	Differentiation	Differentiation	Differentiation Cost leadership	Cost leadership Focus
<b>Market growth rate</b>	Low	Very large	Low to moderate	Negative
<b>Number of segments</b>	Very few	Some	Many	Few
<b>Intensity of competition</b>	Low	Increasing	Very intense	Changing
<b>Emphasis on product design</b>	Very high	High	Low to moderate	Low
<b>Emphasis on process design</b>	Low	Low to moderate	High	Low
<b>Major functional area of concern</b>	Research and development	Sales and marketing	Production	General management and finance
<b>Overall objective</b>	Increase market awareness	Create consumer demand	Defend market share and extend product life cycles	Consolidate, maintain, harvest or exit

## 14 Strategy evaluation and selection

Using models such as Ansoff and Porter a business can generate ideas for strategies to fill any gap identified. Such strategies then have to be evaluated against the goals of the business and a selection made regarding which ones to undertake.

### 14.1 Which strategy?

Stage	Comment	Key tools, models, technique
<b>Strategic options generation</b>	Come up with new ideas on how to compete (competitive advantage), where to compete and method of growth	<ul style="list-style-type: none"> <li>• Value chain analysis</li> <li>• Scenario building</li> <li>• Acquisition vs. organic growth</li> </ul>
<b>Strategic options evaluation</b>	Normally, each strategy has to be evaluated on the basis of: <ul style="list-style-type: none"> <li>• Acceptability</li> <li>• Suitability</li> <li>• Feasibility</li> <li>• Environmental fit</li> </ul>	<ul style="list-style-type: none"> <li>• Stakeholder analysis</li> <li>• Risk analysis</li> <li>• Decision-making tools such as decision trees, matrices, ranking and scoring methods</li> <li>• Financial measures (e.g. ROCE, DCF)</li> </ul>
<b>Strategy selection</b>	Involves choosing between the alternative strategies. <ul style="list-style-type: none"> <li>• <b>Competitive strategies</b> are the generic strategies for competitive advantage an organisation will pursue (which determine <b>how you compete</b>).</li> <li>• <b>Product-market strategies</b> (which markets you should enter or leave) determine <b>where you compete</b> and the direction of growth.</li> <li>• <b>Institutional strategies</b> (i.e. relationships with other organisations) determine the <b>method of growth</b>.</li> </ul>	

### 14.2 Evaluation criteria

JS&W (*Exploring Corporate Strategy*) provide a checklist for assessing strategic options:

- Suitability
  - Acceptability
  - Feasibility
- (a) **Suitability** – Does the strategy fit the company's operational circumstances and strategic position?
- This involves assessing the strategy in relation to issues identified in the SWOT analysis, its external environment, its mission and objectives and its competencies.
- (b) **Acceptability** – Does the strategy meet the stakeholders' expectations?
- This includes consideration of the risks and returns for the company's shareholders but also the wider stakeholders. It also involves issues such as ethics and corporate responsibility discussed in Chapter 1.
- (c) **Feasibility** – Does the organisation have the time and resources to implement the strategy?
- Key issues here are whether the company can access sufficient finance and resources quickly to implement the strategy and whether it will deliver results within an appropriate timeframe.

Where the organisation does not have existing competencies or resources it may choose to implement a strategy through some form of joint development or strategic alliance rather than organic growth which might be slow and costly.

### 14.3 Strategy development in uncertain times

Organisations' environments differ in terms of their stability and complexity. In simple, static environments, the industry and organisational position is relatively easy to understand and is unlikely to change significantly. If change does occur it is likely to be predictable. In such circumstances formal planning and strategy development is easier and organisations can rely to an extent on past experience.

In dynamic (changing) conditions, companies need to consider the environment of the future as well as the past and the degree of uncertainty increases. The emphasis for such organisations needs to be on creating organisational conditions which encourage forward thinking and to make use of techniques such as scenario planning, discussed in section 6.5. Initially strategies may arise as a result of the formal planning process but may need to be adapted to respond to changes in the environment, whether planned or otherwise.

Organisations operating in complex situations face the biggest strategic challenge. Increased globalisation and sophisticated technology create a combination of complexity and uncertainty. For example, in industries such as mobile telecommunications where the effects of technology and legislation may be impossible to predict.

In this environment a successful company has to be able to sense changes in the marketplace and to seize opportunities by reconfiguring existing assets and competencies.

Such organisations will rely less on formal strategic planning but instead create structures and cultures that promote flexibility and the ability to respond quickly to changing conditions. This is likely to involve the decentralisation of the organisation and the delegation of decision making to allow local business units to respond to changes in their local marketplace. The focus will be on innovation and creative thinking and the approach to strategic management is likely to involve a series of short-term plans.

In this scenario strategies can be seen as emergent because the choice of strategy interacts with its implementation. A strategy is tried and developed as it is implemented. Through appropriate control and feedback mechanisms management learn lessons about where the strategy succeeds and fails and adapt their plans or develop new initiatives accordingly.

The **dynamic capabilities** approach to strategy, (*The Dynamic Capabilities of Firms: An Introduction* D. Teece and G. Pisano (2006)), builds on the notion of core competencies but recognises that existing competencies may become less valuable as competitors replicate them or markets shift. Therefore, it focuses on the role of management in building and adapting these competencies to address rapidly changing environments.

Sustained competitive advantage comes from a firm's ability to leverage and reconfigure its competencies and assets in ways that are valuable to the customer but difficult for competitors to imitate. Having dynamic capabilities helps a firm sense opportunities and then to seize them by successfully reallocating resources, often by adjusting existing competencies or developing new ones.



## 15 Strategy implementation: relationship between strategic planning and budgeting



### Topic highlights

Strategy implementation requires the overall strategy to be broken down into functional strategies (HR, procurement and so on) and operational plans which set out what is expected of each area of the business.

Detailed budgets must then be prepared, setting out the plan for a defined period.

### 15.1 Strategy implementation

Strategy implementation is the **conversion** of the chosen **strategy into detailed plans or objectives** for operating units.

The **planning of implementation** has several aspects. The strategic planning process is therefore multi-layered.

- (a) **Resource** planning (i.e. finance, human resources) involves assessing the key tasks that need to be carried out and determining the timing of them.
- (b) **Operations** planning looks at the systems employed to manage the organisation.
- (c) **Organisation** structure and control systems may need to be changed.

A business plan describes the goals, strategies and resources of a business. It should include a number of sub-plans covering operational, marketing and financial aspects of the business. This is discussed in more detail in Chapter 3.

### 15.2 Relationship between budgets and strategic planning

In large organisations the strategic planning activity is usually separated from the budgeting activity. This does not mean that the two activities are unrelated in their objectives. It means that different levels of management are responsible for their development.

It should also be noted that there is a strong relationship between strategic planning and capital budgeting. Often, capital budgets are viewed as concrete financial embodiments of strategic plans.

There are both similarities and differences between budgets and strategic plans. Budgets form part of the strategic plan yet:

- (a) Budgets usually involve one year (short term), whereas strategic plans cover three, five or ten years (long term).
- (b) The strategic plan contains relatively little financial data, whereas the master budget is financially based.
- (c) The strategic plan is normally structured by product/service whereas a budget is normally structured by responsibility centre.
- (d) Budgets can be used to compare performance and plan corrective action if deviations from budget (variances) occur. This enables the organisation to ensure performance is in line with strategy.



### Illustration: Strategic objectives

For example, a large retail store chain with a store in Kowloon and one on Hong Kong Island might have, as some of its strategic objectives, to:

- Phase out toy sales over the next two years
- Increase the range and market share of men's apparel in the 40 to 60 year-old age bracket
- Improve market share and sales revenue in cosmetics

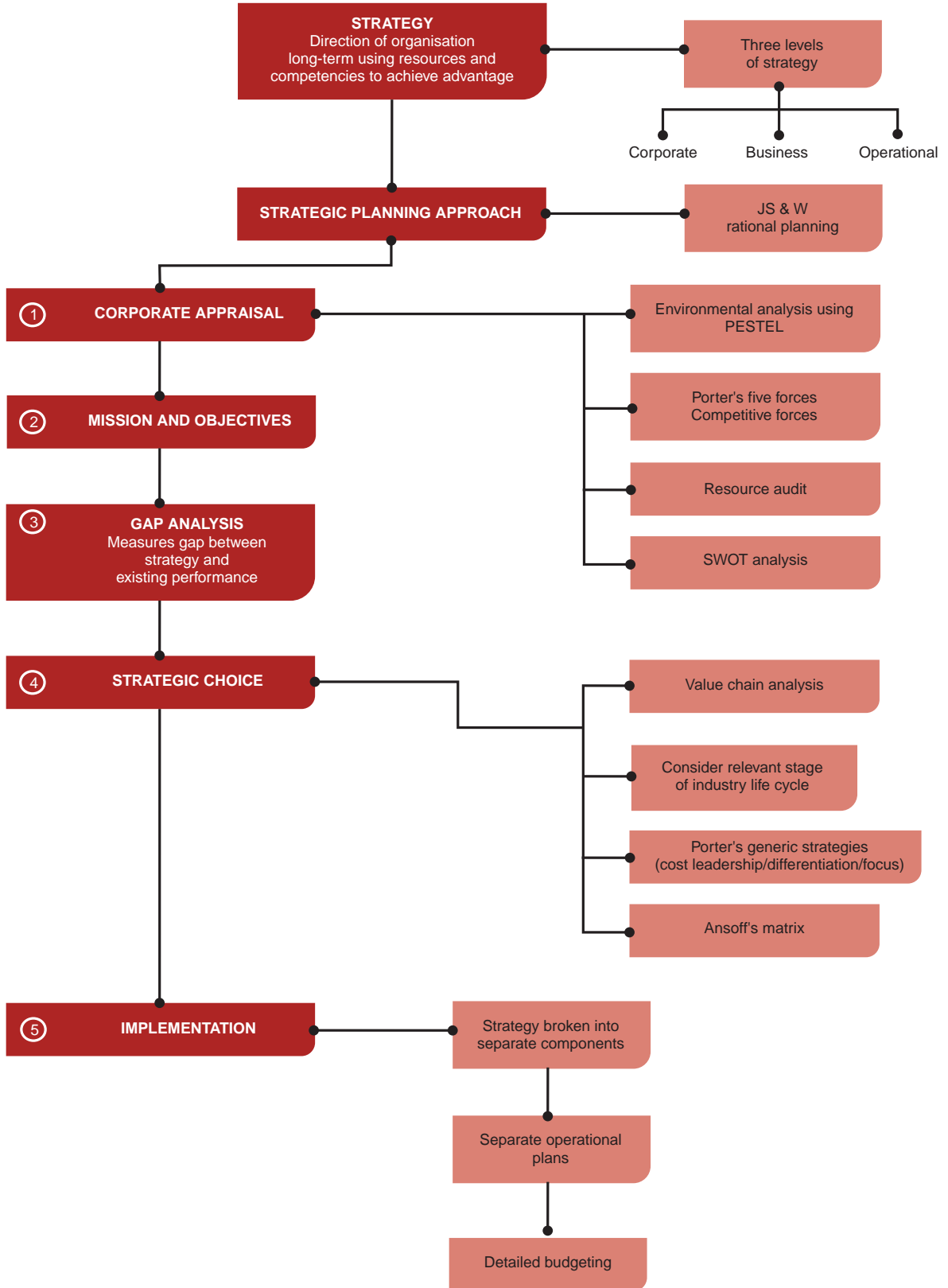
The chain's budget, which would incorporate the short-term financial effects of these objectives, would most likely be structured by retail store (i.e. a budget for the Kowloon store and one for the Hong Kong Island store) to facilitate control and decision making. Critical success factors would need to be implemented to measure performance in line with the new strategies, in order that corrective action can be taken when necessary. For example, growth measures should be used to determine the level of penetration achieved in the cosmetics and men's apparel markets.

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There is, however, a clear relationship between the master budget and strategic planning. The master budget is a tool used to achieve one or more of the actions outlined in the strategic plan (usually the master budget closely correlates with year one of the strategic or business plan). An organisation uses planning models to determine its mission, which has budget implications for the organisation. Earlier the BCG and GEBS matrices, showing four possible mission options, were described. We can use one of these, a "build" mission, as an example to show how a budget relates to mission.

- (a) Build missions focus on building a greater share of the market, therefore more emphasis is placed on marketing/selling/advertising/quality and similar promotional activities rather than on controlling costs. Accordingly the cost control feature of the budget is viewed as being less important, as controlling costs is less important.
- (b) The budget methodology is more likely to be "bottom up" because with a build mission business unit managers aim to achieve the goal of greater market share. To do this managers need the power to develop appropriate financial strategies (as reflected in the master budget).
- (c) Similarly, while the calculations of the variances remain the same, irrespective of strategy, the frequency of variance reporting is less in a build mission.
- (d) Finally, in a build mission a budget would be changed more readily as introductions of new products may necessitate a greater amount of advertising than originally planned in order to achieve the desired market share.

# Topic recap



## Answer to self-test question

### Answer 1

<b>Market penetration</b>	Increase market share in North Town
<b>Product development</b>	Market the installation of solar panels to the existing customer base
<b>Market development</b>	Expand the business into another area of the city e.g. the south
<b>Diversification</b>	Start up a new business operation by offering office cleaning services

## Exam practice



## Formulating strategy

36 minutes

Engineering is a profession that utilises scientific and technical knowledge to design and implement materials, machines, structures and processes to safely achieve a desired objective and to meet the prescribed criteria of a product. FGH Company Limited (FGH) was established in 1959, it has achieved a high level of profitability in providing landslide prevention engineering services very successfully in Hong Kong for the past 50 years.

As an engineering services company in Hong Kong, FGH offers a wide range of services to a wide variety of clients, including many Government departments, private developers, architects and planners, utility companies, oil and gas companies, contractors and other consulting engineering firms. FGH employs 50 staff. Most of them have been working for the company for more than 20 years.

FGH is specialised in providing hi-tech civil engineering services. It has developed in-house special cone penetration testing equipment called FGH Cone. This equipment is commonly used in field services in measuring the probability and detecting the problem areas causing landslides during days of heavy rain.

The company manufactures and sells the equipment to a large range of clients in both the public and private sectors.

In recent years, FGH Company has experienced strong competition in the local market. A lot of small to medium sized engineering consultancy firms have been set up in the market and they offer the same services with a much lower margin. However, these companies normally have fewer personnel and financial resources than FGH.

Mr. Y. H. Tong, the Managing Director has recognised that it is becoming harder to obtain new business from the local market and there are difficulties in sustaining the company's profitability because of the increasing competition and market saturation of the domestic market.

During a business cocktail reception, Mr. Tong chatted with one of his materials suppliers, Mr. John Ng. John mentioned to him that a number of his business competitors had already expanded their businesses to Vietnam and Mainland China and were doing quite well there. John asked whether Mr. Tong was interested in taking his business abroad too. Mr. Tong briefly discussed this subject but did not reveal any of his plans to John because he did not want to appear ignorant about overseas expansion to John.

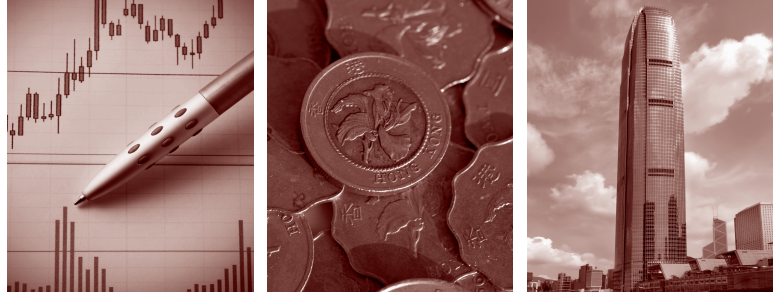
Returning to his office, Mr. Tong thought about this subject again. He thought about whether his business could be extended to South East Asian countries, such as Thailand, the Philippines and Indonesia. He is particularly interested to invest in the Philippines, as typhoons and rainstorms occur every year. Not knowing what and how to achieve this, he went to the office of his controller, Mr. Ding Lee, to discuss overseas expansion. Ding has been working with the company for about six months. He has extensive experience in running overseas investments in the South East Asia region. His former company produced and sold domestic appliances in the region.

*Required*

As the controller of the company, you are required to write a report to Mr. Tong to advise on:

- (a) the main concerns and strategic options for overseas expansion strategy. Apart from overseas expansion, what options are also available; and **(5 marks)**
- (b) the operational issues, in terms of smooth running of the business, which the management should consider before embarking an overseas expansion strategy. **(15 marks)**

**(Total = 20 marks)****HKICPA September 2009 (amended)**



## chapter 3

# Financial analysis and strategy

### Topic list

- 1 Financial strategy and management**
  - 1.1 What is financial management?
  - 1.2 Financial management decisions
  - 1.3 Financial planning
  - 1.4 Financial control
- 2 Financial objectives and targets**
  - 2.1 Financial targets
- 3 Evaluating financial strategy**
  - 3.1 Measuring financial performance
  - 3.2 The broad categories of ratios
  - 3.3 Ratio pyramids
  - 3.4 Profitability
  - 3.5 Debt and gearing ratios
  - 3.6 Liquidity ratios: cash and working capital
  - 3.7 Shareholders' investment ratios
- 4 Business and financial planning**
  - 4.1 Purpose of business planning
  - 4.2 Development of a business plan
  - 4.3 Pro-forma business plan
- 5 The financial plan**
  - 5.1 Master budget
  - 5.2 Role of cash flow and profitability projections
  - 5.3 Sensitivity analysis
- 6 Forecasting**
- 7 Cash flow statements**
  - 7.1 Cash flow statements using the direct method

### Learning focus

Financial strategy refers to the way in which a business allocates and manages its finances (a critical resource) in order to achieve its corporate objectives. It involves decisions relating to investment, financing and dividends; and the management of risk.

This chapter considers the scope of an organisation's financial strategy and the objectives of financial management, principally profitability and solvency. It also covers the role of a business plan in helping to achieve those objectives.

A business plan describes the goals, strategies and resources of a business. The business plan should include a number of sub-plans covering operational, marketing and financial aspects of the business.

The financial plan is designed to ensure that enough funding is available at the right time to meet the needs of the organisation for short, medium and long-term capital.

In order to prepare a financial plan a business prepares forecast information under different assumptions and looks at the impact any given forecast has on the business, including profit effect, cash impact and statement of financial position projection.

A key element of any forecast is the assumptions behind it and you must be able to critically evaluate a forecast or perform some sort of sensitivity analysis on the results.

Some of the business's objectives will have been quantified in financial terms. Once funding has been obtained, measuring performance against those objectives to evaluate the success of the strategy is a key part of the system of financial control of an enterprise as well as being important to investors.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Financial analysis</b>		
Analyse and advise upon an organisation's financial strategy		
<b>3.01</b>	<b>Business plans</b>	2
3.01.01	Explain the role and composition of business plans in helping an organisation achieve its objectives	
3.01.02	Prepare a simple business plan for a given scenario which will achieve an organisation's stated objectives	
3.01.03	Explain the general objectives of financial management and describe the financial strategy process for a business	
3.01.04	Evaluate the financial strategy of the organisation and recommend financial actions that will add value to the organisation	
<b>3.02</b>	<b>Cash flow statements</b>	3
3.02.01	Describe the role of cash flow analysis in the evaluation of an organisation's strategic and operational plans	
3.02.02	Prepare cash flow statements in order to analyse the financial strategy of an organisation and to identify its short and medium term financial requirements	
3.02.03	Explain how an organisation can use cash flow reporting systems to monitor and manage its financial strategy	
<b>3.03</b>	<b>Profitability projections</b>	3
3.03.01	Explain how profitability projections can be used to examine the impact of an organisation's financial strategy	
3.03.02	Prepare projections of future profitability in order to evaluate an organisation's financial strategy	
<b>3.04</b>	<b>Liquidity and solvency positions</b>	2
3.04.01	Analyse the impact of an organisation's financial strategy on its liquidity and solvency through the use of ratios and other techniques	
<b>3.05</b>	<b>Sensitivity analysis</b>	3
3.05.02	Recognise how the outcome of an organisation's decisions is affected by the accuracy of the data on which projections are based and factors which could not be included in any computational analysis	
3.05.03	Explain the role of sensitivity analysis as a method of dealing with uncertainty in forecasting and be able to apply appropriate techniques	

# 1 Financial strategy and management



## Topic highlights

Financial management decisions cover **investment** decisions, **financing** decisions, **dividend** decisions and **risk management**.

Financial strategy refers to the way in which a business allocates and manages its finances (a critical resource) in order to achieve its corporate objectives.

**Financial strategy** can be defined as “the identification of the possible investment strategies capable of maximising an organisation's net present value, the allocation of scarce capital resources among the competing opportunities and the implementation and monitoring of the chosen strategy so as to achieve stated objectives”.

Understanding business strategy and the interaction with a company's chosen financial structure requires a detailed understanding of financial management and practices.

## 1.1 What is financial management?



### Key terms

**Financial management** can be defined as the management of the finances of an organisation in order to achieve the financial objectives of the organisation. The usual assumption in financial management for the private sector is that the objective of the company is to **maximise shareholders' wealth**.

The financial manager makes decisions relating to **investment**, **financing** and **dividends**. The **management of risk** must also be considered.

### Examples of different types of investment decision

<b>Decisions internal to the business enterprise</b>	<ul style="list-style-type: none"> <li>• Whether to undertake new projects</li> <li>• Whether to invest in new plant and machinery</li> <li>• Research and development decisions</li> <li>• Investment in a marketing or advertising campaign</li> </ul>
<b>Decisions involving external parties</b>	<ul style="list-style-type: none"> <li>• Whether to carry out a takeover or a merger involving another business</li> <li>• Whether to engage in a joint venture with another enterprise</li> </ul>
<b>Disinvestment decisions</b>	<ul style="list-style-type: none"> <li>• Whether to sell off unprofitable segments of the business</li> <li>• Whether to sell old or surplus plant and machinery</li> <li>• The sale of subsidiary companies</li> </ul>

Investments in assets must be **financed** somehow. Financial management is also concerned with the **management of short-term funds** and with how funds can be raised over the **long term**.

The retention of profits is also a financing decision. The other side of this decision is that if profits are retained, there is less to pay out to shareholders as dividends, which might deter investors. An appropriate balance needs to be struck in addressing the **dividend decision**: how much of its profits should the company pay out as dividends and how much should it retain for investment to provide for future growth and new investment opportunities?



## 1.2 Financial management decisions

Therefore, financial management encompasses a number of key management processes:

- Business and financial planning
- Methods of financing the business
- Cash flow management
- Current and non-current assets and liabilities management
- The management of interest rate and foreign exchange risk and other financial risk strategies
- Constant testing of the financial health of the business coupled with an understanding of common reasons for business failure.

In this chapter we concentrate on the role of business and financial planning. Other areas will be developed in later chapters.

## 1.3 Financial planning

The financial manager will need to **plan** to ensure that enough funding is available at the right time to meet the needs of the organisation for short, medium and long-term capital.

- (a) In the short term, funds may be needed to pay for purchases of inventory, or to smooth out changes in receivables, payables and cash: the financial manager is here ensuring that **working capital requirements** are met.
- (b) In the medium or long term, the organisation may have planned purchases of **non-current assets** such as plant and equipment, for which the financial manager must ensure that **funding** is available.

The financial manager contributes to decisions on the uses of funds raised by **analysing financial data** to **determine uses** which meet the **organisation's financial objectives**. Is project A to be preferred to project B? Should a new asset be bought or leased?

## 1.4 Financial control

The **control** function of the financial manager is concerned with how effectively the funds of the business are used. Are the various activities of the organisation meeting its objectives? Are assets being used efficiently? To answer these questions, the financial manager may **compare data on actual performance** with expected or **forecast performance**. Financial forecasts are usually based on past performance (historical data) modified to reflect expected future changes. Future changes may include the effects of economic development, for example an economic recovery leading to a forecast upturn in revenues.

Although selling surplus assets yields short-term benefits, the business should not jeopardise its activities in the medium or long term by disposing of productive capacity until the likelihood of it being required in the future has been fully assessed.

# 2 Financial objectives and targets



### Topic highlights

Professional financial management has two principal objectives: profitability and liquidity.

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### Key term

**Professional financial management** has two principal objectives:

- **Profitability** (i.e. a business must achieve long-term profitability objectives that provide shareholders with their required rate of return).
- **Liquidity** (i.e. a business must always have sufficient cash to meet its financial commitments when they become due).

These objectives are equally important. A profitable company can go out of business because it does not have access to sufficient cash to meet its financial commitments. This will lead to business failure. A balance, therefore, must be achieved between profitability and liquidity. It is critical that management understands the risk/return relationship the company is prepared to accept in earning the required level of profitability. This risk/return relationship covers financial and operational risks of the company.

**Operational risks** are those associated with the uncertainties inherent in running a business and the volatility of its operating income. This risk is increased in companies with high fixed cost structures (operating leverage). **Financial risk** describes the additional volatility of profits in companies with high interest costs resultant from high levels of debt in their capital structure (high financial leverage).

The financial manager must understand the business strategy and operations of the business to fully understand the risk/return relationship that ensures an adequate level of profitability and solvency.

The interaction between business strategy and business operations dictates the need to manage the financial resources of the business. Cash flow is the fuel that is fed through the engine of the business operations to enable it to run.

**Financial strategy** depends on stated **objectives** or **targets**.

## 2.1 Financial targets

**Earnings per share (EPS)** is widely used as a measure of a company's performance and is of particular importance in comparing results over a period of several years. A company must be able to sustain its earnings in order to pay dividends and re-invest in the business so as to achieve future growth. Investors also look for **growth** in EPS from one year to the next.

In addition to setting targets for earnings, EPS and dividend per share, a company might set **other financial targets**, such as:

- a restriction on the company's level of **gearing**, or debt. For example, a company's management might decide:
  - the ratio of long-term debt capital to equity capital should never exceed, say, 1:1.
  - the cost of interest payments should never be higher than, say, 25% of total profits before interest and tax.
- a target for **profit retention**. For example, management might set a target that dividend cover (the ratio of distributable profits to dividends actually distributed) should not be less than, say, 2.5 times.
- a target for **operating profitability**. For example, management might set a target for the profit/sales ratio (say, a minimum of 10%) or for a return on capital employed (say, a minimum ROCE of 20%).

These financial targets are not primary financial objectives, but they can act as subsidiary targets or constraints which should help a company achieve its main financial objective without incurring excessive risks. They are usually measured over a year rather than over the long term.

Remember however that short-term measures of return can encourage a company to pursue **short-term** objectives at the expense of **long-term** ones, for example by deferring new capital investments, or spending only small amounts on research and development and on training.

A major problem with setting a number of different financial targets, either primary targets or supporting secondary targets, is that they might not all be consistent with each other. When this happens, some compromises will have to be accepted.



### Example: Financial targets

Lion Grange Co. has recently introduced a formal scheme of long-range planning. Sales in the current year reached \$10,000,000, and forecasts for the next five years are \$10,600,000, \$11,400,000, \$12,400,000, \$13,600,000 and \$15,000,000. The ratio of net profit after tax to sales is 10%, and this is expected to continue throughout the planning period. Total assets less current liabilities will remain at around 125% of sales. Equity in the current year is \$8.75m.

It was suggested at a recent board meeting that:

- If profits rise, dividends should rise by at least the same percentage.
- An earnings retention rate of 50% should be maintained i.e. a payment ratio of 50%.
- The ratio of long-term borrowing to long-term funds (debt plus equity) is limited (by the market) to 30%, which happens also to be the current gearing level of the company.

You are required to prepare a financial analysis of the draft long-range plan.

### Solution

The draft financial plan, for profits, dividends, assets required and funding, can be drawn up in a table, as follows:

	Current year	Year 1	Year 2	Year 3	Year 4	Year 5
	\$m	\$m	\$m	\$m	\$m	\$m
Sales	10.00	10.60	11.40	12.40	13.60	15.00
Net profit after tax	1.00	1.06	1.14	1.24	1.36	1.50
Dividends (50% of profit after tax)	0.50	0.53	0.57	0.62	0.68	0.75
Total assets less current liabilities	12.50	13.25	14.25	15.50	17.00	18.75
Equity (increased by retained earnings)	8.75	9.28	9.85	10.47	11.15	11.90
Maximum debt (30% of long-term funds, or $\frac{3}{7} \times$ equity)	3.75	3.98	4.22	4.49	4.78	5.10
Funds available	12.50	13.26	14.07	14.96	15.93	17.00
(Shortfalls) in funds *	0.00	0.00	(0.18)	(0.54)	(1.07)	(1.75)

\* Given maximum gearing of 30% and no new issue of shares = funds available minus net assets required.



### Self-test question 1

Suggest policies on dividends, retained earnings and gearing for Lion Grange, using the data above.

(The answer is at the end of the chapter)

## 3 Evaluating financial strategy



### Topic highlights

Some of the business's objectives will have been quantified in financial terms. Performance measurement is a key part of the system of financial control of an enterprise as well as being important to investors.

### 3.1 Measuring financial performance

As part of the system of financial control in an organisation, it will be necessary to have ways of measuring the progress of the enterprise, so that managers know how well the company is doing. A common means of doing this is through **ratio analysis**, which is concerned with comparing and quantifying relationships between financial variables, such as those variables found in the statement of financial position and income statement of the enterprise.

### 3.2 The broad categories of ratios

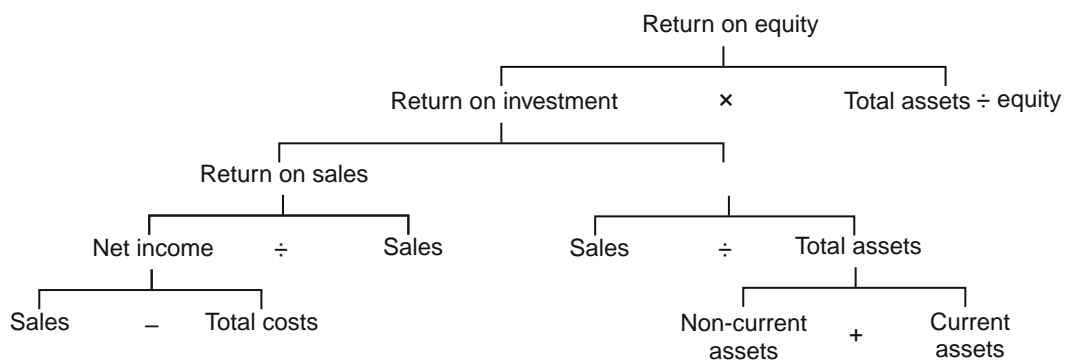
Ratios can be grouped into the following four categories:

- **Profitability and return**
- **Debt and gearing**
- **Liquidity**
- **Shareholders' investment ratios ("stock market ratios")**

The key to obtaining meaningful information from ratio analysis is **comparison**: comparing ratios **over a number of periods** within the same business to establish whether the business is improving or declining, and **comparing ratios between similar businesses** to see whether the company you are analysing is better or worse than average within its own business sector.

### 3.3 Ratio pyramids

The Du Pont system of ratio analysis involves constructing a pyramid of interrelated ratios like that below:



Such ratio pyramids help in providing for an overall management plan to achieve profitability, and allow the interrelationships between ratios to be checked.

### 3.4 Profitability

A company ought of course to be profitable if it is to maximise shareholder wealth, and obvious checks on profitability are:

- (a) Whether the company has made a profit or a loss on its ordinary activities
- (b) By how much this year's profit or loss is bigger or smaller than last year's profit or loss

**Profit before taxation** is generally thought to be a better figure to use than profit after taxation, because there might be unusual variations in the tax charge from year to year which would not affect the underlying profitability of the company's operations.

Another profit figure that should be considered is **profit before interest and tax (PBIT)**. This is the amount of profit which the company earned before having to pay interest to the providers of loan capital. By providers of loan capital, we usually mean **longer-term** loan capital, such as debentures and medium-term bank loans.

#### 3.4.1 Profitability and return: return on capital employed

You cannot assess profits or profit growth properly without relating them to the amount of funds (the capital) employed in making the profits. The most important profitability ratio is therefore **return on capital employed (ROCE)**, also called **return on investment (ROI)**.

$$\text{Return on Capital Employed} = \frac{\text{PBIT}}{\text{Capital employed}}$$

**Capital employed** = Shareholders' funds *plus* payables: amounts falling due after more than one year *plus* any long-term provisions for liabilities and charges  
 = Total assets less current liabilities

#### 3.4.2 Evaluating the ROCE

What does a company's ROCE tell us? What should we be looking for? There are three comparisons that can be made.

- (a) The **change** in ROCE from one year to the next
- (b) The ROCE being **earned** by **other companies**, if this information is available
- (c) A comparison of the ROCE with **current market borrowing rates**
  - (i) What would be the **cost of extra borrowing** to the company if it needed more loans, and is it earning a ROCE that suggests it could make high enough profits to make such borrowing worthwhile?
  - (ii) Is the company making a ROCE which suggests that it is making **profitable use** of its **current borrowing**?

#### 3.4.3 Secondary ratios

We may analyse the ROCE by looking at the kinds of interrelationships between ratios used in ratio pyramids, which we mentioned earlier. We can thus find out why the ROCE is high or low, or better or worse than last year. **Profit margin** and **asset turnover** together explain the ROCE, and if the ROCE is the primary profitability ratio, these other two are the secondary ratios. The relationship between the three ratios is as follows:

Profit margin  $\times$  asset turnover = ROCE

$$\frac{\text{PBIT}}{\text{Sales revenue}} \times \frac{\text{Sales revenue}}{\text{Capital employed}} = \frac{\text{PBIT}}{\text{Capital employed}}$$

It is also worth commenting on the **change in turnover** from one year to the next. Strong sales growth will usually indicate volume growth as well as turnover increases due to price rises, and volume growth is one sign of a prosperous company.

### 3.4.4 Return on equity

Another measure of the firm's overall performance is **return on equity**. This compares net profit after tax with the equity that shareholders have invested in the firm.



#### Key term

$$\text{Return on equity} = \frac{\text{Earnings attributable to ordinary shareholders}}{\text{Shareholders' equity}}$$

This ratio shows the earning power of the shareholders' book investment and can be used to compare two firms in the same industry. A high return on equity could reflect the firm's good management of expenses and ability to invest in profitable projects. However, it could also reflect a higher level of debt finance (gearing) with associated higher risk.

### 3.4.5 Gross profit margin, the net profit margin and profit analysis

Depending on the format of the income statement, you may be able to calculate the **gross profit margin** and also the **net profit margin**. Looking at the two together can be quite informative.



#### Illustration: Profit margins

A company has the following summarised income statements for two consecutive years.

	Year 1	Year 2
	\$	\$
Sales revenue	70,000	100,000
Less cost of sales	42,000	55,000
Gross profit	<u>28,000</u>	<u>45,000</u>
Less expenses	21,000	35,000
Net profit	<u>7,000</u>	<u>10,000</u>

Although the net profit margin is the same for both years at 10%, the gross profit margin is not.

In year 1 it is:  $\frac{28,000}{70,000} = 40\%$  and in year 2 it is:  $\frac{45,000}{100,000} = 45\%$

Is this good or bad for the business? An increased profit margin must be good because this indicates a wider gap between selling price and cost of sales. However, given that the net profit ratio has stayed the same in the second year, expenses must be rising. In year 1 expenses were 30% of turnover, whereas in year 2 they were 35% of revenue. This indicates that administration or selling and distribution expenses may require tighter control.

A percentage analysis of profit between year 1 and year 2 is as follows:

	Year 1	Year 2
	%	%
Cost of sales as a % of sales	60	55
Gross profit as a % of sales	40	45
	<u>100</u>	<u>100</u>
Expenses as a % of sales	30	35
Net profit as a % of sales	10	10
Gross profit as a % of sales	<u>40</u>	<u>45</u>



### Self-test question 2

The financial manager of a company has identified some non-current assets that are under-utilised. Some of these assets could be disposed of. What might be the financial implications of disposing of these surplus assets?

(The answer is at the end of the chapter)

## 3.5 Debt and gearing ratios

Debt ratios are concerned with how much the company owes in relation to its size and whether it is getting into heavier debt or improving its situation. **Gearing** is the amount of debt finance a company uses relative to its equity finance.

- When a company is heavily in debt, and seems to be getting even more heavily into debt, banks and other would-be lenders are very soon likely to **refuse further borrowing** and the company might well find itself in trouble.
- When a company is earning only a modest profit before interest and tax, and has a heavy debt burden, there will be **very little profit** left over for shareholders after the interest charges have been paid.

The main debt and gearing ratios are covered in Chapter 14.

## 3.6 Liquidity ratios: cash and working capital

Profitability is of course an important aspect of a company's performance, and debt or gearing is another. Neither, however, addresses directly the key issue of **liquidity**. A company needs liquid assets so that it can meet its debts when they fall due.

The main liquidity ratios are described in Chapter 8.

## 3.7 Shareholders' investment ratios

Indicators such as **dividend yield**, **EPS**, **P/E ratio** and **dividend cover** can be used to assess investor returns.

**Returns to shareholders** are obtained in the form of **dividends** received and/or **capital gains** from increases in market value.

A company will only be able to raise finance if investors think that the returns they can expect are satisfactory in view of the risks they are taking. We must therefore consider how investors appraise companies. We will concentrate on listed companies.

Information that is relevant to market prices and returns is available from published stock market information, and in particular from certain **stock market ratios**.

### 3.7.1 The dividend yield

$$\text{Dividend yield} = \frac{\text{Dividend per share}}{\text{Market price per share}} \times 100\%$$

The dividend yield can be calculated on either a gross or net basis. The gross dividend is the cash dividend paid plus the appropriate tax credit/withholding tax deducted at source. The gross dividend yield is used in preference to a net dividend yield in the financial press, so that investors can make a direct comparison with (gross) interest yields from bonds.

**Illustration: Dividend yield**

A company pays a dividend of 15c per share, (net of withholding tax at 10%). The market price is 240c. What is the dividend yield?

$$\text{Gross dividend per share} = 15c \times \frac{100}{(100 - 10)} = 16.67c$$

$$\text{Gross dividend yield} = \frac{16.67c}{240c} = 6.95\%$$

**3.7.2 Earnings per share (EPS)****Key term**

$$\text{Earnings per share} = \frac{\text{Profit distributable to ordinary shareholders}}{\text{Weighted average number of ordinary shares}}$$

The use of earnings per share was discussed in section 2.1 of this chapter.

**3.7.3 The price/earnings ratio****Key term**

$$\text{Price/earnings ratio} = \frac{\text{Market price of share}}{\text{EPS}}$$

The **price/earnings (P/E) ratio** is the most important yardstick for assessing the relative worth of a share.

This is the same as:  $\frac{\text{Total market value of equity}}{\text{Total earnings}}$

The **value of the P/E ratio** reflects the **market's appraisal** of the share's **future prospects**. It is an important ratio because it relates two key considerations for investors, the market price of a share and its earnings capacity. Where the share price is 'cum div' and includes the value of a dividend that has been declared and will soon be paid, the P/E ratio should be calculated by deducting the dividend from the market price of the share.

**Example: Price/earnings ratio**

A company has recently declared a dividend of 12c per share. The share price is \$3.72 cum div and earnings for the most recent year were 30c per share. Calculate the P/E ratio.

**Solution**

$$\text{P/E ratio} = \frac{\text{MV ex div}}{\text{EPS}} = \frac{\$3.60}{30c} = 12$$



### 3.7.4 Changes in EPS: the P/E ratio and the share price

An approach to assessing what share prices ought to be, which is often used in practice, is a P/E ratio approach.

- (a) The relationship between the **EPS** and the **share price** is measured by the **P/E ratio**.
- (b) The **P/E ratio** does **not vary much** over time.
- (c) So if the **EPS goes up or down**, the **share price** should be expected to **move up or down** too, and the new share price will be the new EPS multiplied by the constant P/E ratio.

For example, if a company had an EPS last year of 30c and a share price of \$3.60, its P/E ratio would have been 12. If the current year's EPS is 33c, we might expect that the P/E ratio would remain the same, 12, and so the share price ought to go up to  $12 \times 33c = \$3.96$ .



#### Self-test question 3

The directors of X are comparing some of the company's year-end statistics with those of Y, the company's main competitor. X has had a fairly normal year in terms of profit but Y's latest profits have been severely reduced by an exceptional loss arising from the closure of an unsuccessful division. Y has a considerably higher level of financial gearing than X.

The board is focusing on the figures given below:

	X	Y
Share price	450c	525c
Gross dividend yield	5%	4%
Price/earnings ratio	15	25
Proportion of profits earned overseas	60%	0%

In the course of the discussion a number of comments are made, including those given below:

*Required*

Discuss comments (a) to (c), making use of the above data where appropriate.

- (a) "There is something odd about the P/E ratios. Y has had a particularly bad year. Its P/E should surely be lower than ours."
- (b) "One of the factors which may explain Y's high P/E is the high financial gearing."
- (c) "These figures will not please our shareholders. The dividend yield is below the return an investor could currently obtain on risk-free government bonds."

**(The answer is at the end of the chapter)**

## 4 Business and financial planning



### Topic highlights

A business plan describes the goals, strategies and resources of a business.

Planning is a continuous process with plans being made and changed in reaction to shifts in the business environment.



### Key term

A **business plan** describes the goals, strategies and resources of a business. Its aim is to assist management in providing shareholders with the highest possible returns by asking questions about how the company is operating, such as: what products should the company sell, what production methods should it use, what markets should the company try to serve and what marketing strategies should it adopt?

## 4.1 Purpose of business planning

A business plan may be used to:

- (a) co-ordinate the activities of the different business functions towards the achievement of strategic objectives
- (b) set out a case for finance to persuade investors
- (c) gain approval of senior management or Board for a business unit's planned activities
- (d) translate the strategic plan into a series of more detailed short-term plans

The business plan should include a number of sub-plans covering operational, marketing and financial aspects of the business.

The **operational plan** should include the sourcing of raw materials or services, costs and quantities of materials, production processes, method of service delivery and so on. This provides the basic foundation of the cost structure that will apply to the products and/or services.

The **marketing plan** identifies the company's market and the position of the product or service in the market. This should reflect delivery and distribution policies and the current position of the product in its life cycle.

The **financial plan** translates the rest of the plan into financial terms and considers specifically financial matters such as planned investments and financing.

## 4.2 Development of a business plan

A business plan is a formal statement of a firm's goals, and the way that those goals will be attained. It will also contain background information about the organisation attempting to reach those goals.

There is no single formula for developing a business plan, but most good plans have at least four sections:

- A description of the business
- An outline of the vision, mission and strategic plan for the business
- An outline of the production, marketing, financing and management of the business
- Detailed documentation as an appendix supporting the plan.

The detailed documentation appendix would include:

- The business
  - Detailed description of the business
  - Marketing plan
  - Competitive environment
  - Outline of operations and operating procedures
  - Personnel and HR
  - Business insurance

- Financial data
  - Latest statement of financial position and income statement
  - Pro-forma income statement projections
    - Three-year summary
    - Detail by month for the first year
    - Detail by quarters for the second and third years
    - Assumptions on which the projections were based
  - Pro-forma cash flow statement projections
  - Capital expenditure plans
  - Details of loans and loan applications
- Other supporting documents
  - Copies of legal documents, including leases, licences, etc
  - Resumés for all directors and key management personnel
  - Income tax returns for the last three years
  - Copies of important contracts, e.g. supply contracts, franchise agreements
  - Other documentation as appropriate.

### Examples of business plans

While it would be interesting to include in this Learning Pack a full example of an actual business plan, such a document would run to many pages. However, there are some very good websites showing examples of business plans and templates for creating them. Here are three:



[www.planware.org](http://www.planware.org)

[www.myownbusiness.org](http://www.myownbusiness.org)

[www.bplans.com](http://www.bplans.com)

## 4.3 Pro-forma business plan

A suggested outline might be as follows:

### Business pro-forma layout and heading

- 1 **Executive summary.** A short précis of the business idea and the business plan focusing on the key issues arising.
- 2 **Business and management**
  - 2.1 **History and current position.** A brief description as to how the business comes to be as it is. Detailing the status of things, ownership issues as well as profitability.
  - 2.2 **Strategic intent.** What the business needs to look like over the next time period (say 3/5 years).
  - 2.3 **Business objectives** – short term: What needs to be achieved in the next 12 months.
  - 2.4 **Business objectives** – long term: What needs to be achieved over the next 3/5 years.
  - 2.5 **Personal objectives.** (Use if appropriate for the readership.) What you want to achieve.
  - 2.6 **Management team.** Description of the team and skills and experience that support the business plan objectives. The skills (or gaps) of all key employees.
- 3 **Products/Services**
  - 3.1 **Description.** What the products or services are.
  - 3.2 **Readiness for market.** Availability and quality status of existing products and services and potential new ones.
  - 3.3 **Sources of supplies (if important).** If there are critical supplies, details of security of supply.

- 4 **Markets and competitors**
  - 4.1 **Description** (of customers). Who the customers are and the relationship with them.
  - 4.2 **Customer needs and benefits**. Layout their key requirements, and how they will be fulfilled.
  - 4.3 **Market projections**. How markets will develop both from demand and pricing perspectives.
  - 4.4 **Competition**. Nature of competition, key strategies and how it responds.
- 5 **Business strategy**
  - 5.1 **Pricing policy**. How prices are determined and how they will evolve and the response.
  - 5.2 **Promotional plans**. How the business will promote itself and products.
  - 5.3 **Distribution channels**. How the channels work, and the consequential behaviour required for the business.
  - 5.4 **Operational processes**
  - 5.5 **Human resources**
- 6 **Forecasts and financial data**
  - 6.1 **Sales forecasts**. Prediction for both the short and medium-term vision.
  - 6.2 **Assumptions underpinning financial forecasts**. The underlying assumptions are important.
  - 6.3 **Cash flow forecasts**
  - 6.4 **Income statement** and **Statement of financial position**
  - 6.5 **Capital expenditure**
- 7 **Financing requirements**
  - 7.1 **Current financing**. How the business is currently funded, and how it will/needs to evolve.
  - 7.2 **New funds required and timing**. Amounts, timing and what they will be used for.
- 8 **Business controls**. How the business is controlled, what key performance measures will be used, who will look at them and how do they respond. Important documents may include:
  - 8.1 Financial reports
  - 8.2 Sales reports
  - 8.3 Production and quality reports
  - 8.4 Human Resources assessments

## 5 The financial plan



### Topic highlights

The financial plan is an important document in its own right because it summarises information prepared for the other parts of the business plan in financial terms.



### Key term

Although part of the business plan, the **financial plan** is an important document in its own right because it summarises information prepared for the other parts of the business plan in financial terms. It examines financial consequences in profit and cash flow terms. It therefore shows if the business plan is viable. Once finalised it is the risk and cash flow implications that are managed by the treasury operation.

Planning is a continuous process with plans being made and changed in reaction to shifts in the business environment. The advantages of a comprehensive financial plan include the following:

- (a) Advance warning concerning future anticipated events, for example replacement of equipment and other large items of capital expenditure;
- (b) Progressive comparison of actual performance to plan with timely and proactive corrective action taken as required;
- (c) Meeting pre-investment requirements of financial institutions such as banks to review a business plan supporting good corporate governance principles, for example increased responsibilities for directors to keep proper records including profit and cash forecasts.

## 5.1 Master budget

Key to the financial plan is the master budget, which includes profit and cash flow forecasts. The master budget is constructed from the individual budgets prepared for all parts of the business (possibly by cost or profit centre). There may be separate budgets for the following:

- (a) **Sales** (covers the products offered, the price per unit and projected sales volume and revenue and should take account of seasonal variations, maximising economies of scale and any limitations imposed on production capacity).
- (b) **Production** (covers the setting up, direct and indirect production costs per unit, including the amount of machinery and the amount of labour required, the size of the production runs, the cost of maintenance, the purchase of replacement parts and so on).
- (c) **Purchasing** (covers the required cost of goods and/or services provided and takes account of the required investment in both raw material and finished goods inventory to both avoid excessive financing/carrying costs and unnecessary utilisation of cash).
- (d) **Marketing** (covers among other things the costs of promotion and distribution).
- (e) **Administration** (covers the infrastructure costs including staff, computer facilities, funding requirements, payment of loans and other liabilities, rent, utility costs, etc.).
- (f) **Working capital** (covers the investment required in inventories, receivables and payables to support the activity level of the business).
- (g) **Research and development** (if applicable, covers both revenue and capital items of expenditure nature).
- (h) **Capital expenditure** (covers the investment required to support the strategy of the business).

Three forecast financial statements are prepared from this information, the income statement, the statement of financial position and the statement of cash flows.

## 5.2 Role of cash flow and profitability projections

When planning the short or long-term funding requirements of a business, it is more important to forecast the likely cash requirements than to project profitability and so on. While profit is a vital indicator of the performance of a business, the generation of profit does not necessarily guarantee the business's development, or survival. More businesses fail for lack of cash flow than for want of profit.

Cash flow planning entails forecasting all significant cash inflows relating to sales, new loans, interest received etc. and then analysing in detail the timing of expected payments relating to suppliers, wages, other expenses, capital expenditure, loan repayments, dividends, tax, interest payments and so on. The difference between the cash inflows and out-flows within a given period indicates the net cash flow. When this net cash flow is added to or subtracted from opening bank balances, any likely short-term bank funding requirements can be ascertained.

A cash flow model can be used to compile forecasts, assess possible funding requirements and explore the likely financial consequences of alternative strategies. Used effectively, a model can

help prevent major planning errors, anticipate problems, identify opportunities to improve cash flow or provide a basis for negotiating short-term funding from a bank.

Generally, when seeking external funding, the time horizon covered by a set of cash flow projections should at least cover the period for which the funding is needed. The greater the amount of funding required and the longer the period of exposure for the provider of these funds, the more comprehensive the supporting projections and plan must be.

A cash flow model for short-term financial planning uses assumptions on sales, costs, credit, funding and so on to produce monthly cash flow projections for up to a year ahead. The initial assumptions can be readily altered to evaluate alternative scenarios. For example, a model could be used to explore the extent to which future sales could be increased while holding bank borrowings within predetermined limits; to assess the effects on cash flow of varying sales, costs or credit terms; or to determine the likely short-term funding requirements for a business.

Once these assumptions have been established, a model can be used to produce the cash flow projections which, in turn, indicate the likely future surplus cash balances or borrowing requirements.

### 5.3 Sensitivity analysis

No matter how carefully a financial plan or forecast has been prepared, the reality is likely to be different from the plan. Sales may be lower, production costs may be higher, interest rates may have increased or decreased and so on. These and other changes in the business environment may cause unexpected changes to the profit and cash flow.

To allow for unexpected contingencies, a “normal” forecast, which shows the “most likely outcome” and an alternative forecast (or forecasts) that allows for adverse outcomes such as “worst case” situations should be prepared. This is part of the process of **sensitivity analysis**.

Key parts of the business plan will need to be revised during the year as conditions change. The frequency of the revision is a matter of company policy, the guiding principle being that the profit and cash flow forecasts should be revised as frequently as necessary (often monthly) for the forecast information to be capable of being used as a benchmark of performance.

## 6 Forecasting

The example below takes you through the process of producing income statements and statements of financial position for future years. The example also illustrates free cash flow analysis but cash flow forecasting is looked at in detail in Chapter 8.



### Example: Forecast profits, statement of financial position and free cash flow

#### World Tools Organisation Ltd (WTO)

The board of directors of WTO has requested the production of a four-year financial plan. The key assumptions behind the plan are as follows:

- (a) Historically, sales growth has been 9% per year. Uncertainty about future economic prospects over the next four years from 20X1–20X4 however implies that this growth rate will reduce by 1% per year after the financial year 20X1 (e.g. to 8% in 20X2). After 20X4, growth is expected to remain constant at a rate of 6% each year.
- (b) Cash operating costs are estimated to be approximately 68% of sales.
- (c) Tax allowable depreciation for the past few years has been approximately 15% of the net book value of plant and machinery at year end. This is expected to continue for the next few years.
- (d) Inventories, receivables, cash in hand and “other payables” are assumed to increase in proportion to the increase in sales.

- (e) Investment in, and net book value of, plant and machinery is expected to increase in line with sales. No investment is planned in other non-current assets other than a refurbishment of buildings at an estimated cost of \$40 million in late 20X3.
- (f) Any change in interest paid as a result of changes in borrowing may be assumed to be effective in the next year. WTO plans to meet any changes in financing needs, with the exception of the repayment of the fixed rate loan, by adjusting its overdraft.
- (g) WTO currently pays 7% per annum interest on its short-term borrowing.
- (h) Corporation tax is expected to continue at its present rate of 30% over the next four years.
- (i) WTO has borrowed extensively from the banking system, and covenants exist that prevent the company's gearing (book value of total loans to book value of total loans plus equity) exceeding 40% for a period of more than one year.
- (j) The company's chief executive officer has publicly stated that both profits before tax and WTO's share price should increase by at least 100% during the next four years.

### Summarised financial accounts of WTO

#### INCOME STATEMENT FOR THE YEAR ENDED MARCH 20X0

	\$m
Revenue	1,639
Operating costs before depreciation	(1,225)
EBITDA	414
Tax allowable depreciation	(152)
Operating profit	262
Net interest payable	(57)
Profit on ordinary activities before tax	205
Tax on ordinary activities (30%)	(62)
Profit after taxation (Amount transferred to reserves)	143

#### STATEMENT OF FINANCIAL POSITION AS AT 31 MARCH 20X0

	\$m
<i>Non-current assets</i>	
Land and buildings	310
Plant and machinery (net)	1,012
Investments (Note 1)	32
	<u>1,354</u>
<i>Current assets</i>	
Inventories	448
Receivables	564
Cash in hand and short-term deposits	20
	<u>1,032</u>
<i>Current liabilities</i>	
Short-term loans and overdrafts	230
Other payables	472
	<u>(702)</u>
<i>Non-current liabilities</i>	
Borrowings (8% fixed rate) (Note 2)	(580)
	<u>1,104</u>
<i>Capital and reserves</i>	
Share capital	240
Reserves	864
	<u>1,104</u>

#### Notes

- (1) The investments yield negligible interest.
- (2) Borrowings are scheduled to be repaid at the end of 20X2 and will be refinanced with a similar type of loan in 20X2.

The company's current share price is \$21.00, and its weighted average cost of capital (WACC) is 11%. The company has issued 240 million shares.

*Required*

- (1) Produce pro forma statements of financial position and income statements for each of the next four years, using the assumptions set out below. Critically discuss any problems or implications of these assumptions.
- (2) Using free cash flow analysis, evaluate and discuss whether or not the managing director's claims for the future share price are likely to be achievable. The operating cash flow element of free cash flow may be estimated by: (Operating profit (1 – t) + depreciation).

**Solution**

## PRO FORMA INCOME STATEMENTS FOR THE YEARS ENDED MARCH 20X1 – X4

	20X1	20X2	20X3	20X4
	\$m	\$m	\$m	\$m
Revenue	1,787	1,929	2,064	2,188
Operating costs before depreciation	<u>(1,215)</u>	<u>(1,312)</u>	<u>(1,404)</u>	<u>(1,488)</u>
EBITDA	572	617	660	700
Tax allowable depreciation	<u>(165)</u>	<u>(179)</u>	<u>(191)</u>	<u>(203)</u>
Operating profit	407	438	469	497
Net interest payable	<u>(63)</u>	<u>(65)</u>	<u>(66)</u>	<u>(70)</u>
Profit on ordinary activities before tax	344	373	403	427
Tax on ordinary activities	<u>(103)</u>	<u>(112)</u>	<u>(121)</u>	<u>(128)</u>
Profit after tax	241	261	282	299
Amount transferred to reserves	<u>241</u>	<u>261</u>	<u>282</u>	<u>299</u>

## PRO FORMA STATEMENTS OF FINANCIAL POSITION 20X1 – X4

	20X1	20X2	20X3	20X4
	\$m	\$m	\$m	\$m
<i>Non-current assets</i>				
Land and buildings	310	310	350	350
Plant and machinery (net)	1,103	1,191	1,275	1,351
Investments	<u>32</u>	<u>32</u>	<u>32</u>	<u>32</u>
	1,445	1,533	1,657	1,733
<i>Current assets</i>				
Inventories	488	527	564	598
Receivables	615	664	710	753
Cash and cash equivalents	<u>22</u>	<u>24</u>	<u>25</u>	<u>27</u>
	1,125	1,215	1,299	1,378
<i>Current liabilities</i>				
Short-term loans and overdrafts	266	287	332	320
Other payables	<u>514</u>	<u>556</u>	<u>595</u>	<u>30</u>
	(780)	(843)	(927)	(950)
<i>Non-current liabilities</i>				
Borrowings (Note)	<u>(580)</u>	<u>(580)</u>	<u>(580)</u>	<u>(580)</u>
	<u>1,210</u>	<u>1,325</u>	<u>1,449</u>	<u>1,581</u>



	20X1 \$m	20X2 \$m	20X3 \$m	20X4 \$m
<i>Capital and reserves</i>				
Share capital	240	240	240	240
Reserves	<u>1,105</u>	<u>1,366</u>	<u>1,648</u>	<u>1,947</u>
	<u>1,345</u>	<u>1,606</u>	<u>1,888</u>	<u>2,187</u>

**Note.** Refinanced with a similar type of loan in 20X2

The *pro forma* accounts are based primarily upon the percentage of sales method of forecasting. This provides a simple approach to forecasting, but is based upon assumptions of existing or planned relationships between variables remaining constant, which are highly unlikely. It also does not allow for improvements in efficiency over time.

- Accurate forecasts of sales growth are very difficult. Sensitivity analysis is recommended to investigate the implications of sales differing from the forecast levels. A constant growth rate of 6% forever after four years is perhaps unlikely.
- Cash operating costs are unlikely to increase in direct proportion with sales. The variable elements (wages, materials, distribution costs etc.) could all move at a higher or lower rate than sales, while the fixed elements will not change with the value of sales at all in the short run. If the company becomes more efficient then costs as a proportion of sales should reduce.
- Unless tax allowable depreciation from new asset purchases exactly offsets the diminishing allowances on older assets, and effect of the increase in assets with sales growth, this relationship is unlikely to be precise. The government might also change the rates of tax allowable depreciation.
- Assuming a direct relationship between inventories, receivables, cash and other payables to sales could promote inefficiency. Although a strong correlation between such variables exists, there should be no need to increase inventory, receivables and payables in direct proportion to sales.

Company valuations will be explained in Chapter 17. For the purpose of this example, it is assumed that the value of the company is the present value of its future expected free cash flows.

**Free cash flow** will be estimated by Operating profit (1 – t) plus depreciation less adjustments for changes in working capital and expenditure on non-current assets. (**Note.** Other definitions of free cash flow exist.)

	20X1 \$m	20X2 \$m	20X3 \$m	20X4 \$m
Change in land and buildings	–	–	40	–
Change in plant and machinery	91	88	84	76
Change in working capital	15	27	–	56
Change in assets	<u>106</u>	<u>115</u>	<u>124</u>	<u>132</u>
	20X1 \$m	20X2 \$m	20X3 \$m	20X4 \$m
Operating profit (1 – t)	285	307	328	348
Depreciation	165	179	191	203
Change in assets	<u>(106)</u>	<u>(115)</u>	<u>(124)</u>	<u>(132)</u>
Free cash flow	<u>344</u>	<u>371</u>	<u>395</u>	<u>419</u>

The present value of free cash flow for the company after 20X4 may be estimated by a formula:

$$\frac{FCF_{20X4}(1+g)}{WACC-g}, \text{ or } \frac{419(1.06)}{0.11-0.06} = 8,883$$

**Note.** This valuation formula is similar to the dividend growth valuation formula, which is explained in Chapter 13.

The estimated value of the company at the end of 20X4 is \$8,883 million. From this the value of any loans must be deducted in order to find the value accruing to shareholders. From the *pro forma*

accounts, loans are expected to total \$900 million, leaving a net value of \$7,983 million. If the number of issued shares has not changed, the estimated market value per share is:

$$\frac{7,983}{240} = \$33.26 \text{ per share, an increase of 58\% on the current share price.}$$

This data suggests that the managing director's claim that the share price will double in four years is not likely to occur. However, the impact of the performance of the economy, and unforeseen significant changes affecting WTO mean that such estimates are subject to a considerable margin of error.

## 7 Cash flow statements

### 7.1 Cash flow statements using the direct method

Cash flow statements are segmented into three types of activities; operations, investing and financing. As the name suggests, cash flows from operating activities result from the transactions and other events relating to the calculation of profit or loss. Cash flows from investing activities are the expenditures made by the firm in resources that are expected to generate future benefits – usually in the form of additional non-current assets. Cash flows from financing activities are associated with changes in the firm's debt and equity structure.

When measuring cash flows from operating activities, either of two methods can be used by firms – the direct method or the indirect method. The direct method involves calculating cash flows by adjusting each item in the income statement from the accrual basis to the cash basis. The indirect method begins with accrual-based net operating profit and adjusts it for items that reflect non-cash items and movements in working capital.

The direct method is preferred and involves the disclosure of major classes of gross cash receipts and gross cash payments. This means that cash flows from operating activities will include:

- Cash received from customers for sales of goods or services
- Cash paid to suppliers for goods and services purchased by the firm
- Cash paid to employees for wages salaries and bonuses
- Cash paid for other operating expenses
- Cash paid for interest and dividends (sometimes shown under financing activities)



#### Example: Cash flow statement using direct method

This example uses the summarised financial accounts from the World Tools Organisation Ltd (WTO) example in section 6 of this chapter. Only the data for the years 20X0 and 20X1 are used.

INCOME STATEMENT FOR YEAR ENDED 31 MARCH	Actual 20X0 \$m	Projected 20X1 \$m
Revenue	1,639	1,787
Operating costs before depreciation	<u>(1,225)</u>	<u>(1,215)</u>
EBITDA	414	572
Tax allowable depreciation (all plant and machinery)	<u>(152)</u>	<u>(165)</u>
Operating profit	262	407
Net interest payable	<u>(57)</u>	<u>(63)</u>
Profit on ordinary activities before tax	205	344
Tax on ordinary activities (30%)	(62)	(103)
Dividends	<u>(80)</u>	<u>(135)</u>
Amount transferred to reserves	<u>63</u>	<u>106</u>

STATEMENT OF FINANCIAL POSITION AS AT 31 MARCH	Actual 20X0 \$m	Projected 20X1 \$m
<i>Non-current assets</i>		
Land and buildings	310	310
Plant and machinery (net of depreciation)	1,012	1,103
Investments	<u>32</u>	<u>32</u>
	<u>1,354</u>	<u>1,445</u>
<i>Current assets</i>		
Inventories	448	488
Receivables	564	615
Cash in hand and short-term deposits	<u>20</u>	<u>22</u>
	<u>1,032</u>	<u>1,125</u>
<i>Current liabilities</i>		
Short-term loans and overdrafts	230	266
Other payables	<u>472</u>	<u>514</u>
	<u>(702)</u>	<u>(780)</u>
<i>Non-current liabilities</i>		
Borrowings (8% fixed rate)	<u>(580)</u>	<u>(580)</u>
<b>Total</b>	<b><u>1,104</u></b>	<b><u>1,210</u></b>
<i>Capital and reserves</i>		
Share capital	240	240
Reserves	<u>864</u>	<u>970</u>
<b>Total</b>	<b><u>1,104</u></b>	<b><u>1,210</u></b>

*Background calculations for operating cash flows direct method*

In order to calculate the operating cash flows using the direct method it is necessary to convert some accrual accounting numbers to cash flow numbers. The necessary calculations are shown below.

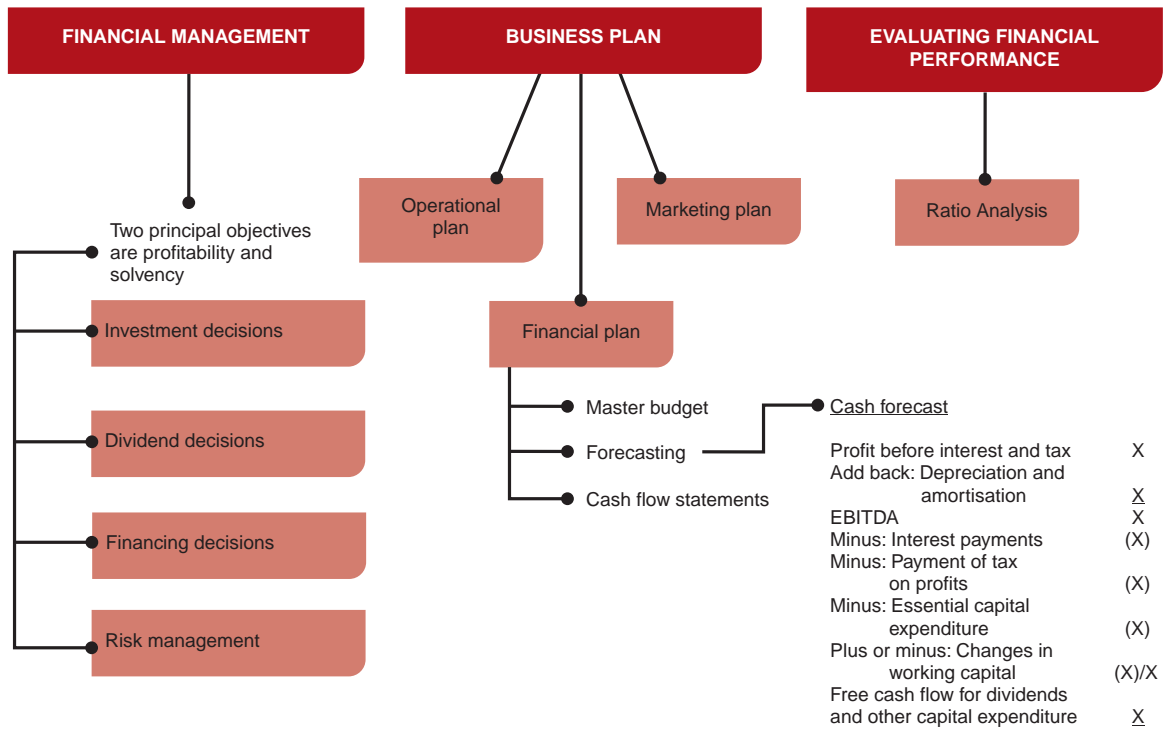
<i>Cash receipts from customers:</i>	\$m
Accrual accounting revenue	1,787
Less increase in receivables	<u>(51)</u>
Cash receipts from customers	<u>1,736</u>
<i>Cash payments for operating costs:</i>	
First, calculate purchases figure:	
Accrual accounting operating costs	1,215
Add increase in inventory	<u>40</u>
Purchases of operating costs	<u>1,255</u>
Second, calculate cash payments for purchases:	
Purchases of operating costs	1,255
Less increase in payables	<u>(42)</u>
Cash payments for purchases	<u>1,213</u>

WORLD TOOLS ORGANISATION LIMITED (WTO)  
PRO FORMA CASH FLOW STATEMENT FOR THE YEAR ENDED 31 MARCH 20X1

	\$m	\$m
<i>Cash flows from operating activities</i>		
Receipts from customers	1,736	
Payments for operating costs	(1,213)	
Payments for interest	(63)	
Tax on ordinary activities	(103)	
Payments for dividends	(135)	
<i>Net cash inflow from operating activities</i>	<u>222</u>	222
<i>Cash flows from financing activities</i>		
Increase in short-term loans and overdrafts	36	
<i>Net cash inflows from financing activities</i>		36
<i>Cash flows from investing activities</i>		
Purchase of new plant and equipment <sup>1</sup>	(256)	
<i>Net cash outflows from investing activities</i>		<u>(256)</u>
Net increase in cash		<u>2</u>
Add cash balance 31 March 20X0		20
Equals pro-forma cash balance 31 March 20X1		<u><u>22</u></u>
<sup>1</sup> Increase in carrying amount (\$91) plus depreciation added back (\$165)		

(Note. This pro forma cash flow statement is prepared using the direct method and differs from the “free cash flow” calculation used in estimating the value of the company.)

# Topic recap



## Answers to self-test questions

### Answer 1

The financial objectives of the company are not compatible with each other. Adjustments will have to be made.

- (a) Given the assumptions about sales, profits, dividends and net assets required, there will be an **increasing shortfall of funds** from year 2 onwards, unless new shares are issued or the gearing level rises above 30%.
- (b) In years 2 and 3, the shortfall can be eliminated by **retaining a greater percentage** of profits, but this may have a serious **adverse effect** on the share price. In year 4 and year 5, the shortfall in funds cannot be removed even if dividend payments are reduced to nothing.
- (c) The **net asset turnover** appears to be **low**. The situation would be eased if investments were able to generate a higher volume of sales, so that fewer non-current assets and less working capital would be required to support the projected level of sales.
- (d) If asset turnover cannot be improved, it may be possible to **increase the profit to sales ratio** by reducing costs or increasing selling prices.
- (e) If a new issue of shares is proposed to make up the shortfall in funds, the amount of funds required must be considered very carefully. Total **dividends** would have to be **increased** in order to pay dividends on the new shares. The company seems unable to offer prospects of suitable dividend payments, and so raising new equity might be difficult.
- (f) It is conceivable that extra funds could be raised by issuing new debt capital, so that the level of gearing would be over 30%. It is uncertain whether investors would be prepared to lend money so as to increase gearing. If more funds were borrowed, profits after interest and tax would fall so that the share price might also be reduced.

### Answer 2

The surplus assets are earning no profit; therefore in principle disposing of them would increase ROCE because assets employed can be reduced by disposal.

However in the year of disposal, there will be a gain or loss on disposal, which will affect the reported profit. The assets may have a disposal value, and the proceeds from disposal could be re-invested to increase profit. Alternatively, it may cost money to dispose of the unwanted assets, so that both profits and cash would be reduced.

There would be a reduction in depreciation charges after disposal of the assets.

In summary, ROCE may be higher or lower in the year of disposal, as a consequence of the disposal of the assets. In subsequent years, ROCE should increase, because profit will be higher (less depreciation, and possibly interest income or other benefits from investing the disposal proceeds).

### Answer 3

(a) **P/E ratio**

The **P/E ratio** measures the **relationship** between the **market price** of a share and the **earnings per share**. Its calculation involves the use of the share price, which is a reflection of the market's expectations of the future earnings performance, and the historic level of earnings.

If Y has just suffered an abnormally bad year's profit performance which is not expected to be repeated, the market will price the share on the basis of its expected future earnings. The earnings figure used to calculate the ratio will be the historic figure which is lower than that forecast for the future, and therefore the ratio will appear high.

(b) **Financial gearing**

The **financial gearing** of the firm expresses the **relationship** between **debt** and **equity** in the capital structure. A high level of gearing means that there is a high ratio of debt to equity. This means that the company carries a high fixed interest charge, and therefore the amount of earnings available to equity will be more variable from year to year than in a company with a lower gearing level. Therefore, the shareholders will carry a higher level of risk than in a company with lower gearing.

All other things being equal, it is therefore likely that the share price in a highly geared company will be lower than that in a low geared firm.

The historic P/E ratio is dependent upon the **current share price** and the **historic level of earnings**. A high P/E ratio is therefore more likely to be found in a company with low gearing than in one with high gearing. In the case of Y, the high P/E ratio is more probably attributable to the depressed level of earnings than to the financial structure of the company.

(c) **Comparison with risk-free securities**

**Dividend yield** is the relationship between the **dividend per share** and the **current market price** of the share. The market price of the share reflects investor expectations about the future level of earnings and growth. If the share is trading with a low dividend yield, this means that investors have positive growth expectations after taking into account the level of risk. Although the government bonds carry no risk, it is equally likely that they have no growth potential either, and this means that the share will still be more attractive even after the low dividend yield has been taken into account.

## Exam practice



## Charity funding

28 minutes

You have recently been elected as the honorary treasurer of a charity organisation. Your responsibility is to manage the donation money and the expenses of the organisation. On the morning of 1 September, a report on the projected cash flow for the week was sent to you. The report showed that the opening balance in the bank account was \$188,000 and the net change of cash flow for each day of the week was projected as follows:

*Amount in HK\$*

Date	Opening	Net change	Cumulative
1-Sep Mon	188,000	2,723,000	2,911,000
2-Sep Tue		(1,411,000)	1,500,000
3-Sep Wed		2,820,000	4,320,000
4-Sep Thu		(3,850,000)	470,000
5-Sep Fri		2,255,000	2,725,000
6-Sep Sat		–	2,725,000
7-Sep Sun		–	2,725,000

It is the organisation's practice to put the closing balance of the account into an overnight deposit. However, you believe that this is not the best way to maximise the interest income. Therefore, you contacted the bank and obtained the following interest rates for overnight and 7-day call deposits:

Overnight	2.75% p.a.
7-day call	4.25% p.a.

(Note. In your calculation, ignore the annual fee for the overdraft facility and use the 365 day-count and the simple interest rate method.)

*Required*

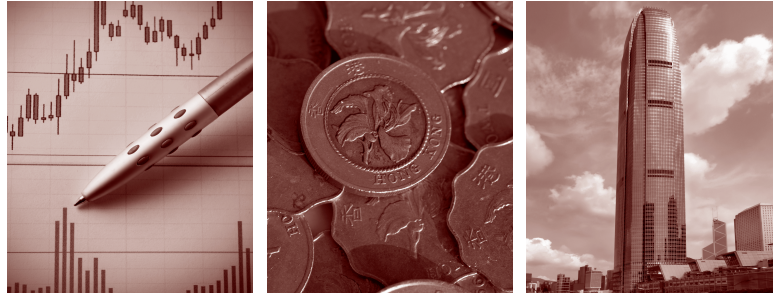
- (a) (i) Assuming that the cash flow projection is accurate, what is the maximum amount that you can put into the 7-day call deposit on 1 September to earn higher interest, but without resulting in a negative balance throughout the week? **(1 mark)**
- (ii) After making the 7-day call deposit in (a)(i), the remaining balance on each day will be placed in overnight deposit. How much more can the organisation earn in this way compared to its previous practice of putting the closing balance of the account into an overnight deposit? **(5 marks)**
- (b) What are the major characteristics and drawbacks of an overdraft facility? **(3 marks)**
- (c) Liquidity and funding risk management are of crucial importance to the long-term sustainability of an organisation. Discuss ways of managing these two types of risk. **(6 marks)**

**(Total = 15 marks)**

**HKICPA May 2008**





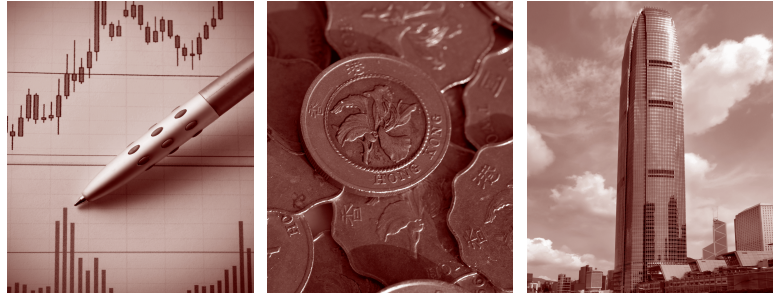


## Part C

# Management reporting

The emphasis in this section is on assessment of operational performance for an organisation. The purpose of this section is to develop candidates' ability to apply various management accounting models on costing, pricing and performance measurement in order to select feasible solutions or courses of action for an organisation.





## chapter 4

# Cost measurement and analysis in service and manufacturing environments

### Topic list

- 1 Cost concepts and costing systems**
  - 1.1 Methods of measuring the cost of cost units
  - 1.2 Cost behaviour
- 2 Activity-Based Costing (ABC)**
  - 2.1 Elements of ABC
  - 2.2 Implementing ABC
  - 2.3 Activity-Based Management (ABM)
  - 2.4 Time-driven activity-based costing (TDABC)
  - 2.5 Advantages of time-driven activity-based costing (TDABC)
- 3 Cost-volume-profit (CVP) analysis**
  - 3.1 CVP formulae
  - 3.2 Selling price decisions and CVP
- 4 Pricing**
  - 4.1 Introduction
  - 4.2 Cost-plus pricing
  - 4.3 Absorption cost pricing formulae
  - 4.4 Drawbacks of absorption cost pricing
  - 4.5 Variable cost pricing formulae
  - 4.6 Minimum pricing
- 5 Total quality cost management**
  - 5.1 Quality costs
  - 5.2 Cost of Quality (COQ) reporting
- 6 Target costing**
  - 6.1 What is target costing?
  - 6.2 Target costing and the product life cycle
  - 6.3 Implementing target costing
  - 6.4 Deriving a target cost
  - 6.5 Implications of using target costing
  - 6.6 Closing a target cost gap
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  - 6.8 Target costing: summary
- 7 Life cycle costing**
  - 7.1 What are life cycle costs?
  - 7.2 The product life cycle
  - 7.3 The implications of life cycle costing
- 8 Customer Profitability Analysis (CPA)**
  - 8.1 Background
  - 8.2 Methodology
  - 8.3 The results of successful CPA implementation
  - 8.4 Format for CPA

### Learning focus

A business needs to measure and analyse its costs to ensure that they add value to its services or products. This chapter focuses on the use and application of various cost measurement and analysis techniques including activity based costing (ABC), total quality cost management, target costing, life cycle costing and customer profitability analysis. It is vital that you understand and can explain the terminology.

Consideration is given to the way these techniques are used in today's business environment, covering both manufacturing and service industries.

Approaches, such as ABC, can provide better management accounting information which allows organisations to identify the potential for improvements in the design of products and processes, and to focus attention on the activities that can be eliminated without detriment to the organisation or the customer.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Performance control</b>		
Design, implement and review performance measurement and control systems in organisations		
<b>2.03</b>	<b>Cost measurement and analysis in service and manufacturing environments</b>	2
2.03.01	Explain and compare traditional costing approaches with more modern approaches such as Activity Based Costing (ABC)	
2.03.02	Calculate costs for products/services using both traditional and Activity Based Costing (ABC) methodologies	
2.03.03	Describe the factors that affect an organisation's pricing decisions and the different cost based pricing approaches	
2.03.04	Explain the features of target costing and its implications for pricing, cost control and performance management	
2.03.05	Identify the costs involved at different stages of the product/service cycle and explain the implications of life cycle costing for pricing, performance management and decision making	
2.03.06	Explain the concept of customer profitability analysis and perform a customer profitability analysis from given data	
2.03.07	Explain the relationship between cost and quality and be able to prepare and analyse a cost of quality report	

# 1 Cost concepts and costing systems



## Topic highlights

There are different methods of measuring costs. There are also different approaches to analysing costs based on cost behaviour and cash flow.

## 1.1 Methods of measuring the cost of cost units

A costing system is a system for establishing the costs of cost units, which may be manufactured products, services, operations or activities. Costs are classified in different ways.

- **Direct costs** are costs that can be directly attributed to an item. For example, direct materials costs and direct labour costs can be attributed directly to products that are made with the materials and by the workers.
- **Indirect costs** are costs that cannot be directly attributable to the items that are being costed. Indirect costs are also called overhead costs, and in a manufacturing business they are typically classified as production, administration and selling and distribution overhead costs.

There are different approaches to establishing the cost of a cost unit.

- One approach is based on the view that costs should include a fair share of indirect costs as well as direct costs. Overhead costs are therefore included in the full cost of cost units. This approach to costing is **absorption costing**.
- Another approach is that cost units should include only direct costs, or **marginal costs**. Marginal costs are direct costs plus any variable overhead costs.

**Traditional absorption costing** in manufacturing businesses is based on the view that:

- Most production costs are direct costs.
- Production overheads are 'driven' by production activity; therefore production overhead costs should be absorbed into the cost of cost units on the basis of direct labour hours or machine hours, using a labour hour or machine hour absorption rate.

With changes in production methods and the organisation of activities, **activity-based costing (ABC)** has developed as an alternative to the traditional view of overhead absorption. In a system of ABC, overhead costs are absorbed on the basis of 'cost drivers', which need not be direct labour hours or machine hours. ABC is described in more detail later.

## 1.2 Cost behaviour

Another aspect of costing is the recognition of cost behaviour. Total costs rise or fall with increases or reductions in the level of activity in a business. Within a normal range of business activity levels, it is possible to separate costs into fixed costs and variable costs and to analyse profitability using contribution (sales revenue minus variable cost) and **cost-volume-profit analysis**.

Cost-volume-profit analysis is used for the analysis of normal business activities within a normal range of activity levels. A different approach to costing is used to assess the costs of 'one-off' decisions, based on the view that the only costs, savings and revenues that are relevant to any business decision are those that will affect future cash flows. Accounting concepts such as depreciation and absorbed overhead costs should not be considered for 'one-off' decisions, such as shutdown decisions or capital expenditure decisions.

Cost-volume-profit analysis and **relevant costing** for short-term decisions are also described briefly later in this chapter.

The remainder of this chapter will describe a number of different approaches to costing. It is assumed that you are already familiar with absorption costing and marginal costing systems. If you need to refresh your knowledge, please refer to a basic management accounting text book.

## 2 Activity-Based Costing (ABC)



### Key term

**ABC** is a management accounting information system that identifies the various activities performed in an organisation, collects costs on the basis of the underlying nature and extent of those activities, and assigns costs to products and services based on those activities.

ABC should improve the quality of management accounting information in situations where conventional overhead allocation methods may produce misleading results. ABC focuses on **activities** as the **fundamental cost objects**. It uses the cost of these activities as the basis for assigning costs to such other cost objects as products, services or customers. In contrast, traditional absorption costing focuses on the product or service as the cost object. Under traditional costing the assumption is made that products/services consume resources. Under ABC, products/services consume activities and activities consume resources.

### 2.1 Elements of ABC

ABC may be particularly useful for costing in organisations where overhead costs are high relative to direct costs, and many costs are driven by “overhead activities” rather than by direct production work or direct service provision.

#### 2.1.1 What is an activity?

Activities are major tasks performed in an organisation, for example, receiving goods, inspecting goods and storing goods. In the first stage of an ABC system, the costs of the activities are calculated then the costs of the activities are traced to product or services using a relevant cost driver.

#### 2.1.2 What are resources?

All activities consume resources. Typical examples of resources are labour, materials, rent, depreciation, power, travel and entertainment, insurance, supplies and repairs and maintenance.

#### 2.1.3 What is an activity driver and a resource driver?

Cost objects, such as products or services, consume activities. The consumption of activities by cost objects is traced by activity drivers. For example, an activity is order processing. The activity driver for order processing may be the processing of orders.

Activities consume resources. A resource driver measures how the activity level for an activity driver affects the amount of resources consumed by an activity. For example, the resource driver for order processing may be the number of orders processed.

#### 2.1.4 What is a cost driver?

A cost driver has a direct and positive relationship with the cost which is being driven to the product or service. An increase in volume of the cost driver increases the cost allocated to the product or service. We need to determine cost drivers because we need to accurately measure costs. An

example of a cost driver is direct labour hours. As labour hours increase, so does the direct labour cost.

Judgment may be needed to identify the cost drivers for overhead costs. For example, it may be decided that the cost driver for order processing costs may be the number of orders processed, so that processing costs increase with the number of orders. In ABC, order processing costs would therefore be charged to products (cost objects) on the basis of the number of orders for the product.

### 2.1.5 What is a cost pool?

Cost pools represent accumulations of expenditure under a category which describes a particular activity. For example, a cost pool titled “quality assurance” is managed by personnel from operations, sales and administration. The cost of all quality assurance activities are assigned to the cost pool, regardless of the department in which the activities are carried out.

### 2.1.6 What is a cost object?

A cost object is something which cost management wishes to know, in order to make a decision. Examples of cost objects are products, services, customers and divisions.



#### Example: Cost objects

PNC Ltd has three factories in different locations, each manufacturing pencils. It has eight major customers who purchase approximately 90% of the total annual production. PNC buys the graphite from one supplier and the balsa wood from three different suppliers, depending upon such factors as price, deliverability and quality of the wood.

How many cost objects can you identify in this case? The following list is not exhaustive.

#### Solution

Cost object	Decision or other purpose for the cost information
<b>Pencils</b>	Pricing the pencils. Assessment of product profitability. Also external reporting (ER)
<b>Graphite</b>	Inventory cost, ER
<b>Customers</b>	Customer profitability/marketing strategy decisions
<b>Wood</b>	Inventory cost, ER
<b>Sales personnel</b>	Contribution to profits/bonus calculations/decisions about adding to or removing staff
<b>Factories</b>	Performance measurement for each factory

## 2.2 Implementing ABC

Before implementing any cost system change, careful planning must take place. The initial decision must be whether the system is piloted in say one division, or whether a complete ABC system will be put in place at the same time. The planning phase is important to ensure that there is minimal staff resistance to the implementation. Education is the best way to achieve acceptance. Meetings should be held to provide relevant information to all staff affected.

ABC assumes that activities cause costs. ABC implementation occurs in a two-stage process. Stage 1 requires the organisation to identify what activities are performed (an activity dictionary is created). Resource costs are attached to activities. In stage 2 costs are attributed to products based on their use of resources.



**Stage 1: There are four types of activities:**

- **Unit-level activities** which are performed each time a unit is produced, for example machining;
- **Batch-related activities** which are performed each time a batch of goods is processed, for example, machine set ups;
- **Product-sustaining activities** which are performed to enable individual products to be produced and sold, for example marketing;
- **Facility-sustaining activities** are required in order to operate the organisation, but are not used by any particular cost object.

**Stage 2: Attribute costs**

The type of information that needs to be gathered for each activity includes how many people perform the activity, who performs the activity, how much time is spent in performing the activity, what resources are consumed by performing the activity and what value the activity has (if any). The activities are then classified into the four categories. Unit, batch, and product activities are driven to product units using bases that reflect the underlying behaviour of the product's demands for those activities. Facility-sustaining expenses should be treated as a period expense as they are unrelated to the volume and mix of individual products. However, all costs must be covered somewhere in the organisation, which favours the allocation of these costs also.

Not all organisations should adopt ABC. It is a question of whether the costs of adopting ABC exceed the benefits. For organisations with one or a small number of products, a simpler costing system may provide the required information to run the organisation effectively.

However, the development of an ABC system provides the platform for cost analysis and management. For example, ABC identifies non-value adding activities. Organisations can then use that information to reduce costs. Activity-based management focuses on the management of activities as a mechanism for improving the value received by the customer and the profit earned by providing this value. The discipline comprises cost driver analysis, activity analysis, and performance measurement.

## 2.3 Activity-Based Management (ABM)

ABM draws upon ABC as a major source of information. It uses ABC information to set and implement strategic priorities, analyse and measure performance and to identify low-cost product designs, cost reduction opportunities, potential for improvements in quality, cost inefficiencies in supplier relationships, and to redirect capital expenditure toward the most profitable activities.

A major benefit of ABM is value analysis. This involves classifying activities as value-added or non-value added. Non-value added activities do not add value to a product or service from the customer's perspective or for the business. ABM therefore focuses management attention toward those activities that can be eliminated without detriment to the organisation or the customer. Once major non-value added activities are identified, cost driver analysis can be used to find their root causes. A cost reduction programme is developed to work towards the reduction and eventual elimination of these cost drivers. ABM also highlights opportunities for re-engineering of an organisation's activities, benchmarking value-added activities and the development of a performance measurement system for continuous improvement.



### Example: Activity-Based Costing (ABC) (1)

One of the partners in the accounting firm in which you work asks you to explain how ABC differs from conventional costing. She particularly wants to know if the operating environment of an accounting firm would encourage the adoption of an ABC approach.

How would you explain this to the partner?

## Solution

ABC is a costing system that tries to establish connections between overhead activities (and costs) and the products or services that are sold to customers. In conventional costing overheads are usually absorbed into product costs at a rate based on an element of direct cost, such as a rate per direct labour hour or a percentage of direct labour cost. This assumes that there is a relationship between overhead costs and the direct cost activity.

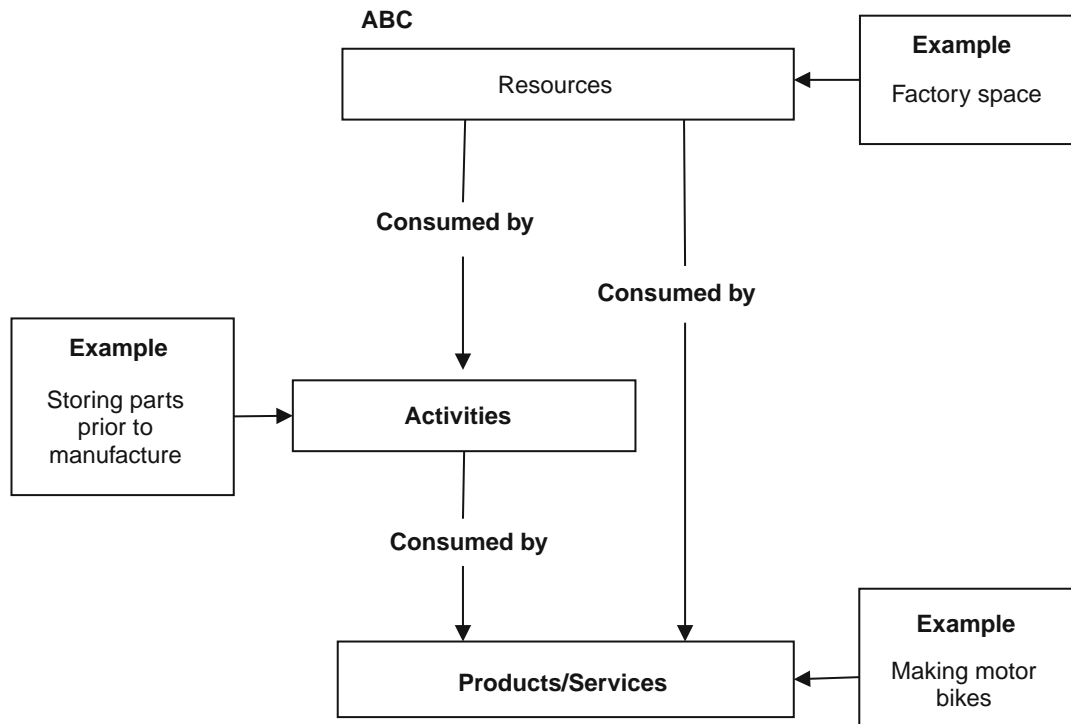
In reality, this assumption is often incorrect. Some companies manufacture a wide range of products and have complex manufacturing processes. Some customer orders may require time-consuming work on production design and planning. Some standard products may be manufactured in large batch quantities, whereas other products are made in small batches, but the costs of preparing each batch of production may be the same, regardless of batch size. In such situations the use of an overhead absorption rate based on production volumes or direct labour time can result in inaccurate product cost information. Under such a system of absorption costing there is a tendency for high volume products to be given an excessive share of overhead costs, and low-volume products are given an insufficient share.

The following factors are relevant when considering if ABC would be useful:

- Multiple products or services that are not produced in a standard or uniform manner
- Multiple markets or customers that are not given a standard or uniform service
- Support departments that provide services to the direct cost centres in a non-uniform manner

It may be argued that these factors apply in an accountancy firm. On the other hand, many costs of the firm can be traced, through time sheets, to specific clients and jobs. Other costs, such as the costs of travel and accommodation, can also be traced to specific clients or jobs. ABC would be useful only if the firm has a large amount of overhead costs that are not “driven” by direct labour time. Investigation of the costs of the firm, and what drives them, is recommended before a decision about the value of ABC is reached.

The following diagram may help make the processes involved clearer.





### Example: Activity-Based Costing (ABC) (2)

D Ltd manufactures and sells a wide range of machine tools. In the past few years the company has been performing reasonably well, but its market share has been declining as a result of severe competition. The company uses absorption costing for both external reporting as well as for individual product information for decision making.

In 20X8, although the company performed reasonably well overall, senior management was concerned with the profit performance of some specific product lines. The production manager was surprised when the accountant showed him that some difficult and time-consuming products produced in small batches had made very attractive profit margins, while some of his favourites that sold very well and were produced in large quantities, showed rather poor or negative margins. On the advice of the company's financial consultants, management decided to trial a system of ABC for 20X8, while still retaining the traditional costing system. At the end of the first quarter for 20X9, the following information was available:

#### (1) Income statement for the quarter using absorption costing

	\$'000	\$'000	\$'000
Sales			40,000
Less: Cost of goods sold			
materials		8,000	
labour		7,500	
production overheads		10,000	25,500
Gross margin			<u>14,500</u>
Less: marketing expenses			
delivery expenses	400		
sales commissions	2,000		
after-sales service	500		
advertising and promotions	2,000		
sales administration	1,000	5,900	
administration expenses		3,000	
			<u>8,900</u>
Net profit before profits tax			<u><u>5,600</u></u>

(2) Production overhead application rate per direct labour hour for absorption costing used for all products manufactured is \$20.00

(3) Activity cost pools, cost drivers identified, costs and driver units used for the ABC system:

#### Production expenses

<i>Activity cost pools</i>	<i>Cost driver identified</i>	<i>Cost</i> \$'000	<i>Driver units</i> \$'000
Purchasing	No. purchase orders	1,200	3
Materials handling and storage	No. of components used	1,000	5,000
Machine set-up	No. of setups	1,350	9
Quality control	No. of batches	800	3
Labour and other overhead	No. machine hours	10,650	500
Packaging	No. of units	2,500	625

#### Marketing expenses

<i>Activity cost pools</i>	<i>Cost driver identified</i>	<i>Cost</i> \$'000	<i>Driver units</i> \$'000
Delivery expenses	No. of sales orders	400	4
Sales commissions	Sales dollars	2,000	40,000
After-sales service	Number of service calls	500	10

For the purpose of the ABC system the company has classified production wages as an overhead expense. It was also decided not to allocate administration (general) expenses,

advertising, promotions, and sales administration expenses to products under the ABC system.

- (4) Data for two of the many products produced by the company is provided below:

**Per unit data**

<i>Products</i>	AAA	ZZZ
Price	\$80	\$400
Direct materials costs	\$20	\$120
Direct wages	\$15	\$60
Labour hours	1 hour	4 hours

**Other data**

<i>Products</i>	AAA	ZZZ
Number of purchase orders	200	200
Number of components used	450,000	100,000
Number of set-ups	50	1,000
Number of batches	50	200
Total machine hours	30,000	8,000
Number of units produced and sold	30,000	2,000
Number of sales orders	300	400
Sales (\$)	\$2,400,000	\$800,000
Number of service calls	50	500

*Required*

- (a) Calculate the cost drivers per unit for each activity cost pool identified.  
 (b) Prepare income statements for products AAA and ZZZ using ABC (ignore costs not allocated to products) and calculate the gross margin percentage for AAA and ZZZ.

**Solution**

(a)

<i>Activity cost pool</i>	<i>Cost driver</i>	<i>Cost</i> \$'000	<i>Driver units</i>	<i>Cost per driver unit</i> \$
Purchasing	No. of purchase orders	1,200	3	400.00
Material handling and storage	No. of components used	1,000	5,000	0.20
Machine set up	No. of set ups	1,350	9	150.00
Quality control	No. of batches	800	3	250.00
Labour and other overhead	No. machine hours	10,650	500	21.30
Packaging	No. of units	2,500	625	4.00
Delivery expenses	No. of sales orders	400	4	100.00
Sales commissions	Sales (\$)	2,000	40,000	0.05
After-sales service	No. of service calls	500	10	50.00

(b)

	AAA			ZZZ		
	<i>Units</i> \$'000	<i>Price</i> \$	<i>Value</i> \$'000	<i>Units</i>	<i>Price</i> \$	<i>Value</i> \$'000
Sales	30	80	2,400	2,000	400	800
<i>Production costs</i>						
Direct materials	30	20	600	120		240

	Cost per driver unit \$	Driver units	Cost \$'000	Driver units	Cost \$'000
<i>Overhead costs</i>					
Purchasing	400.00	200	80	200	80
Materials handling and storage	0.20	450,000	90	100,000	20
Machine set up	150.00	50	7	1,000	150
Quality control	250.00	50	12	200	50
Labour and other overhead	21.30	30,000	639	8,000	170
Packaging	4.00	30,000	120	2,000	8
Total			<u>1,549</u>		<u>718</u>
Gross margin			851		81
<i>Marketing costs</i>					
Delivery expenses	100.00	300	30	400	40
Sales commissions	0.05	2,400,000	120	800,000	40
After-sales service	50.00	50	2	500	25
Total			<u>152</u>		<u>105</u>
Net profit			698		(23)
Gross margin percentage			35.46%		10.20%
Net margin percentage			29.10%		-2.93%

Following are income statements for products AAA and ZZZ using a system of absorption costing (up to gross margin stage only), where the gross margin percentage is calculated for AAA and ZZZ. A comparison of the two methods is then possible.

#### Income statements – absorption costing

	AAA		ZZZ	
	\$'000	\$'000	\$'000	\$'000
Sales		2,400		800
<i>Costs</i>				
Materials	600		240	
Labour	450		120	
Overheads	<u>600</u>		<u>160</u>	
Gross margin		<u>(1,650)</u>		<u>(520)</u>
		<u>750</u>		<u>280</u>
Gross margin percentage		31.25%		35.00%

#### Analysis

The company is experiencing market share decline and product portfolio problems. Specifically, some high volume products with good market share are showing low or negative margins, and some complex low volume products are showing high margins.

The two products (out of several manufactured) illustrated in the question show that the product costing system in this company suffers from the problems associated with overhead allocation under traditional costing. Management is receiving incorrect information about product cost and profit margin. This may lead to incorrect pricing decisions and product portfolio strategy decisions which have adverse effects on the market share of the company.

ABC, by tracing costs to products on the basis of activity cost drivers, has provided more accurate product cost and margin information for better pricing and product portfolio management decisions.

In addition, the process of setting up an ABC system directs the attention of management to activities that add value and those that do not add value, as well as the drivers of costs. This information can be used to improve production processes and cost control.

An ABC system may therefore contribute considerably towards addressing the company's current problems – but only when overhead costs are a large proportion of total costs and are not driven by direct cost activities.

## 2.4 Time-driven activity-based costing (TDABC)

Despite the advantages of ABC for firms experiencing problems with their conventional costing systems, adoption rates for ABC have historically been low (around 20%). Research has shown that typical reasons for the low adoption rate are as follows:

- Implementation of an ABC system is time-consuming and costly.
- Data is subjective and difficult to validate.
- Data is expensive to store and process, and reporting can be delayed due to complexities.
- Most ABC systems do not cover all the costs and activities of an organisation and therefore do not provide a complete view of profitability or profit opportunities. For example, administration costs and marketing costs may be excluded from an ABC system, even though they could be a large proportion of total costs.
- Updating the ABC system to meet changing needs and circumstances is difficult and costly.
- Whenever an ABC system ignores unused capacity, the reported costs may be misleading.

To overcome these difficulties with ABC systems, time-driven ABC (TDABC) was developed. Instead of identifying activities, drivers and cost pools for each individual activity, TDABC takes a departmental approach.

Consider the following example.



### Example: TDABC

The customer service department of Lim Manufacturing performs the following activities and incurs the associated costs in a three-month period:

Activity	Time spent %	Assigned cost \$	Cost driver quantity	Cost driver rate \$
Process customer orders	70	396,900	49,000	8.10 per order
Handle customer enquiries	10	56,700	1,400	40.50 per enquiry
Perform credit check	20	113,400	2,500	45.36 per credit check
Total	<u>100</u>	<u>567,000</u>		

For the data above, the percentage of time spent is obtained from employee estimates of the average time they spend performing each activity. This is one of the cited disadvantages of ABC (see above). For example as a result, a customer enquiry is charged at \$40.50 whether it takes 10 minutes to resolve or one hour.

To overcome this, Lim Manufacturing have decided to implement TDABC. To do this only two items of data are required – the cost of the capacity supplied and the practical capacity of the resource supplied. The cost of the capacity supplied in the three-month period is \$567,000 (see above). To determine the capacity of the customer service department for the period, it is necessary to determine how much time is spent working by all employees. Lim Manufacturing determines that each employee works on average 7.5 hours per day and for 20 days each month, hence each employee will work for around 450 hours in each three-month period. To be more precise this can be converted to minutes by multiplying by 60 – 27,000 minutes. Not all this time is spent working however. Employees are entitled to 75 minutes each day for breaks, training and education. This brings the practical capacity of one employee to around 22,500 minutes in each three-month

period. As the customer service department employs 28 employees, its practical capacity in the period is 630,000 minutes (22,500 minutes × 28 employees).

It is now possible to calculate the capacity cost rate:

$$\begin{aligned}\text{Capacity cost rate} &= \frac{\text{Cost of capacity supplied}}{\text{Practical capacity of resource supplied}} \\ &= \frac{\$567,000}{630,000 \text{ minutes}} = \$0.90 \text{ per minute}\end{aligned}$$

To obtain a TDABC cost driver rate, employees need to estimate the time taken to perform each activity rather than the percentage of their time taken performing each activity. Employees at Lim Manufacturing provide the following estimates of their time:

Processing customer orders – 8 minutes  
Handling customer enquiries – 44 minutes  
Performing credit checks – 50 minutes

It is now possible to calculate TDABC cost driver rates for the three activities in the customer service department.

Activity	TDABC cost driver	
	Unit time Minutes	Rate (@\$.90 per minute) \$
Process customer order	8	7.20
Handle customer enquiry	44	39.60
Perform credit check	50	45.00

Using a TDABC cost driver rate makes reporting at the end of each period more timely, because all that is required is the quantity of each activity performed for the period and the cost driver rate. In addition, it can reveal the extent and cost of unused capacity.

#### Customer service department end of period TDABC report

Activity	Quantity	Unit time	Total time	Unit cost \$	Total assigned cost \$
Process customer orders	49,000	8	392,000	7.20	352,800
Handle customer enquiries	1,400	44	61,600	39.60	55,440
Perform credit checks	2,500	50	125,000	45.00	112,500
Used capacity			578,600		520,740
Unused capacity (8.2%)			51,400		46,260
Total			<u>630,000</u>		<u>567,000</u>

The end of period TDABC reports reveals an under-allocation of costs for the customer service department of \$46,260. Traditional ABC period end reporting, with its reliance on percentage estimates, hides the existence and costs of unused capacity. In addition, the TDABC report can provide insights into the future. By revealing the amount and cost of unused capacity, management can make resource allocation decisions and plan for the future. In addition, the TDABC model is also easier to update as changes occur, as the time taken to perform activities need only be updated rather than the traditional ABC model which would require an entire estimate of percentages to be performed.

## 2.5 Advantages of time-driven activity-based costing (TDABC)

In summary, TDABC provides the following advantages over traditional ABC:

- (a) It is easier and faster to build an accurate cost model.
- (b) It integrates well with existing ERP and customer relationship management systems.
- (c) It drives costs to transactions and orders using time as the cost-accumulating feature of performing activities.
- (d) It can be run monthly to ensure timely reporting and management. It shows the extent and cost of capacity utilisation.
- (e) It allows budgeting of resource capacity on the basis of expected order quantities as well as order complexity.
- (f) It can be applied to all activities within the organisation, with the use of software and database technologies.
- (g) It enables fast and inexpensive maintenance of the TDABC system.
- (h) It supplies information to allow users to identify the factors that cause resource problems.
- (i) It can be used in any industry and with any level of complexity with regard to customers, products, channels, segments and processes.

## 3 Cost-volume-profit (CVP) analysis



### Topic highlights

You should be familiar with CVP analysis from your previous studies, but it is a useful technique that may feature in your examination, and you should be prepared to use it if required.

Cost-volume-profit analysis (CVP analysis) is the analysis of how costs and profits change with increases or decreases in sales volume. It is based on simple marginal costing principles, which are that:

- For every unit of product sold, there is a variable cost of production and sale per unit, and this is usually a constant amount per unit. Similarly for every \$1 of items sold, the variable cost of sale is a fixed percentage amount of revenue.
- During a given time period, there is an amount of fixed costs. Fixed costs are unaffected by the volume of production and sales in the period.

### 3.1 CVP formulae



### Topic highlights

This is a simple set of rules for CVP analysis. The relationship between revenues, costs, profit and sales volume can be set out in the following formulae.





### Formula to learn

Profit = Total sales revenue – Total variable costs – Fixed costs

$$P = (S - V) - F$$

Re-arranging this formula:

$$P + F = S - V$$



### Key term

**Sales minus variable costs equals contribution.** Contribution is a term meaning “contribution towards covering fixed costs and making a profit”. You should see from the formula that total contribution (S – V) minus fixed costs equals profit. Put in another way: total contribution in a time period is the sum of fixed costs during the period plus the profit (or minus the loss) for the period.

If the sales volume or sales quantity is Q, the sales price per unit is s and the variable cost per unit is v, the formula can be re-stated as follows:

$$P + F = Q(s - v)$$

Total contribution is the contribution per unit (s – v) multiplied by the quantity of units sold.

### 3.1.1 Contribution/sales ratio (C/S ratio)

If the variable cost per unit is constant and the sales price per unit is constant, the ratio of variable cost to sales, and the ratio of contribution to sales, must be constant values. This can be shown by re-arranging the basic formula as follows:

$$\text{If } P + F = S - V$$

$$\text{Then } P + F = \frac{(S - V)}{S} \times S$$

(S – V)/S is the contribution to sales ratio; therefore total contribution equals total sales multiplied by the contribution/sales ratio.

The management of an organisation usually wishes to know the profit likely to be made if the aimed-for production and sales for the year are achieved. Management may also be interested to know the following.

- The **breakeven** point, which is the activity level at which there is neither profit nor loss.
- The **amount** by which actual **sales can fall** below anticipated sales, **without** a **loss** being incurred.

CVP analysis is a simple method of making this analysis of profit or breakeven.



### Example: CVP analysis

Expected sales	10,000 units at \$8 = \$80,000
Variable cost	\$5 per unit
Fixed costs	\$21,000

*Analysis*

The contribution per unit is $\$(8 - 5)$	=	\$3
Contribution required to break even	=	Fixed costs = \$21,000
Breakeven point (BEP)	=	$\$21,000 \div \$3$ per unit
	=	7,000 units
In sales revenue, BEP	=	$(7,000 \times \$8) = \$56,000$

Another way of reaching the same conclusion is to use the C/S ratio.

C/S ratio =  $\$3/\$8 = 0.375$

Contribution required to break even (= fixed costs) = \$21,000

Breakeven sales revenue =  $\$21,000/0.375 = \$56,000$ .



### Example: Target profit

To achieve a target profit for a time period, total contribution must be sufficient to cover fixed costs for the period and make the required target profit.

A company makes and sells a single product, for which variable costs are as follows.

	\$
Direct materials	10
Direct labour	8
Variable production overhead	6
	<u>24</u>

The sales price is \$30 per unit, and fixed costs per annum are \$68,000. The company wishes to make a profit of \$16,000 per annum.

*Required*

Determine the sales required to achieve this profit.

### Solution

Required contribution = Fixed costs + Profit =  $\$68,000 + \$16,000 = \$84,000$

Required sales can be calculated in one of two ways.

$$(a) \quad \frac{\text{Required contribution}}{\text{Contribution per unit}} = \frac{\$84,000}{\$(30 - 24)} = 14,000 \text{ units, or } \$420,000 \text{ in revenue}$$

$$(b) \quad \frac{\text{Required contribution}}{\text{C/S ratio}} = \frac{\$84,000}{20\%*} = \$420,000 \text{ of revenue, or } 14,000 \text{ units.}$$

$$* \text{ C/S ratio} = \frac{\$30 - \$24}{\$30} = \frac{\$6}{\$30} = 0.2 = 20\%.$$



### Example: C/S ratio method

Sometimes, only the C/S ratio method can be used to estimate the total contribution required to achieve a target profit.

A company provides a range of services and it estimates from previous experience that its variable costs are 25% of sales revenue. Fixed costs each year are \$520,000 and the company wishes to make a profit of at least \$200,000.

*Required*

Calculate the minimum required sales revenue.

**Solution**

Required minimum total contribution = \$(520,000 + 200,000)	=	\$720,000
Contribution/sales ratio = 1 – 25%	=	75% or 0.75
Minimum sales revenue required = \$720,000/0.75	=	\$960,000

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**3.2 Selling price decisions and CVP**

CVP analysis can help management with a variety of decisions. For example, it can be used to analyse the effects of raising or reducing the sales prices on a company's products or services. If a company raises its sales prices, it can expect a fall in sales volume. If it reduces its sales prices, it should expect higher sales volume. A change in sales price may be considered desirable if the effect is to increase total contribution and profit.

**Example: Selling price decisions and CVP**

A company operates with a contribution/sales ratio of 60%. Annual fixed costs are \$900,000 and the company makes an annual profit of \$300,000. It has been estimated that:

- (a) if sales prices are increased by 20%, sales volume would fall by 10%, and
- (b) if sales prices are reduced by 10%, sales volume would increase by 20%.

*Required*

Would a change in sales prices result in higher profit?

**Solution**

Currently total annual contribution = \$900,000 + \$300,000 = \$1,200,000.

C/S ratio = 0.60.

Therefore annual sales are currently \$1,200,000/0.60 = \$2,000,000.

- (a) If the sales price is increased by 20%, the C/S ratio would change as follows:

	<i>Current</i>	<i>After price rise</i>
Sales price	100	120
Variable cost	<u>40</u>	<u>40</u>
Contribution	<u>60</u>	<u>80</u>

The new C/S ratio will be 80/120 or 2/3.

Sales will fall by 10% from \$2,000,000 to \$1,800,000.

Total contribution will be \$1,800,000 × 2/3 = \$1,200,000.

This is the same as the current total contribution; therefore a price increase by 20% would not increase total contribution and profit.

- (b) If the sales price is reduced by 10%, the C/S ratio would change as follows:

	<i>Current</i>	<i>After price reduction</i>
Sales price	100	90
Variable cost	<u>40</u>	<u>40</u>
Contribution	<u>60</u>	<u>50</u>

The new C/S ratio will be 50/90 or 5/9.

Sales will increase by 20% from \$2,000,000 to \$2,400,000.

Total contribution will be \$2,400,000 × 5/9 = \$1,333,333.

This would provide an increase in total annual contribution, and an increase in total annual profit.

## 4 Pricing

### 4.1 Introduction



#### Topic highlights

There are many factors that affect an organisation's pricing decisions (for example, cost, customer demand, the presence of competition, strategy and so on).

Product pricing is one of the most important and complex decisions facing management. This is because the saleability of individual products or services is directly affected by pricing decisions.

While pricing is often thought to be the realm of the marketing department, managers often base prices on accounting costs, therefore the accountant is often responsible for providing and interpreting cost and price data.

The use of cost-based pricing formulae is a common method employed by managers to price products and services. The cost of a product or service provides a baseline below which the price cannot fall in the long-term. While shorter-term considerations may nonetheless result in a price considerably above or below cost, a product's price ultimately must cover its costs in order for the organisation to remain viable. Other pricing methods include target costing/pricing and life cycle pricing. These will be examined in turn.

### 4.2 Cost-plus pricing



#### Key term

**Cost-plus pricing formulae** define price as being equal to cost plus a mark-up. The basic equation is as follows:

$$\text{Price} = \text{cost} + (\text{mark-up percentage} \times \text{cost})$$

Note that depending upon the definition of cost, the mark-up percentage may vary greatly. Cost could be absorption cost, variable cost, variable manufacturing cost, target cost and so on.

### 4.3 Absorption cost pricing formulae



#### Key term

The **absorption cost pricing formula** defines cost as being equal to all costs incurred in the production process, that is, variable costs plus fixed costs, both direct and allocated.

It is used by organisations because in the long run the price must cover all the costs and a normal profit margin.

It is argued that absorption cost pricing provides a price that is both justifiable and perceived as equitable by all parties to a purchase transaction. In this regard, purchasers typically accept that an organisation must earn a profit on its transactions in order to remain viable. The setting of a sale price based on total costs of production, both fixed and variable is generally regarded as reasonable by consumers.

Absorption cost information is required for external reporting purposes. An argument for its use in pricing is that since the information already exists, it meets the cost-benefit test for use in formulating prices.

Disadvantages of absorption cost pricing methods are that it includes allocated fixed costs, and, that it is inconsistent with cost-volume-profit (CVP) methodology. The former criticism is raised since it is unclear how these costs change as the organisation's volume of output increases, yet they are treated as unitised costs in the determination of price. With regard to the CVP model, the criticism again stems from the failure of absorption cost pricing models to incorporate and emphasise the distinction between fixed and variable costs. This information is obscured in absorption and total cost information and can cause dysfunctional decisions to be made with regard to differential analysis.



#### Example: Absorption cost pricing

B Ltd (B), a cereal and breakfast food manufacturer was recently approached by K Ltd (K), a large supermarket chain, to tender for the manufacture and supply of "K Brand" breakfast cereal. B has excess capacity on some of its machines and could make a maximum of 70,000 packets of cereal per week.

The K tender requires the Breakfast Food Division to quote prices for a 525g packet at three different weekly volumes: 40,000; 50,000; and 60,000 packets. The following points are relevant:

- B prepares its tender prices on the basis of full cost plus 15% of cost as a profit margin.
- For the purposes of the tender, full cost comprises the following: raw materials (\$1.05 per packet), direct labour (\$0.30 per packet), and packaging and transport (\$0.15 per packet). In addition, charges are included in the full-cost for the following: manufacturing overheads (charged at 200% of direct labour cost) and administrative overheads (charged at 100% of direct labour cost).
- The actual incremental manufacturing and administrative overheads expected to be incurred (if the tender is successful) are forecast as fixed at \$8,200 per week, unless output increases to 60,000 units (or more) when an additional \$1,800 per week will be incurred.
- If the tender is successful then the actual level of sales achieved by K will determine the volume actually produced and sold. Market researchers at K have estimated that the probability of achieving weekly sales volumes of 40,000, 50,000 or 60,000 packets are 10%, 60% and 30% respectively.
- A week before the K tender was to be presented for negotiation the Breakfast Food Division received an enquiry from W Ltd (W), a rival supermarket chain. W was seeking a producer to supply 50,000 packets of a gourmet breakfast cereal weekly, and indicated a willingness to pay \$2.95 per 525g packet. In this regard:

- The estimated variable costs for the potential W contract are: raw materials (\$1.20 per packet); direct labour (\$0.30 per packet); and packaging and transport (\$0.15 per packet).
  - The expected incremental fixed costs for W's tender are the same as for the K tender.
  - The commercial manager believes that there is a higher likelihood of W Ltd signing a contract for production than exists for the K tender.
- Note that the two sets of negotiations are completely independent of each other. None of B's 70,000 weekly excess capacity could be used for another product if either of these contracts were taken up. Both contracts, if successful, would contain provisions to guarantee a minimum of two years' supply of the breakfast cereal at the agreed price (adjusted for inflation).

*Required*

Select between the tenders, i.e. which should sales resources be devoted towards in an attempt to win?

- (a) Calculate the price per unit for each tender.
- (b) Calculate the expected contribution margin for each tender.
- (c) Identify other factors in making the decision about which tender to pursue.

**Solution**

- (a) **K Ltd tender**

	\$
<i>Full cost</i>	
Materials	1.05
Direct labour	0.30
Packing	0.15
Manufacturing overhead (200% × 0.30 (direct labour cost))	0.60
Admin overhead (100% × 0.30 (direct labour cost))	0.30
	<u>2.40</u>

Price (full cost + 15% of cost) = (\$2.40 × 1.15) = \$2.76.

- (b) The expected contribution margin is calculated by multiplying each value by the probabilities of achieving those volumes.

	<u>40,000</u>	<u>50,000</u>	<u>60,000</u>	
Output				
Revenue (\$)	110,400	138,000	165,600	
Variable cost (\$)	(60,000)	(75,000)	(90,000)	
Incremental fixed cost (\$)	(8,200)	(8,200)	(10,000)	
Incremental contribution (\$)	<u>42,200</u>	<u>54,800</u>	<u>65,600</u>	
<i>Probability</i>	<i>0.1</i>	<i>0.6</i>	<i>0.3</i>	<i>Total</i>
Expected value (\$)	4,220	32,880	19,680	56,780

The same is done for the W tender as for the K tender, except that no expected values need to be calculated.

**W Ltd tender**

	<i>Unit price</i>	<i>Output</i>	<i>Amount</i>
	\$		\$
Revenue	2.95	50,000	147,500
Materials	1.20	50,000	(60,000)
Direct labour	0.30	50,000	(15,000)
Packing	0.15	50,000	(7,500)
Incremental fixed overhead cost			<u>(8,200)</u>
Total			<u>56,800</u>

- (c) Some factors that could be considered are these:
- Acceptance of the orders could cause problems with other existing customers who might demand a similar pricing arrangement.
  - The effect on machinery and the scheduled maintenance of equipment.
  - Other possible production orders that could come in and that would require the capacity allocated to the tender (i.e. are there other jobs that would make a greater contribution).
  - The possibility that future sales growth within the division could require the extra capacity (i.e. this would increase fixed costs if additional investment becomes necessary).

The information given in the worked example states that the commercial manager believes that there is a slightly higher likelihood of W Ltd signing a contract for production than exists for the K Ltd tender. Therefore, W Ltd should probably receive the greater sales effort.

## 4.4 Drawbacks of absorption cost pricing

Although in the long term, both methods ensure recovery of all fixed costs plus a profit, full absorption costing plus pricing is inflexible in the short term. For example, an organisation tendering for a one-off contract using this method may not win the contract even though a lower price would have been sufficient to cover all incremental costs and opportunity costs. Furthermore, different overhead allocation methods can result in very different prices for products. This is most evident when more than one product is manufactured. Price and demand changes also need to be considered.



### Example: Absorption cost pricing

A Ltd is in the process of pricing two products Alpha and Beta. These products are manufactured by the same workforce. For the year, 50,000 direct labour hours are budgeted. The expected fixed costs are \$100,000 and it is expected that the department will operate at full capacity. Variable costs per unit are as follows:

	<i>Alpha</i>	<i>Beta</i>
	\$	\$
Materials	5	5
Labour	2 (1 hour)	6 (3 hours)
Expenses	3 (1 machine hour)	3 (1 machine hour)
	<u>10</u>	<u>14</u>

Sales demand is estimated roughly to be 5,000 Alphas and 15,000 Betas.

What unit selling prices will be needed to give a profit of 20% on full cost if overheads are absorbed first on a direct labour hour basis, and second on a machine hour basis?

## Solution

### Direct labour hour basis

$$\frac{\text{Budgeted fixed costs}}{\text{Budgeted labour hours}} = \frac{100,000}{(5,000 \times 1 + 15,000 \times 3)} = \$2$$

### Absorption rate of \$2 per direct labour hour

	<i>Alpha</i>	<i>Beta</i>
	\$	\$
Variable costs	10.00	14.00
Overheads absorbed	<u>2.00</u>	<u>6.00</u>
Full costs	12.00	20.00
Profit (20%)	<u>2.40</u>	<u>4.00</u>
Sales price	<u>14.40</u>	<u>24.00</u>

The total budgeted profit would be \$72,000 (\$12,000 + \$60,000)

### Machine hour basis

$$\frac{\text{Budgeted fixed costs}}{\text{Budgeted machine hours}} = \frac{100,000}{(5,000 \times 1 + 15,000 \times 1)} = \$5$$

### Absorption rate of \$5 per machine hour

	<i>Alpha</i>	<i>Beta</i>
	\$	\$
Variable costs	10.00	14.00
Overheads absorbed	<u>5.00</u>	<u>5.00</u>
Full costs	15.00	19.00
Profit (20%)	<u>3.00</u>	<u>3.80</u>
Sales price	<u>18.00</u>	<u>22.80</u>

The total budgeted profit is \$72,000 (\$15,000 + \$57,000).

The different basis for charging overheads between the products results in a different price for both Alpha (increase of \$3.60 per unit or 25%) and Beta (decrease of \$1.20 per unit or 5%). It is questionable whether the expected sales demand for the products will be the same at each sales price, and the estimates of sales volume may therefore be unreliable because they ignore price.

## 4.5 Variable cost pricing formulae

Because of the criticisms of absorption cost pricing models, it may be preferable to utilise variable manufacturing costs or total variable costs for cost-plus pricing.



### Key term

**Variable cost pricing models** remove the need for the allocation of fixed costs to individual product lines.

The disadvantage of variable cost pricing is that managers may inadvertently perceive the variable cost of a product or service as being the baseline price and may set the actual selling price below the level required for the organisation to recover its fixed costs. In the long run this practice will cause viability problems for the organisation.



## 4.6 Minimum pricing

A minimum price is the minimum selling price for an item that must be charged in order to achieve a stated target. The target may be a minimum profit on the sale, or it may be a price that will leave total profit unchanged.

Minimum price is calculated from the incremental and relevant costs of making the sale.

The relevant cost of an item or action is the **increase in future net cash outflows** that will occur as a consequence of making or selling the product, or performing the action. (The same principles of relevant costing are used to estimate cash flows for discounted cash flow analysis, which is described in a later chapter.)

### 4.6.1 Rules for measuring relevant costs

The following rules should be used to identify the relevant costs of an item or action when calculating the minimum price for a job or contract.

Relevant costs of materials		
(1)	If the materials will have to be purchased	Purchase cost
(2)	If the materials are held in store but are used regularly for other activities or products	Purchase cost
(3)	If the materials are held in store and have no other use	Zero
(4)	If the materials are held in store, have no other use and will be disposed of unless used for the item or activity	Any costs that would be incurred in disposing of the material are a negative cost (= cash outflow avoided)
(5)	If the materials are held in store and will not be replaced if used, but have an alternative use or benefit	Relevant cost = opportunity cost. This is the benefit foregone by not using the materials for the alternative purpose. This may be the contribution that would be obtained from the alternative use.
Relevant costs of labour		
(1)	If the labour will be hired	Additional spending on labour (cost of labour time)
(2)	If the employees are currently employed on a fixed wage or salary and would otherwise do nothing	Zero
(3)	If the employees are currently employed on a fixed wage or salary but would have to work overtime and be paid extra for doing this	The additional cost of overtime
(4)	If the employees are currently employed but their available time is restricted/limited, and they would otherwise be employed on other work	Relevant cost = opportunity cost. This is the benefit foregone by not using the labour for the alternative purpose. This may be the contribution that would be obtained from the alternative use of the labour time

### Relevant costs of overheads/other expense items

1	Variable overheads	Additional spending on variable overheads
2	Fixed overheads Fixed overheads which are absorbed using pre-determined absorption rates (absorption costing) are never a relevant cost because they do not represent incremental expenditure and should not be included in the calculation of a minimum price.	Zero, unless there are specific additional cash expenditures as a consequence of making the item or performing the activity. Relevant cost = any additional cash expenditures



### Example

A company is considering the price to charge a customer for a job. It has been decided that the customer will be offered a price that gives the company an incremental profit of \$10,000. The following information is available.

- (1) Some quantity of material A will have to be purchased for the job, at a cost of \$3,000.
- (2) 100 kilograms of material B will be required. The company already holds units of material B in inventory, which originally cost \$2,000. Material B is used regularly by the company and its current purchase price is \$25 per kilogram.
- (3) 50 units of material C will be required. The company has 100 units of material C in inventory. This no longer has any other use, and if not used for the job, will be disposed of at a cost of \$5 per kilogram.
- (4) The company would use its existing work force to do the work. The time required will be 300 hours. The work force has only 100 hours of spare capacity and 200 hours would be worked in overtime. Employees are paid a fixed weekly wage, except that overtime working is paid extra at \$70 per hour.
- (5) The company will also need to use 20 hours of time of a specialist engineer. This engineer is paid \$250 per hour and is fully occupied on other work that earns the company a contribution of \$150 per hour (assuming that labour time is a variable cost).
- (6) Production overheads are absorbed into production cost at the rate of \$100 per direct labour hour.
- (7) The company will need to obtain some assistance from external consultants to do the job, and this will cost \$6,000.

What price should the company charge for the job?

### Solution

<i>Item</i>	<i>Relevant cost</i>	<i>Comment</i>
	\$	
Material A	3,000	Purchase cost
Material B	2,500	Material in regular use; therefore purchase (replacement) cost
Material C	(250)	Disposal cost avoided if the material is used
Labour	1,400	Additional cash payment = cost of overtime
Specialist engineer	8,000	Cost of labour time plus opportunity cost of contribution foregone = \$250 + \$150 per hour
External consultants	6,000	Additional cash expenditure
Relevant costs	<u>20,650</u>	
Profit required	10,000	
Price for the job	<u><u>30,650</u></u>	

## 5 Total quality cost management



### Key term

**Total Quality Management (TQM)** is a philosophy where organisations strive to create an environment that will enable the production of zero defect products or services.

### 5.1 Quality costs



### Topic highlights

There are four main types of costs associated with quality: prevention, appraisal, internal failure and external failure.

When a firm adopts TQM, the costs associated with increases in quality need to be monitored.

There are four main types of costs associated with quality:

(1) **Prevention costs**

These costs are incurred in preventing poor quality products/services from being produced. If prevention costs were 100% effective, businesses would not have any other costs of quality because no defective products/services would be produced. But this is never the case. There is a trade-off between prevention costs and other costs of quality. As prevention costs increase other quality costs should decrease and *vice versa*, but the two types are never totally eliminated.

Examples of prevention costs: quality engineering, quality training for staff, quality circles, supplier evaluation and selection, quality audits, field trials, design reviews.

(2) **Appraisal costs**

These costs are incurred in determining whether poor quality and defects exist.

Examples of appraisal costs: inspection of raw materials, supervising appraisal activities, inspection and test equipment, sampling and testing products and processes.

(3) **Internal failure costs**

These costs are incurred because there is a failure to produce acceptable quality which is found before delivery to the customer.

Examples of internal failure costs: re-work, scrap, downtime, design changes.

(4) **External failure costs**

These costs are incurred because faulty products have reached customers.

Examples of external failure costs: sales returns and allowances, warranty repairs, replacements, lost sales.

### 5.2 Cost of Quality (COQ) reporting

A quality cost report lists the costs by category and by specific type within each category. Consider the following example.



### Example: COQ reporting

BJ Transport Company (BJ) runs a fleet of 15 semi-trailer trucks which deliver ship containers from the docks to customers. During early June 20X9, officials from a government department made a routine inspection of BJ's fleet. The officials required ten of the trucks to be immediately taken off the road and repaired due to those trucks being un-roadworthy. This resulted in the trucks being off the road for an average of 10 days each. The shortest was three days and the longest 25 days.

#### What are the other quality costs in this case?

Because BJ failed to maintain its fleet properly internal failure costs have been incurred. Further, some external failure costs may also be incurred such as lost sales because BJ was not able to deliver its normal level of service to its customers for some days. Also, revenue would have been lost because the service could not be provided. This is also a cost to BJ and could be estimated from contract notes etc. There is also the cost of bad publicity within the industry. This may be the most significant cost incurred as a result of internal failure but may not be felt for some time.

There is also likely to be a cost associated with increased future inspections from this authority because of the attention drawn to BJ as a result of the bad report. This cost is very subjective but could also be significant. Despite the subjectivity involved in some of these estimates, an estimate should be made and supporting assumptions included in the report.

The report format of a cost of quality report is vital because attention should be drawn to the relative importance of each component of the total quality cost. If more money is invested in prevention, less should be needed for other quality costs. Percentages of (say) gross sales revenue can be used to highlight relative importance.

The following is an example of a cost of quality report for BJ for the month of June:

<i>Cost of quality category</i>	<i>Amount</i> \$	<i>Sub total</i> \$	<i>As a percentage of monthly sales revenue</i> %
Prevention costs			
Maintenance	<u>112,500</u>	112,500	2.7
Appraisal			
Internal failure costs			
External failure costs			
Lost sales	600,000		
Lost customers	1,350,000		
Handling complaints	25,000		
Repairs	<u>150,000</u>	2,125,000	<u>51.0</u> <u>53.7</u>

## 6 Target costing

### 6.1 What is target costing?



#### Key term

**Target costing** involves setting a target cost by subtracting a desired profit margin from a competitive market price.

Companies that operate in a competitive market must continually innovate in order to remain competitive. They must continually redesign their products (or services) and develop new products.

In many competitive markets, the life cycle of a new product or a re-designed product is very short. If a company cannot provide new or better products for its customers, rival companies will.

When developing or re-designing a product (or service), it is important to ask the following questions:

- What do customers want from their product that they are not getting? Do they want a product with improved features? Do they want the same product at a lower price? Do they want a completely different product that meets their needs in a better way?
- How can we produce a new or re-designed products to meet customer needs better?
- What will it cost to design, develop and produce this product?
- What will customers be willing to pay for it?
- Can we make and sell it at a profit?

The first requirement is to identify a new product or a change in the product design that will meet customer needs better.

With target costing, the next key requirement is to identify the price that customers will pay for it. The company must identify a target price for its new product. At this price, customers will buy the product instead of buying similar products of competitor companies.

Having decided the target price, the next requirement is to decide the minimum profit margin that the company wants from the product. This may be expressed as a percentage of the target sales price.

The target cost for a new product is the difference between the target selling price and the target profit. The objective is to produce and sell a new (or re-designed) product at a cost that is no higher than the target cost.

	\$
Target selling price (decision 1)	X
Target profit (decision 2)	<u>(X)</u>
Target cost	X

This target cost may be less than the planned initial product cost but it is expected to be achieved by the time the product reaches the maturity stage of the product life cycle.

## 6.2 Target costing and the product life cycle

Japanese companies have developed target costing as a response to the **problem of controlling and reducing costs** over the product life cycle. These costs include the costs of product design and development and the costs of establishing a production process to make the new product.

Cost management, cost control and cost reduction are key elements of target costing.

- The **design and development stages of the product life cycle** are critically important for target costing. The most effective way of controlling the cost of a product is to design the product in a way that meets the cost target. There is an opportunity to eliminate elements of a product design that are unnecessary and add no value for the customer. It may also be possible to identify different ways of making a product that are cheaper without reducing the value of the product for customers.
- The design stage offers the greatest opportunities for controlling and reducing costs, without loss of value. When a new product is in manufacture, cost reductions are more difficult to achieve.

Here are some examples of decisions made at the design stage which impact on the cost of a product.

- The number of different components in the product
- Whether the components are standard components or not: standard components cost less than non-standard components
- The ease of changing over tools in the production process.

A company can also reduce design and development costs by reducing the “time to market”. This is the time between:

- identifying a new product idea and
- manufacturing the product and bringing it to the market.

### 6.3 Implementing target costing

Here is a useful summary of the steps in the implementation of the target costing process:

- Step 1** Determine a product specification of which an adequate sales volume is estimated.
- Step 2** Set a selling price at which the organisation will be able to achieve a desired market share.
- Step 3** Estimate the required profit based on return on sales or return on investment.
- Step 4** Calculate the target cost = target selling price – target profit.
- Step 5** Compile an estimated cost for the product based on the anticipated design.
- Step 6** Calculate target cost gap = estimated cost – target cost.
- Step 7** Make efforts to close the gap. This is more likely to be successful if efforts are made to “design out” costs prior to production, rather than to “control out” costs during the production phase.
- Step 8** Negotiate with the customer before making the decision about whether to go ahead with the project.

### 6.4 Deriving a target cost

The target cost is calculated by starting with a market-based selling price and subtracting a desired profit margin. The target cost is simply the price minus the profit.



#### Example: Target costing

A manufacturer of a computer games console is deciding whether to develop a new console. It is estimated that in order to attract customers, the new product will have to be cheaper than rival products that are already in the market, and the price must therefore be no more than \$700. The company requires an 8% profit margin.

*Required*

What is the target cost, and what information does this give to management?

#### Solution

Profit required =  $8\% \times \$700 = \$56$

Target cost =  $\$(700 - 56) = \$644$

Management should make a careful estimate of the expected cost of developing and producing the new console. The estimated cost will depend to a large extent on the expected sales demand at a price of \$700. If the estimated cost is higher than \$644, management must then decide whether the target maximum cost of \$644 can be achieved, for example by revising the product design. If a

target cost of \$644 seems achievable, management may decide to go ahead with the new product development. If \$644 does not seem achievable, the idea for the new product may be abandoned.

## 6.5 Implications of using target costing

Target costing requires managers to **change** the way they think about the **relationship between cost, price and profit**.

- (a) **Traditionally** the approach is to develop a product, determine the production cost of that product, set a selling price, with a resulting profit or loss.
- (b) The **target costing approach** is to develop a product, determine the market selling price and desired profit margin, with a resulting cost which must be achieved.

With target costing there is a focus on:

- (a) **Price-led** costing.
- (b) **Customers.** Customer requirements for quality, cost and time are incorporated into product and process decisions. The value of product features to the customers must be greater than the cost of providing them.
- (c) **Design.** Cost control is emphasised at the design stage so any engineering changes must happen before production starts.
- (d) **Faster time to market.** The early external focus enables the business to get the process **right first time** and avoids the need to go back and change aspects of the design and/or production process. This then reduces the time taken to get a product to the market.

## 6.6 Closing a target cost gap



### Key term

The **target cost gap** is the estimated cost less the target cost.

When a product is first manufactured, its target cost may well be much lower than its currently-attainable cost, which is determined by current technology and processes. Management can then set **benchmarks for improvement** towards the target costs, by improving technologies and processes.

Various techniques can be employed:

- Reducing the number of components
- Using standard components wherever possible
- Training staff in more efficient techniques
- Using different materials (identified using activity analysis etc.)
- Using cheaper staff
- Acquiring new, more efficient technology
- Cutting out non-value-added activities

Even if the product can be produced within the target cost the story does not end there. Target costing can be applied throughout the entire life cycle. Once the product goes into production target costs will therefore gradually be reduced. These reductions will be incorporated into the budgeting process. This means that cost savings must be actively sought and made continuously over the life of the product.

However, target costing is most useful at the product design stage, because this is when substantial cost savings can be achieved by altering the product design or production processes and methods.



### Example: Target cost for a new project

A large chartered accounting firm is in the process of preparing a tender for a large public sector project for two Hong Kong Special Administration Region (HKSAR) departments. The firm assigns two partners, two directors, two managers and five junior staff to formulate the tender. Based on similar projects and estimation of the amount the HKSAR is willing to pay, the team estimates the price to be \$1,500,000. The firm aims for a target profit of 15% on gross fees.

*Required*

Calculate the target cost.

### Solution

The profit from the project should be \$225,000 ( $\$1,500,000 \times 15\%$ ). Therefore, the target cost of the project is \$1,275,000 ( $\$1,500,000 - \$225,000$ ).

The costs of carrying out the project are considered to be as follows:

<i>Cost category</i>	<i>Estimated cost</i> \$'000
Partner time	60
Second tier staff time	400
Third tier staff time	500
Junior staff time	200
Photocopying	80
Postage	30
Travel	100
Printing	30
Total	<u>1,400</u>

Costs of \$1,400,000 are too high. As a result, costs would be analysed to see where savings could be made. Target costing requires much more work at the initial stage of a project than other pricing techniques.



### Self-test question 1

A company is considering a new product. It currently estimates that design and development costs will be \$200,000 and the cost of investment in equipment will be \$800,000. The product is expected to have a life cycle of four years and at the end of this time the residual value of the equipment will be \$300,000.

Market research indicates that the target selling price should be \$20 per unit and that at this price, the expected sales of the product will be as follows:

<i>Year</i>	<i>Sales demand</i> units
1	20,000
2	30,000
3	40,000
4	10,000

The variable cost of making the product is currently estimated as \$14 per unit, and there will be no incremental fixed costs. The company requires a DCF return of at least 10% on investments of this type.



Required

- (a) Calculate the target cost for this product. Ignore taxation.
- (b) Comment on the target cost you have calculated.

(The answer is at the end of the chapter)

## 6.7 Value engineering



### Key term

**Value engineering** is a systematic evaluation of all aspects of the business functions, with objectives to reduce costs while satisfying customer needs.

Value engineering is a systematic evaluation of all aspects of the business functions, with objectives to reduce costs while satisfying customer needs. Value engineering can result in improvement in product designs, changes in materials specifications or modification of process methods.

Value engineering is important due to the concepts of cost incurrence and cost lock-in. Cost incurrence occurs when a resource is sacrificed or used up. The costing system emphasises cost incurrence. Cost lock-in refers to those costs that have not yet been incurred but will be incurred in the future on the basis of decision already made.

It is important to recognise lock-in cost at the early stage of designing a product. It is difficult to alter cost or reduce cost once the costs are locked-in after the product is designed (for example, scrap cost, wastage and rectification cost incurred in manufacturing is difficult to reduce locked-in to a faulty design).

## 6.8 Target costing: summary

To successfully implement a target price and target cost, a company should:

- Develop a product that satisfies the needs of potential customers
- Choose a target price based on customers' perceived value for the product and target operating income
- Derive the target cost by subtracting target operating income from target price
- Perform value engineering.

## 7 Life cycle costing



### Key term

**Life cycle costing** tracks and accumulates costs and revenues attributable to each product over the entire product life cycle.

## 7.1 What are life cycle costs?

A product's life cycle costs are incurred from its design stage through development to market launch, production and sales, and finally to its eventual withdrawal from the market. The component elements of a product's cost over its life cycle could therefore include the following:

- Research and development costs
  - Design
  - Testing
  - Production process and equipment
- The cost of purchasing any technical data required
- Training costs (including initial operator training and skills updating)
- Production costs
- Distribution costs: transportation and handling
- Marketing costs
  - Customer service
  - Field maintenance
  - Brand promotion
- Inventory costs (holding spare parts, warehousing and so on)
- Retirement and disposal costs. Costs occurring at the end of a product's life

Life cycle costs can apply to services, customers and projects as well as to physical products.

Traditional cost accumulation systems are based on the financial accounting year and tend to dissect a product's life cycle into a series of 12-month periods. This means that traditional management accounting systems do not accumulate costs over a product's entire life cycle and do not therefore assess a product's profitability over its entire life. Instead they do it on a periodic basis.

Life cycle costing, on the other hand, tracks and accumulates actual costs and revenues attributable to each product over the entire product life cycle. Hence the total profitability of any given product can be determined.

Life cycle costing is the accumulation of costs over a product's entire life.

## 7.2 The product life cycle

A product life cycle can be divided into five phases:

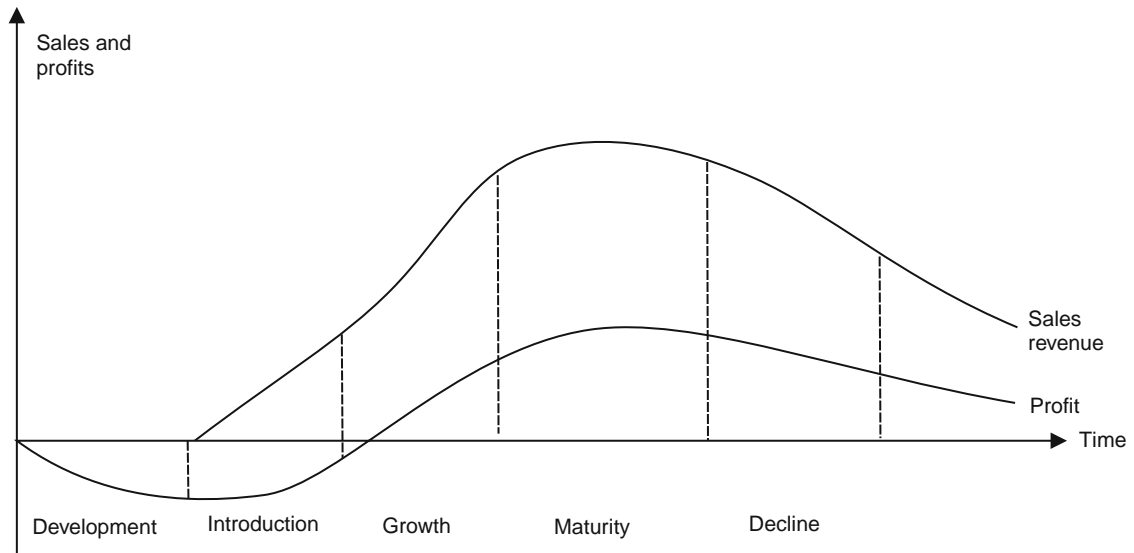
- Development
- Introduction
- Growth
- Maturity
- Decline

Every product goes through a life cycle.

- (a) **Development.** The product has a research and development stage where costs are incurred but no revenue is generated.
- (b) **Introduction.** The product is introduced to the market. Potential customers will be unaware of the product or service, and the organisation may have to spend further on advertising to bring the product or service to the attention of the market.
- (c) **Growth.** The product gains a bigger market as demand builds up. Sales revenues increase and the product begins to make a profit.

- (d) **Maturity.** Eventually, the growth in demand for the product will slow down and it will enter a period of relative maturity. It will continue to be profitable. The product may be modified or improved, as a means of sustaining its demand.
- (e) **Decline.** At some stage, the market will have bought enough of the product and it will therefore reach "saturation point". Demand will start to fall. Eventually it will become a loss-maker and this is the time when the organisation should decide to stop selling the product or service.

The level of sales and profits earned over a life cycle can be illustrated diagrammatically as follows:



The horizontal axis measures the duration of the life cycle, which can last from, say, 18 months to several hundred years. Children's crazes or fad products have very short lives while some products, such as binoculars (invented in the 18<sup>th</sup> century) can last a very long time.

### 7.2.1 Problems with traditional cost accumulation systems

Traditional cost accumulation systems do not tend to relate research and development costs to the products that caused them. Instead they write off these costs on an annual basis against the revenue generated by existing products. This makes the existing products seem less profitable than they really are. If research and development costs are not related to the causal product the true profitability of that product cannot be assessed.

Traditional cost accumulation systems usually total all non-production costs and record them as a period expense.

### 7.3 The implications of life cycle costing

Life cycle costing has implications on pricing, performance management and decision making.

With life cycle costing, non-production costs are traced to individual products over complete life cycles.

- (a) The total of these costs for each individual product can therefore be reported and compared with revenues generated in the future.
- (b) The visibility of such costs is increased.
- (c) Individual product profitability can be better understood by attributing *all* costs to products.
- (d) As a consequence, more accurate feedback information is available on the organisation's success or failure in developing new products. In today's competitive environment, where the ability to produce new or updated versions of products is paramount to the survival of an organisation, this information is vital.

### 7.3.1 The importance of the early stages of the life cycle

It is reported that some organisations operating within an advanced manufacturing technology environment find that approximately 90% of a product's life cycle cost is determined by decisions made early within the cycle at the design stage. Life cycle costing is therefore particularly suited to such organisations and products, monitoring spending and commitments to spend during the early stages of a product's life cycle.

In order to compete effectively in today's competitive market, organisations need to redesign their products continually with the result that product life cycles have become much shorter. The planning, design and development stages of a product's cycle are therefore critical to an organisation's cost management process. Cost reduction at this stage of a product's life cycle, rather than during the production process, is one of the most important ways of reducing product cost.

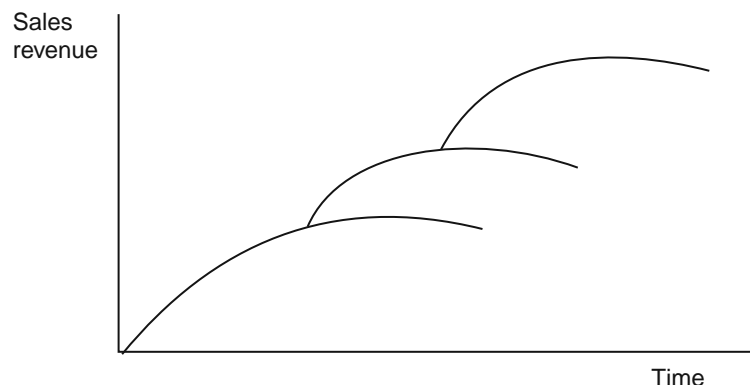
### 7.3.2 Maximising the return over the product life cycle

**Design costs out of products.** Between 70% to 90% of a product's life cycle costs are determined by decisions made early in the life cycle, at the design or development stage. Careful design of the product and manufacturing and other processes will keep cost to a minimum over the life cycle.

**Minimise the time to market.** This is the time from the conception of the product to its launch. More products come onto the market nowadays and development times have been reduced over the years. Competitors watch each other very carefully to determine what types of product their rivals are developing. If an organisation is launching a new product it is vital to get it to the market place as soon as possible. This will give the product as long a period as possible without a rival in the market place and should mean increased market share in the long run. Furthermore, the life span may not proportionally lengthen if the product's launch is delayed and so sales may be permanently lost. It is not unusual for the product's overall profitability to fall by 25% if the launch is delayed by six months. This means that it is usually worthwhile incurring extra costs to keep the launch on schedule or to speed up the launch.

**Minimise breakeven time (BET).** A short BET is very important in keeping an organisation liquid. The sooner the product is launched the quicker the research and development costs will be repaid, providing the organisation with funds to develop further products.

**Maximise the length of the life span.** Product life cycles are not predetermined; they are set by the actions of management and competitors. Once developed, some products lend themselves to a number of different uses; this is especially true of materials, such as plastic, PVC, nylon and other synthetic materials. The life cycle of the material is then a series of individual product curves nesting on top of each other as shown below.



By entering different national or regional markets one after another an organisation may be able to maximise revenue. This allows resources to be better applied, and sales in each market to be maximised. On the other hand, in today's fast moving world, an organisation could lose out to a competitor if it fails to establish an early presence in a particular market.

**Minimise product proliferation.** If products are updated or superseded too quickly, the life cycle is cut short and the product may just cover its R&D costs before its successor is launched.



### Example: Life cycle costing

Solaris specialises in the manufacture of solar panels. It is planning to introduce a new slim-line solar panel specially designed for small houses. Development of the new panel is to begin shortly and Solaris is in the process of determining the price of the panel. It expects the new product to have the following costs:

	Year 1	Year 2	Year 3	Year 4
Units manufactured and sold	2,000	15,000	20,000	5,000
	\$	\$	\$	\$
R&D costs	1,900,000	100,000	–	–
Marketing costs	100,000	75,000	50,000	10,000
Production cost per unit	500	450	400	450
Customer service costs per unit	50	40	40	40
Disposal of specialist equipment				300,000

The marketing director believes that customers will be prepared to pay \$500 for a solar panel but the financial director believes this will not cover all of the costs throughout the life cycle.

Calculate the cost per unit looking at the whole life cycle and comment on the suggested price.

### Solution

#### Life cycle costs

	\$'000
R&D (1,900 + 100)	2,000
Marketing (100 + 75 + 50 + 10)	235
Production (1,000 + 6,750 + 8,000 + 2,250)	18,000
Customer service (100 + 600 + 800 + 200)	1,700
Disposal	300
Total life cycle costs	<u>22,235</u>
Total production ('000 units)	42
Cost per unit	529.40

The total life cycle costs are \$529.40 per solar panel which is higher than the price proposed by the marketing director. Solaris will either have to charge a higher price or look at ways to reduce costs.

It may be difficult to increase the price if customers are price sensitive and are not prepared to pay more. Costs could be reduced by analysing each part of the costs throughout the life cycle and actively seeking cost savings, for example, using different materials, using cheaper staff or acquiring more efficient technology.

## 8 Customer Profitability Analysis (CPA)



### Topic highlights

**Customer Profitability Analysis** assigns revenues and costs to major customers or groups of customers rather than to organisational units, products, or other objects. CPA considers the total sales revenue from a customer or customer group less all the costs incurred in servicing that customer or customer group.

## 8.1 Background

Given the increased importance accorded to customers, it follows that management should devote more attention and effort to them. One way of directing management attention to customers is to place a value on them by identifying expected future cash flows from customers. The emphasis is on attracting and retaining profitable customers.

Customer value can be calculated in two ways, either as Customer Profitability Analysis (CPA) or Customer Lifetime Value (CLV). In the management accounting literature CPA is used.



### Key term

**Customer Profitability Analysis (CPA)** involves two steps:

- (1) First, the customer or customer group needs to be identified.
- (2) Second, direct customer costs are attached to the customer.

An activity-based costing approach will improve customer costing accuracy. The analysis involved is no different from that used for any cost object. The cost object (customer or customer group) and the resources consumed to service the customer(s) are identified. The costs are then traced to the revenue concerned, and then profitability can be calculated. CPA's limitation is that it provides a historical, single (or few) period(s) value of customers.

CLV, championed in the marketing literature, presents the “present value of the future net cash flows expected to be received over the lifetime of a customer relationship”. Again, customers or customer groups are identified, but with this system the value is in the future — a “cradle to the grave” value. Either method provides a firm with information for directing attention and guiding management action.

## 8.2 Methodology

In essence, CPA assigns revenues and costs to major customers or groups of customers rather than to organisational units, products, or other objects. It considers the total sales revenue from a customer or customer group less all the costs incurred in servicing that customer or customer group.

### 8.2.1 Detailed process

- Step 1** Analyse the customer base and divide it into segments.
- Step 2** Calculate annual purchase volume-high activity accounts.
- Step 3** What is the average size of order and ordering cost?
- Step 4** What is the method of ordering (personal sales calls, electronic etc.)?
- Step 5** Calculate the annual revenues earned from the customer segments:
  - Net of production cost for standardised goods
  - For customised products, include the cost of customisation as it can be a reason for poor profitability
  - Any discount should be taken into account
- Step 6** Calculate the annual costs of serving the segments, including:
  - costs of order getting
  - special customisation costs or rush orders
  - promotional costs to segment
  - number of delivery drops
  - location of customer
  - sales returns, warranties or refunds

### 8.3 The results of successful CPA implementation

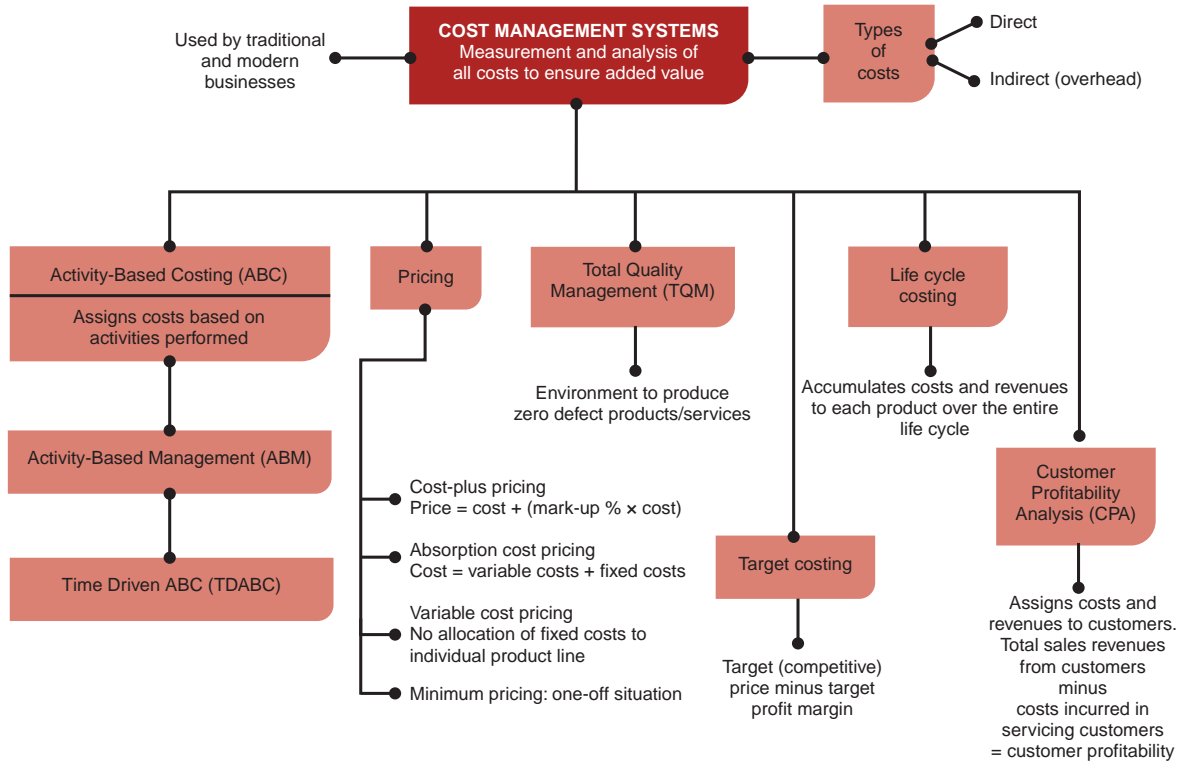
If properly implemented and the output is accurate, there are a number of possible benefits that will accrue, including some or all of the following:

- Identify and retain the quality customers, which may be those who
  - provide earnings in excess of costs
  - are prepared to pay more for premium service and so on
- Eliminate or re-engineer the unprofitable customer groups by:
  - ceasing to supply them
  - raising prices generally but allowing discount to valuable clients to retain them
  - re-engineering involves reducing the factors that are causing the costs
  - increasing minimum order size to reduce number of orders
  - installation of telesales or electronic ordering for small clients
  - charging fees for services
  - imposition of flat charges for order handling
  - charging differential prices for products

### 8.4 Format for Customer Profitability Analysis (CPA)

	\$
Gross sales revenue	XX
Less: discounts	<u>(XX)</u>
Net sales revenue	XX
Cost of goods/services sold	<u>(XX)</u>
Gross margin	XX
Less:	
Customer specific costs (marketing, administration, selling, telephone etc.)	<u>(XX)</u>
Net customer margin	<u>XX</u>

# Topic recap





## Answer to self-test question

### Answer 1

- (a) The target cost in this example is a target cost for the variable cost per unit. It is assumed that cost reductions in product design and development and in the cost of the equipment are not possible. (In practice, cost reductions in these areas may be possible.)

In the table below, the target variable cost per unit =  $V$

Year	0	1	2	3	4	Total
	\$	\$	\$	\$	\$	
Equipment	(800,000)				300,000	
Design costs	(200,000)					
Revenue		400,000	600,000	800,000	200,000	
Variable costs		20,000V	30,000V	40,000V	10,000V	
Discount factor at 10%		0.909	0.826	0.751	0.683	
PV of revenue		363,600	495,600	600,800	136,600	1,596,600
PV of variable costs		18,180V	24,780V	30,040V	6,830V	79,830V
PV of residual value					204,900	204,900

A DCF return of 10% is achieved where:

$$1,596,600 + 204,900 = 79,830V + 800,000 + 200,000$$

$$79,830V = 801,500$$

$$V = 10.04$$

The target variable cost per unit is \$10.04

- (b) This is less than the current estimated variable cost to make the product, which is \$14. The company must consider ways of reducing the variable cost per unit to this amount (or finding cost reductions in the product design costs or equipment costs).

## Exam practice



## Cost control

32 minutes

TJP is principally engaged in the design, manufacture and distribution of video graphics array display cards (“VGA cards”), which are components of personal computers (“PC”).

From TJP’s perspective, the PC market is largely divided into two. The first PC market comprises domestic and commercial users who use PCs for general applications such as data processing, Internet and electronic communications. The second market comprises more sophisticated commercial, industrial and other PC users, who require VGA cards with a higher standard of performance in terms of speed and quality for graphic and audio displays.

The market in VGA cards for the more sophisticated PC users is principally dominated by manufacturers from Taiwan who have been playing a leading role and accumulated substantial expertise in the research and development of technology related products such as chipsets and integrated circuits (“ICs”). VGA cards manufactured by these manufacturers usually command a price premium for the advanced design and technology involved.

TJP is now positioned in the market in VGA cards for general PC users. This market is more fragmented, with numerous manufacturers that have similar production capability and are able to produce comparable VGA cards. Given the keen competition in the industry, Mr. Terence Choy, Managing Director of TJP, believes that manufacturers who are capable of designing and manufacturing products of a reliable quality at competitive prices would be in a better position to defend or capture a larger market share.

The latest estimate for TJP’s gross profit for the current financial year ending 31 December 20X5 is as follows:

	HK\$'000	% to sales	% to costs
Revenue – sales of VGA cards	279,444	100.00	
Raw material costs	259,967	93.03	97.79
Labour costs	1,788	0.64	0.67
Depreciation	1,872	0.67	0.70
Other overhead costs	2,208	0.79	0.83
Cost of sales	<u>265,835</u>	95.13	100.00
Gross profit	<u>13,609</u>	4.87	

Currently TJP has four production lines in operation in the PRC, producing eight different models of VGA cards. Two of the four production lines are the more advanced and reliable high-speed surface mount technology (“H-SMT”) production lines and the other two are equipped with double-sided mounting technology (“D-SMT”). The production capacity of TJP is principally affected by the following factors:

- (1) The speed of the production lines at which electronic components are mounted onto a VGA card
- (2) The number of electronic components that need to be mounted on a VGA card
- (3) Set-up time for change over from one model of VGA card to another
- (4) Regular maintenance and service time; and
- (5) Repair time due to breakdowns

Each H-SMT production line and each D-SMT line is able to mount approximately 600,000 and 200,000 electronic components onto the VGA cards per day respectively. The design and specifications of the current models of VGA cards require, on average 400 electronic components. Assuming that the machine operates 250 days a year (after taking into account routine maintenance of equipment and statutory holidays for workers), the four production lines are

estimated to have a maximum annual production capacity of one million units of VGA cards per annum (75% from H-SMT and 25% from D-SMT).

The latest estimate for actual production in 20X5 is 900,000 units, or 90% of the theoretical maximum production capacity. The management ruled out shortage of orders or raw materials as possible causes for the 10% under utilisation. They considered that the 10% idle capacity was mainly due to:

- (1) Some of the older models needed more than 400 electronic components inserted
- (2) The set-up time for switching between models
- (3) Suspension of production due to production line breakdowns

TJP's management put a lot of emphasis on quality control. Quality controllers are placed at a number of check points in the production process. If the level of defective work-in-progress exceeds the predetermined limit, production will be suspended until the cause of the quality problem is identified. This practice avoids cost of raw materials incurred in defective items since rework for defective items is not practical.

To improve product reliability and reduce quality problems, TJP's management plan to acquire two more H-SMT production lines at a total cost of HK\$10,000,000 to replace the existing D-SMT lines. The useful life of the new production lines is estimated to be 10 years. After full implementation of the two new lines, the two D-SMT lines will be disposed of at minimum scrap value.

Based on 20X5's average sale price of HK\$310, the management expect the two new H-SMT production lines to at least bring an increase in sales quantity of 200,000 units per annum, resulting in an annual increase in total sales revenue of HK\$62,000,000. Assuming a variable material cost of 93% of sales, variable labour and other overhead costs of 1.5% of sales and an effective tax rate of 20%, the management estimated an internal rate of return of 24.14%. The management estimated the required rate of return for the investment is 12%.

Judy Poon is the accounting manager of TJP. Her assistant has collected the following information regarding overhead costs, which mainly consists of depreciation and electricity costs, of one of the two D-SMT production lines, D-SMT(2), for the month of November 20X5:

The budgeted overhead costs for November 20X5 is HK\$96,000 but the actual overhead cost incurred is HK\$100,000. Based on a total of 20 working days in November, the total available machine time is 480 hours. The standard overhead absorption rate is therefore HK\$200 per hour.

During the month, D-SMT(2) produced two models, TJP-03 and TJP-06, in five production runs as follows:

<i>Model</i>	<i>TJP-06</i>	<i>TJP-03</i>
Actual production	4,735 units	3,770 units
Standard insertion per unit	400	420
Standard machine time	210 hours	190 hours
Actual machine time used	230 hours	200 hours
Number of production runs	2	3
Standard set-up time per run	5 hours	5 hours
Actual total set-up time used	8 hours	12 hours

Judy's assistant is attending a Masters Course in Business Administration (MBA). He started to criticise TJP's cost control system through traditional variance analysis, saying that the concept is a hundred years old and obviously outdated. On several occasions, he has introduced modern management accounting concepts like activity based costing ("ABC"), target costing and kaizen costing to Judy and Mr. Choy. He is particularly eager to convince Judy and Mr. Choy to adopt ABC since he considers it a world class costing system.

Mr. Choy asked Judy to write him a memo about the above issues.

*Required*

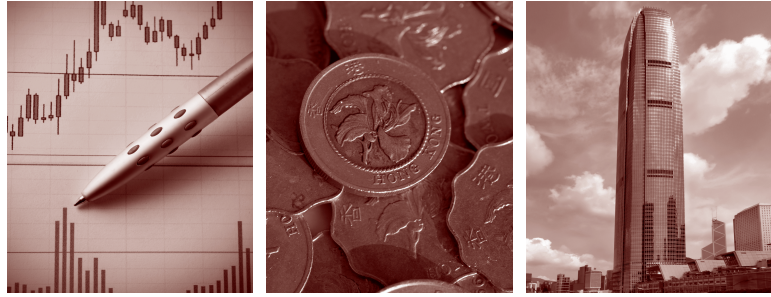
Assume that you are Judy. In your memo to Mr. Choy:

- (a) Explain to Mr. Choy the new management accounting concepts recommended by your assistant. **(6 marks)**
- (b) Determine whether it is appropriate for TJP to adopt these cost control methods, particularly ABC. **(5 marks)**
- (c) Identify THREE areas that the cost control system of TJP should focus on and propose improvements to the existing cost control system that are consistent with TJP's strategy. **(7 marks)**

**(Total = 18 marks)**

**HKICPA September 2005 (amended)**





## chapter 5

# Performance measurement systems

### Topic list

- 1 Strategic control and performance measurement**
  - 1.1 Gaps and false alarms
  - 1.2 Strategic control systems
  - 1.3 Strategic performance measures
  - 1.4 Strategic versus operational planning and control
  - 1.5 Summary of principal differences
  - 1.6 The need to link strategy and operations
- 2 Performance measures**
  - 2.1 Features of performance measures
  - 2.2 Quantitative and qualitative performance measures
  - 2.3 Comparisons and benchmarking
- 3 Financial Performance Indicators (FPIs)**
  - 3.1 Profitability
  - 3.2 Gearing
  - 3.3 Liquidity
  - 3.4 Cash flow performance measurement
  - 3.5 Common size trend analysis and index analysis
- 4 Non-Financial Performance Indicators (NFPIs)**
  - 4.1 The value of NFPIs
  - 4.2 NFPIs in relation to employees
  - 4.3 Performance measurement in a TQM environment
  - 4.4 Quality of service
- 5 Short-termism and manipulation**
  - 5.1 Methods to encourage a long-term view
- 6 The balanced scorecard**
  - 6.1 Perspectives
- 7 Performance pyramid**
- 8 Building block model**
  - 8.1 Dimensions
  - 8.2 Standards
  - 8.3 Rewards
- 9 External considerations**
  - 9.1 Stakeholders
  - 9.2 Economic environment
  - 9.3 Competition
- 10 Behavioural aspects of performance management**
  - 10.1 Measuring managerial performance
  - 10.2 The controllability principle
  - 10.3 Reward schemes and performance measurement

### Learning focus

Planning and control within an organisation is based on setting targets for performance and measuring actual results against the target. Budgets and budgetary control are one approach to performance management, but there are many others too. Performance can be monitored over the long term as well as the shorter term, and using non-financial measures of performance as well as financial measures. This chapter explores different aspects of performance measurement systems.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Performance control</b> Design, implement and review performance measurement and control systems in organisations		
<b>2.01</b>	<b>Performance measurement systems</b>	3
2.01.01	Explain the role of performance measurement systems in managing strategy and monitoring the achievement of an organisation's strategic objectives	
2.01.02	Explain the need to allow for external considerations in performance management and suggest ways in which such considerations could be allowed for	
2.01.03	Evaluate the merits of multi-dimensional models of performance, such as the Balanced Scorecard, the Performance Pyramid and the Building Block model	
2.01.04	Design and recommend an appropriate performance measurement system for a given organisation, including multinational companies (MNCs)	
2.01.05	Identify problems with an organisation's current system of performance measurement and recommend improvements	
2.01.06	Explain the "management by exception" technique and its limitations	
<b>2.02</b>	<b>Performance indicators and measures for organisational units</b>	3
2.02.01	Explain and demonstrate how appropriate financial and non-financial performance indicators can be used to monitor the performance of an organisation's strategic units, divisions or projects	
2.02.02	Calculate financial, strategic and operational performance measures and understand the relationships between them	
2.02.03	Describe, calculate and interpret appropriate financial performance indicators (FPIs) in both manufacturing and service businesses and suggest methods to improve the performance indicated by these measures	
2.02.04	Identify and explain issues that may cause performance not meeting expectations	
<b>2.04</b>	<b>Management of intra- and inter-organisational relationships</b>	2
2.04.02	Explain the concept and potential benefits of benchmarking performance measures against worldwide best practice	
<b>2.05</b>	<b>Behavioural and ethical aspects of control systems</b>	3
2.05.01	Explain the behavioural issues associated with capital budgeting and performance management and control systems	

2.05.02	Explain the causes and problems created by short-termism and financial manipulation of results and suggest approaches to performance measurement and control that encourage a long term view	
2.05.04	Explain the practical issues (including behavioural issues) that arise when an organisation implements changes to its control systems and recommend ways of dealing with these	

# 1 Strategic control and performance measurement



## Topic highlights

**Performance measurement** aims to establish how well something or somebody is doing in relation to a plan. The “thing” may be a machine, a factory, a subsidiary company or an organisation as a whole. The “body” may be an individual employee, a manager or a group of people.

Performance measurement is a **vital part of the control process**.

Control at a strategic level means asking the question: “is the organisation on target to meet its overall objectives and is control action needed to turn it around?”

Strategic control measures might require complicated trade-offs between current financial performance and longer-term competitive position, and between different desirable ways of building competitive strength. The main task is to ensure that the right things are measured.

## 1.1 Gaps and false alarms

**Strategic control** depends on avoiding “gaps” and “false alarms” and on identifying milestones of performance.

Many firms **measure the wrong things** and **do not measure the right things**.

- (a) **False alarms** motivate managers to **improve areas** where there are **few benefits** to the organisation.
  - (i) Over-emphasis on direct costs is foolish when most costs are overheads
  - (ii) Labour efficiency measures are easily manipulated and ignore labour effectiveness
  - (iii) Machine standard hours are irrelevant, as long as the firm has enough capacity
- (b) **Gaps** are important **areas** that are **neglected**.
  - (i) New product introduction
  - (ii) Customer satisfaction
  - (iii) Employee involvement
- (c) **Different measures apply to different industries**. In continuous processes, such as chemicals, throughput time is not important as there will always be buffer stock. However, it is important in consumer electronics.

## 1.2 Strategic control systems

To **encourage the measurement of the right things**, firms can institute formal or informal systems of **strategic control**. There are four **influences on a strategic control system**:

- (a) The **time-lag** between **strategic control** measures and financial results
- (b) The **linkages** with the other businesses in a group



- (c) The **risks** the business faces
- (d) The **sources** of competitive advantage

### 1.2.1 Formal systems of strategic control

- Step 1** Strategy review. Review the progress of strategy.
- Step 2** Identify milestones of performance (strategic objectives), both quantitative and qualitative (e.g. market share, quality, innovation, customer satisfaction).
- Milestones are identified after critical success factors have been outlined.
  - Milestones are short-term steps towards long-term goals.
  - Milestones enable managers to monitor actions (e.g. whether a new product has been launched) and results (e.g. the success of the launch).
- Step 3** Set target achievement levels. These need not be exclusively quantitative.
- Targets must be reasonably precise.
  - Targets should suggest strategies and tactics.
  - Competitive benchmarks are targets set relative to the competition.
- Step 4** Formal monitoring of the strategic process. Reporting is less frequent than for financial reporting.
- Step 5** Reward. For most systems, there is little relationship between the achievement of strategic objectives and the reward system, although some companies are beginning to use measures of strategic performance as part of the annual bonus calculations.

### 1.2.2 Informal control

Many companies **do not** “define explicit strategic objectives or milestones that are regularly and formally monitored as part of the ongoing management control process”.

- (a) Choosing one objective (e.g. market share) might encourage managers to ignore or downgrade others (e.g. profitability), or lead managers to ignore wider issues.
- (b) Informality promotes flexibility.
- (c) Openness of communication is necessary.
- (d) Finite objectives overlook nuances especially in human resource management. In other words, an objective like “employee commitment” is necessary for success, but hard to measure quantitatively.

Informal control does not always work because it enables managers to skate over important strategic issues and choices.



### Illustration: Strategic control report

Date: March 20X4

Source: January 20X0 planning document

**Mission: Market share**

#### 1 Long-term targets, to be achieved by 20X9

- (a) X% value of market share
- (b) Y% profitability over the decade

*Status: March 20X4.* Market share lower than anticipated, owing to unexpected competition. Profits lower than expected because of loss of scale economies and increased marketing costs.

*Outlook:* Profit will be improved thanks to cost-cutting measures. Market share target might be missed.

#### 2 Assumptions

The home market is growing only slowly, and is becoming mature. There are limited opportunities for segmentation.

Overseas markets are likely to expand by Z% as some are reducing tariffs.

*Status March 20X4.* The home market has matured more quickly than expected. Overseas market growth can compensate for this.

#### 3 Critical success factors

Although market share and hence profit are lower than expected, as a result of loss of scale economies, we have become more efficient. Defects per 1,000 have been reduced to 0.3, which allows us to bid for the Japanese contract.

#### 4 Key tasks

- Launch of budget products for overseas markets
- Setting up of a computerised distribution system to enhance speedy response to demand and to cut warehousing costs
- Get BS EN ISO 9000 certification

## 1.3 Strategic performance measures

### 1.3.1 Desirable features of strategic performance measures

Role of measures	Comment
Focus attention on what matters in the long term	Shareholder wealth?
Identify and communicate drivers of success	How the organisation generates shareholder value over the long term
Support organisational learning	Enable the organisation to improve its performance
Provide a basis for reward	Rewards should be based on strategic issues not just performance in any one year

## 1.4 Strategic versus operational planning and control

At **strategic and operational levels, planning and control** differ in terms of the nature of feedback, orientation (future versus present) and scope (organisation as a whole versus limited set of processes within it).

**Control** at the **higher levels of the hierarchy** has the following **characteristics**:

- Exercised by external stakeholders (e.g. shareholders)
- Exercised by the market
- Relatively free to change targets
- Often feedforward elements (where control is based on comparisons of targets with revised forecasts)

Control can also occur at **the lower levels** of the performance hierarchy. Such **control** has the following **features**:

- Exercised externally by management or, in the case of empowered teams, by the staff themselves
- Immediate or rapid feedback
- Managers have little or no authority to change plans or targets

## 1.5 Summary of principal differences

To summarise, we can contrast briefly the **differences between planning and control** at the strategic and operational levels.

Strategic	Operational
“Broad brush” targets	Detailed
Whole organisation	Departmental activities
External input	Mainly internal information
External focus	Internal focus, on actual procedures
Future-orientated feed forward control	More concerned with monitoring current performance against plan
Potential for changing the plan	Performance must change, not the plan

## 1.6 The need to link strategy and operations

The achievement of long-term goals will require strategic planning which is linked to short-term operational planning. If there is no link between strategic planning and operational planning the result is likely to be unrealistic plans, inconsistent goals, poor communication and inadequate performance measurement.

The problems arising from a failure to link strategic and operational plans are explored below.

### 1.6.1 Unrealistic plans

Unrealistic operational plans will force staff to **try too hard** with **too few resources**. Mistakes and failure are almost inevitable. This means poor quality products: costs include lost sales, arranging for returns, and time wasted dealing with complaints.

**Over-ambitious** plans may also mean that more stocks are produced than an organisation could realistically expect to sell (so costs of write-offs, opportunity costs of wasted resources, and unnecessary stock holding costs are incurred).

### 1.6.2 Inconsistent goals

Inconsistent strategic planning and operational planning goals may mean **additional costs** are incurred. An operational plan may require additional inspection points in a production process to ensure quality products are delivered to customers. The resulting extra costs will be at odds with the strategic planning goal of **minimum cost**.

### 1.6.3 Poor communication

**Poor communication** between senior management who set strategic goals and lower-level operational management could mean that operational managers are **unaware** of the strategic planning goal, say to sustain competitive advantage at minimum cost through speedy delivery of quality products to customers.

Some operational managers may therefore choose to focus on quality of product while others attempt to produce as many products as possible and as quickly as they can; still others will simply keep their heads down and do as little as possible. This will lead to **lack of co-ordination**: there will be bottlenecks in some operational areas, needing expensive extra resources in the short term, and wasteful idle time in other areas.

### 1.6.4 Inadequate performance measurement

Inadequate performance measurement will mean that an organisation has little idea of which areas are performing well and which **need to improve**. If quality of product and speed of delivery are the main sources of competitive advantage a business needs to know how good it is at these things.

For example, if an organisation measures only **conventional accounting results** it will know how much stock it has and how much it has spent, say, on “carriage out”, but it will not know the **opportunity cost** of cancelled sales through not having stock available when needed, or not being able to deliver it on time. Equally the **quality** of products needs to be measured in terms not only of sales achieved, but also in terms of **customer complaints** and feedback: again the cost is the opportunity cost of lost sales.

## 2 Performance measures



### Topic highlights

**Performance measurement** aims to establish how well something or somebody is doing in relation to a plan.

Performance measures may be divided into two groups.

- Financial performance indicators
- Non-financial performance indicators

### 2.1 Features of performance measures

Different measures are appropriate for different businesses. Factors to consider:

- Measurement needs resources** – people, equipment and time to collect and analyse information. The costs and benefits of providing resources to produce a performance indicator must be carefully weighed up.
- Performance must be measured in relation to something**, otherwise measurement is meaningless. Overall performance should be measured against the **objectives** of the organisation and the **plans** that result from those objectives. If the organisation has no clear

objectives, the first step in performance measurement is to set them. The second is to identify the factors that are critical to the success of those objectives.

- (c) **Measures must be relevant.** This means finding out what the organisation does and how it does it so that measures reflect what actually occurs.
- (d) **Short and long-term achievement** should be measured. Short-term targets can be valuable, but exclusive use of them may direct the organisation away from opportunities that will mean success for the business in the long term.
- (e) Measures should be **fair**. They should only include factors which managers can control by their decisions, and for which they can be held **responsible**. Measuring controllable costs, revenues and assets may prove controversial however.
- (f) A **variety** of measures should be used. Managers may be able to find ways to distort a single measure, but should not be able to affect a variety of measures. The balanced scorecard (section 6) provides a method of measuring performance from a number of perspectives.
- (g) **Realistic estimates** may be required for measures to be employed. These include estimates of financial items whose value is not certain, such as the cost of capital, and estimates of the impact of non-financial items.
- (h) Measurement needs **responses**, above all managers to make decisions in the best interests of the organisation. Managers will only respond to measures that they find useful. The management accountant therefore needs to adopt a modern marketing philosophy to the provision of performance measures: satisfy customer wants, not “pile 'em high and sell 'em cheap”.

Once suitable performance measures have been selected they must be **monitored on a regular basis** to ensure that they are providing useful information. There is little point in an organisation devoting considerable resources to measuring market share if an increase in market share is not one of the organisation's objectives.

## 2.2 Quantitative and qualitative performance measures

Quantitative information is capable of being expressed in numbers. Qualitative information is not numerical. Qualitative information can sometimes be converted into numbers through tools such as ranking scales.

For example, 1–5 where 1 = Good and 5 = Poor.

- (a) An example of a **quantitative** performance measure is “You have been late for work **twice** this week and it's only Tuesday!”.
- (b) An example of a **qualitative** performance measure is “My bed is **very** comfortable”.

The first measure is likely to find its way into a **staff appraisal report**. The second would feature in a bed manufacturer's **customer satisfaction survey**. Both are indicators of whether their subjects are doing as good a job as they are required to do.

**Qualitative measures** are by nature **subjective** and **judgmental** but they can still be useful. They are especially valuable when they are derived from several **different sources**, as the likelihood of an unreliable judgment is reduced.

Consider the statement.

“Seven out of ten customers think our beds are very comfortable.”

This is a **quantitative measure** of customer satisfaction (7 out of 10), as well as a **qualitative measure** of the perceived performance of the beds (very comfortable).

## 2.3 Comparisons and benchmarking



### Topic highlights

Benchmarking involves a systematic analysis of one's own performance against that of another organisation. There are five main types: internal, competitive, functional, generic and customer.

In order to measure performance, there must be comparisons made:

- to the organisation's past performance or budget
- between divisions of the organisation
- with the organisation's competitors



### Key term

**Benchmarking** is a systematic and continuous measurement process, a process continually comparing and measuring an organisation's business processes against business leaders, to gain information which will help the organisation take action that will improve its performance.

The basic idea of benchmarking, like many ideas in modern management, is essentially simple. If you have ever compared the way you do things with the way others do them then you have practised benchmarking. By comparing your own procedures with those of others it is possible to define a reference point. It may well be that the process of comparison reveals a better way of doing things. As may be seen benchmarking is a process of performance measurement and review. When applied within an organisation it simply entails formalising the process of comparison. Benchmarking involves a systematic analysis of one's own performance against that of another organisation. It may measure:

- products
- services
- practices
- processes by which a product is delivered

### 2.3.1 The objectives of benchmarking

The objective is to achieve and maintain a competitive advantage by establishing what it is that gives leading organisations their edge in the marketplace. It is important to remember that financial performance measures should be only one of a battery of measures to be applied to achieve competitive success.

The idea of benchmarking was originally developed by the Xerox Corporation who benchmarked with a number of non-competitors. The areas in which they undertook the benchmarking exercise included:

- quality management/invoicing and debt collection
- research and development/distribution and logistics
- factory layout/marketing
- strategy implementation/computer operations

### 2.3.2 Selecting the benchmark

These are of five main types:

- (1) Internal benchmarks
- (2) Competitive benchmarks
- (3) Functional benchmarks (organisations in different, non-competing product/service sectors but with similar core operations)

- (4) Generic benchmarks (comparing identical business functions)
- (5) Customer benchmarks (with customer expectation)

Benchmarking provides the opportunity to compare performance across sites and between companies to give an indication of current best practice.

There are many potential sources for gathering data:

- Newspaper articles/business magazines and journals
- Market research
- Inter-firm comparison reports (from government bodies)
- Brokers/bankers or market analysts reports
- Exhibitions, trade fairs
- Hiring of ex-employees

Accurate and relevant information is often difficult to obtain, as it is likely to be closely guarded by competitors, yet can be used as a comparative tool.

### 2.3.3 Why use benchmarking?

- (a) **Position audit.** Benchmarking can assess a firm's existing position, and provide a basis for establishing standards of performance.
- (b) The sharing of information can be a **spur to innovation**.
- (c) Its flexibility means that it can be used in both the **public and private sectors** and by people at different levels of responsibility.
- (d) **Cross comparisons** (as opposed to comparisons with similar organisations) are more likely to expose radically different ways of doing things.
- (e) It is an effective method of **implementing change**, people being involved in identifying and seeking out different ways of doing things in their own areas.
- (f) It identifies the **processes** to improve.
- (g) It helps with **cost reduction**.
- (h) It improves the **effectiveness** of operations.
- (i) It delivers **services** to a defined standard.
- (j) It provides a focus on **planning**.
- (k) It can provide early warning of **competitive disadvantage**.
- (l) It should lead to a greater incidence of **team working** and **cross-functional learning**.

Benchmarking works, it is claimed, for the following reasons:

- (a) The comparisons are carried out by the managers who have to live with any changes implemented as a result of the exercise.
- (b) Benchmarking focuses on improvement in key areas and sets targets which are challenging but “achievable”. What is *really* achievable can be discovered by examining what others have achieved: managers are thus able to accept that they are not being asked to perform miracles.

Benchmarking has other advantages: it can provide **early warning of competitive disadvantage** and should lead to a greater incidence of **team-working** and **cross-functional learning**.

### 2.3.4 Disadvantages of benchmarking

- (a) It implies there is **one best way** of doing business – arguably, this boils down to the difference between efficiency and effectiveness. A process can be efficient but its output may not be useful. Other measures (such as amending the value chain) may be a better way of securing competitive advantage.

- (b) It is a **catching-up exercise** rather than the development of anything distinctive. After the benchmarking exercise, the competitor might improve performance in a different way.
- (c) It depends on **accurate** information about comparator companies – it may be hard to **persuade other organisations** to share information.
- (d) It can be difficult to decide **which activities to benchmark**.
- (e) **It may be difficult to identify** the “**best in class**” for each activity.
- (f) **Successful practices** in one organisation may not transfer successfully to another.

### 3 Financial Performance Indicators (FPIs)



#### Key term

**Financial performance indicators** analyse profitability, liquidity and risk.

The table shows a sense of typical financial indicators (or **monetary** measures):

Measure	Example
<b>Profit</b>	<b>Profit</b> is the commonest measure of all. Profit maximisation is usually cited as the main objective of most business organisations: “ICI increased pre-tax profits to \$233 million”; “General Motors yesterday reported better-than-expected first-quarter net income of \$513 million. Earnings improved \$680 million from the first quarter of last year when GM lost \$167 million”.
<b>Revenue</b>	“The US businesses contributed \$113.9m of total group turnover of \$409 million.”
<b>Costs</b>	“Sterling’s fall benefitted pre-tax profits by about \$50m while savings from the cost-cutting programme instituted in 1991 were running at around \$100m a quarter”; “The group interest charge rose from \$48 million to \$61 million”.
<b>Share price</b>	“The group’s shares rose 31c to 1,278c despite the market’s fall”.
<b>Cash flow</b>	“Cash flow was also continuing to improve, with cash and marketable securities totalling \$8.4 billion on 31 March, up from \$8 billion at 31 December”.

Note that the monetary amounts stated are **only given meaning in relation to something else**. Financial results should be compared against a **yard-stick** such as those listed below:

- Budgeted **sales**, costs and **profits**
- **Standards** in a standard costing system
- The **trend** over time (last year/this year, say)
- The **results** of **other parts of the business**
- The **results** of **other businesses**
- The **economy** in general
- **Future potential** (for example, the performance of a new business may be judged in terms of nearness to breaking even)

#### 3.1 Profitability

A company ought of course to be profitable, and there are obvious checks on **profitability**.

- (a) Whether the company has made a profit or a loss on its ordinary activities.
- (b) By how much this year’s profit or loss is bigger or smaller than last year’s profit or loss.



It is probably better to consider separately the profits or losses on exceptional items if there are any.

Such gains or losses should not be expected to occur again, unlike profits or losses on normal trading.



### Example: Profitability

Example A company has the following summarised income statements for two consecutive years.

	Year 1	Year 2
	\$	\$
Revenue	70,000	100,000
Less cost of sales	42,000	55,000
Gross profit	<u>28,000</u>	<u>45,000</u>
Less expenses	21,000	35,000
Net profit	<u><u>7,000</u></u>	<u><u>10,000</u></u>

Although the net profit margin is the same for both years at 10%, the gross profit margin is not.

$$\text{Gross profit margin} = \frac{\text{Gross profit}}{\text{Revenue (turnover)}} \times 100\%$$

$$\text{Year 1 } \frac{28,000}{70,000} = 40\%$$

$$\text{Year 2 } \frac{45,000}{100,000} = 45\%$$

Is this good or bad for the business?

An increased profit margin must be good because this indicates a wider gap between selling price and cost of sales. Given that the net profit ratio has stayed the same in the second year, however, expenses must be rising. In year 1 expenses were 30% of revenue, whereas in year 2 they were 35% of revenue. This indicates that administration, selling and distribution expenses or interest costs require tight control.

### Percentage analysis of profit between year 1 and year 2

	Year 1	Year 2
	%	%
Cost of sales as a % of sales	60	55
Gross profit as a % of sales	40	45
	<u>100</u>	<u>100</u>
Expenses as a % of sales	30	35
Net profit as a % of sales	10	10
Gross profit as a % of sales	<u>40</u>	<u>45</u>

**Profit on ordinary activities before taxation** is generally thought to be a **better** figure to use than profit after taxation, because there might be unusual variations in the tax charge from year to year which would not affect the underlying profitability of the company's operations.

Another profit figure that should be calculated is **PBIT: profit before interest and tax**. This is the amount of profit which the company earned **before having to pay interest to the providers of loan capital**. By providers of loan capital, we usually mean longer-term loan capital, such as debentures and medium-term bank loans, which will be shown in the statement of financial position as "Payables: amounts falling due after more than one year." This figure is of particular importance to bankers and lenders.

**Key term**

**Profit before interest and tax (PBIT)** = profit on ordinary activities before taxation + interest charges on long-term loan capital.

**3.1.1 Sales margin****Key term**

**Sales margin** is revenue less cost of sales.

**Example: Sales margin**

Look at the following examples.

**(a) Golden Press, a printer**

	20X9 \$'000
Revenue	89,844
Cost of sales	<u>(60,769)</u>
Gross profit	29,075
Distribution expenses	(1,523)
Administrative expenses	(13,300)
Goodwill impairment	(212)
Operating profit (15.6%) (Interest etc.)	<u><u>14,040</u></u>

**Cost of sales** comprises **direct material** cost, such as paper, and **direct labour**.  
Distribution and administrative expenses include depreciation. **Sales margin = 32%**.

Sales margin at least shows the contribution that is being made, especially when direct variable costs are very significant.

**(b) Blue Line, a bus company**

	\$m
Revenue	1,534.30
Cost of sales	<u>1,282.60</u>
Gross profit	251.70
Net operating expenses	133.80
Operating profit (7.6%)	<u><u>117.90</u></u>

**Sales margin = 16%**. Clearly a higher percentage of costs are operating costs.

**Lessons to be learned**

- Sales margin as a measure is not really of any use in comparing different industries.
- Sales margin is influenced by the level of fixed costs.
- Trends in sales margin are of interest. A falling sales margin suggests an organisation has not been able to pass on input price rises to customers.
- Comparisons with similar companies are of interest. If an organisation has a lower sales margin than a similar business, this suggests problems in controlling input costs.

In short, the value of sales margin as a measure of performance depends on the **cost structure** of the industry and the **uses** to which it is put.

### 3.1.2 Earnings per share (EPS)

EPS is a convenient measure as it demonstrates the financial success of the shareholder's investment.



#### Topic highlights

EPS is widely used as a **measure of a company's performance**, especially in **comparing** results over a period of **several years**. A company must be able to sustain its earnings in order to pay dividends and re-invest in the business so as to achieve future growth. Investors also look for **growth in the EPS** from one year to the next.



#### Key term

**Earnings per share (EPS)** is defined as the profit attributable to each equity (ordinary) share.



#### Example: EPS

Walter Wall Carpets Ltd made profits before tax in 20X8 of \$9,320,000. Tax amounted to \$2,800,000.

The company's share capital is as follows:

	\$'000
Ordinary share capital (8,000,000 shares)	10,000
8% preference shares	2,000
	<u>12,000</u>

Calculate the EPS for 20X8.

	\$'000
Profits before tax	9,320
Less tax	2,800
Profits after tax	<u>6,520</u>
Less preference dividend (8% of \$2,000,000)	160
Earnings	<u>6,360</u>

Number of ordinary shares: 8,000,000

EPS: 79.5cents

**EPS on its own does not really tell us anything.** It must be seen **in context**.

- EPS is used for comparing the results of a company **over time**. Is its EPS growing? What is the rate of growth? Is the rate of growth increasing or decreasing?
- If EPS is to be a reliable basis for comparing results, it **must be calculated consistently**. The EPS of one company must be directly comparable with the EPS of others, and the EPS of a company in one year must be directly comparable with its published EPS figures for previous years. Changes in the share capital of a company during the course of a year cause problems of comparability.
- EPS is a figure based on past data, and it is easily manipulated by changes in accounting policies and by mergers or acquisitions. **The use of the measure in calculating management bonuses makes it particularly liable to manipulation.** The attention given to EPS as a performance measure by equity analysts is arguably disproportionate to its true

worth. Investors should be more concerned with **future earnings**, but of course estimates of these are more difficult to reach than the readily available figure.

### 3.1.3 Profitability and return: return on capital employed (ROCE)

It is impossible to assess profits or profit growth properly without relating them to the amount of funds (the capital) employed in making the profits. An important profitability ratio is therefore **return on capital employed (ROCE)**, which states the profit as a **percentage of the amount of capital employed**.



#### Key term

$$\text{Return on capital employed} = \frac{\text{Operating profit}}{\text{Capital employed}}$$

Capital employed = Shareholders' funds plus "payables: amounts falling due after more than one year" plus any long-term provisions for liabilities and charges = total assets less current liabilities.

What does a company's ROCE tell us? What should we be looking for? There are three **comparisons** that can be made.

- (a) The change in ROCE from **one year to the next**.
- (b) The ROCE being earned by **other companies**, if this information is available.
- (c) A comparison of the ROCE with **current market borrowing rates**.
  - (i) What would be the cost of extra borrowing to the company if it needed more loans, and is it earning an ROCE that suggests it could make high enough profits to make such borrowing worthwhile?
  - (ii) Is the company making an ROCE which suggests that it is making profitable use of its current borrowing?

### 3.1.4 Analysing profitability and return in more detail: the secondary ratios

We may analyse the ROCE, to find out why it is high or low, or better or worse than last year. There are two factors that contribute towards a return on capital employed, both related to revenue.

- (a) **Profit margin**. A company might make a high or a low profit margin on its sales. For example, a company that makes a profit of 25c per \$1 of sales is making a bigger return on its revenue than another company making a profit of only 10c per \$1 of sales.
- (b) **Asset turnover**. Asset turnover is a measure of how well the assets of a business are being used to generate sales. For example, if two companies each have capital employed of \$100,000, and company A makes sales of \$400,000 a year whereas company B makes sales of only \$200,000 a year, company A is making a higher turnover from the same amount of assets and this will help company A to make a higher return on capital employed than company B. Asset turnover is expressed as "x times" so that assets generate x times their value in annual turnover. Here, company A's asset turnover is 4 times and company B's is 2 times.



### Key terms

**Profit margin** and **asset turnover** together explain the ROCE, and if the ROCE is the primary profitability ratio, these other two are the secondary ratios. The relationship between the three ratios is as follows:

$$\begin{array}{rclcl}
 \text{Profit margin} & \times & \text{Asset turnover} & = & \text{ROCE} \\
 \frac{\text{Operating profit}}{\text{Sales}} & \times & \frac{\text{Sales}}{\text{Capital employed}} & = & \frac{\text{Operating profit}}{\text{Capital employed}}
 \end{array}$$



### Topic highlights

It is also worth commenting on the **change in turnover** from one year to the next. Strong sales growth will usually indicate volume growth as well as turnover increases due to price rises, and volume growth is one sign of a prosperous company.

## 3.2 Gearing

The assets of a business must be financed somehow, and when a business is growing, the additional assets must be financed by additional capital. **Capital structure** refers to the **way in which an organisation is financed**, by a combination of long-term capital (ordinary shares and reserves, preference shares, debentures, bank loans, convertible bonds and so on) and short-term liabilities, such as a bank overdraft and trade payables. Capital structure is covered in detail in Chapter 14.

### 3.2.1 Debts and financial risk

There are two main **reasons why companies should keep their debt burden under control**.

- (a) When a company is heavily in debt, and seems to be getting even more heavily into debt, banks and other would-be lenders are very soon likely to refuse further borrowing and the company might well find itself in trouble.
- (b) When a company is earning only a modest profit before interest and tax, and has a heavy debt burden, there will be very little profit left over for shareholders after the interest charges have been paid. And so if interest rates were to go up or the company were to borrow even more, it might soon be incurring interest charges in excess of PBIT. This might eventually lead to the liquidation of the company.

A high level of debt creates **financial risk**. Financial risk can be seen from different points of view.

- (a) **The company** as a whole. If a company builds up debts that it cannot pay when they fall due, it will be forced into liquidation.
- (b) **Payables**. If a company cannot pay its debts, the company will go into liquidation owing creditors money that they are unlikely to recover in full.
- (c) **Ordinary shareholders**. A company will not make any distributable profits unless it is able to earn enough profit before interest and tax to pay all its interest charges, and then tax. The lower the profits or the higher the interest-bearing debts, the less there will be, if there is anything at all, for shareholders.

### 3.2.2 Gearing ratios



#### Topic highlights

**Gearing ratios** measure the financial **risk** of a company's capital structure. Business risk can be measured by calculating a company's operational gearing.



#### Key term

**Financial leverage or gearing** is the use of debt finance to increase the return on equity by using borrowed funds in such a way that the return generated is greater than the cost of servicing the debt. If the return on borrowed funds is less than the cost of servicing the debt, the effect of gearing is to reduce the return on equity.

Gearing (leverage) measures the **relationships between shareholders' capital plus reserves, and debt**. Debt is any loans which pay fixed interest and are secured. In this exam, overdrafts do not form part of debt in a gearing ratio.



#### Key term

**Gearing ratios** can be used to measure the relationships between shareholders' capital plus reserves, and debt.

$$\text{Gearing} = \frac{\text{Debt}}{\text{Debt plus equity}} \text{ or } \text{Gearing} = \frac{\text{Debt}}{\text{Equity}}$$

If using the first definition, a gearing ratio of over 50% indicates **high** gearing and if using the second definition, a gearing ratio of over 100% indicates high gearing.

There is **no absolute limit** to what a **gearing ratio** ought to be. Many companies are highly geared, but if a highly geared company is increasing its gearing, it is likely to have difficulty in the future when it wants to borrow even more, unless it can also boost its shareholders' capital, either with retained profits or with a new share issue.

### 3.2.3 The effect of gearing on earnings

The level of gearing has a considerable effect on the earnings attributable to the ordinary shareholders. A **highly geared** company must **earn enough profits to cover its interest charges before anything is available for equity**. On the other hand, if borrowed funds are invested in projects which provide returns in excess of the cost of debt capital, then shareholders will enjoy increased returns on their equity.

**Gearing**, however, also **increases the probability of financial failure** occurring through a company's inability to meet interest payments in poor trading circumstances.



### Illustration: Gearing

Suppose that two companies are identical in every respect except for their gearing. Both have assets of \$20,000 and both make the same operating profits (profit before interest and tax: PBIT). The only difference between the two companies is that Nonlever Ltd is all-equity financed and Lever Ltd is partly financed by debt capital, as follows:

	<i>Nonlever</i>	<i>Lever</i>
	\$	\$
Assets	20,000	20,000
10% Bonds	—	(10,000)
	<u>20,000</u>	<u>10,000</u>
Share capital	<u>20,000</u>	<u>10,000</u>

Because Lever has \$10,000 of 10% bonds it must make a profit before interest of at least \$1,000 in order to pay the interest charges. Nonlever, on the other hand, does not have any minimum PBIT requirement because it has no debt capital. A company, which is lower geared, is considered less **risky** than a higher geared company because of the greater likelihood that its PBIT will be high enough to cover interest charges and make a profit for equity shareholders.

### 3.2.4 Operational gearing

Financial risk, as we have seen, can be measured by financial gearing. **Business risk** refers to the **risk of making only low profits**, or even losses, **due to the nature of the business** that the company is involved in. One way of measuring business risk is by calculating a company's "operational gearing".



#### Key term

**Operational gearing** considers the proportion of a company's cost base that is fixed rather than variable. It can be measured in different ways:

$$\text{Operational gearing} = \frac{\text{Fixed costs}}{\text{Total costs}}$$

The higher the proportion of fixed costs, the higher the operating gearing.

Another way of looking at operating gearing is to consider the relationship between contribution and operating profit in order to measure how sensitive profits are to changes in sales volumes:



#### Key term

$$\text{Operational gearing} = \frac{\text{Contribution}}{\text{Operating profit}}$$

Contribution is revenue minus variable cost of sales.

Operating profit is contribution minus fixed costs. The larger the ratio of contribution to operating profit, the greater the level of fixed costs and hence operational gearing.

Companies with high operational gearing tend to have volatile operating profits. This is because fixed costs remain the same, regardless of sales volumes. As a result, if sales increase, operating profit increases by a larger percentage when there is high operational gearing. But if sales volume falls, operating profit falls by a larger percentage.

Generally, it is a high-risk policy to combine high financial gearing with high operational gearing.

## 3.3 Liquidity



### Topic highlights

A company can be profitable but at the same time get into cash flow problems. Liquidity ratios (**current** and **quick**) and **working capital turnover ratios** give some idea of a company's liquidity.

Profitability is of course an important aspect of a company's performance, and debt or gearing is another. Neither, however, addresses directly the key issue of liquidity. A company needs liquid assets so that it can meet its debts when they fall due.



### Key term

**Liquidity** is the amount of cash a company can obtain quickly to settle its debts (and possibly to meet other unforeseen demands for cash payments too).

### 3.3.1 Liquid assets

**Liquid funds** include:

- (a) Cash
- (b) Short-term investments for which there is a ready market, such as investments in shares of other companies (**Note.** *Not* subsidiaries or associates)
- (c) Fixed-term deposits with a bank or building society, for example six month deposits with a bank
- (d) Trade receivables
- (e) Bills of exchange receivable

**Some assets are more liquid than others.** Inventories of goods are fairly liquid in some businesses. Inventories of finished production goods might be sold quickly, and a supermarket will hold consumer goods for resale that could well be sold for cash very soon. Raw materials and components in a manufacturing company have to be used to make a finished product before they can be sold to realise cash, and so they are less liquid than finished goods. Just how liquid they are depends on the speed of inventory turnover and the length of the production cycle.

**Non-current assets are not liquid assets.** A company can sell off non-current assets, but unless they are no longer needed, or are worn out and about to be replaced, they are necessary to continue the company's operations. Selling non-current assets is certainly not a solution to a company's cash needs, and so although there may be an occasional non-current asset item which is about to be sold off, probably because it is going to be replaced, it is safe to disregard non-current assets when measuring a company's liquidity.

In summary, **liquid assets are current asset items that will or could soon be converted into cash, and cash** itself. Two common definitions of liquid assets are **all current assets** or **all current assets with the exception of inventories**.

**The main source of liquid assets for a trading company is sales.** A company can obtain cash from sources other than sales, such as the issue of shares for cash, a new loan or the sale of non-current assets. However, a company cannot rely on these at all times, and in general, obtaining liquid funds depends on making sales and profits.

### 3.3.2 Liquidity ratios

Ratios for measuring and monitoring liquidity are discussed in Chapter 8.



## 3.4 Cash flow performance measurement

### 3.4.1 Overview

The management of cash flow is very important as cash balances must be maintained at a sufficient level to ensure that there is enough cash to pay liabilities when these are due for settlement. The organisation must be able to maintain inventories or pay for purchases (Just in Time); offer competitive credit terms, and meet its short-term and long-term operating and financing costs as they fall due. Failure to meet maturing liabilities on time makes the organisation technically insolvent. In addition, holdings of idle cash balances should be kept to a minimum (and surplus cash should be invested to earn interest).

### 3.4.2 Factors affecting cash flows

Organisations experience irregular increases in their cash holdings due to external and internal factors. External factors affecting cash inflows include the issue of new shares or bonds or arranging non-marketable debt contracts, such as loans from commercial banks. These cash flows tend to be irregular because there are usually large sums of money involved. Other sources of cash arise from internal operations and occur on a more regular basis. These usually comprise receipts from sales to customers and sales of non-current assets. Decreases in cash arise from the payment of dividends, interest and principal repayments on debt, taxation liabilities; acquisitions of non-current assets; and purchases of raw materials for production.

If excess cash becomes temporarily available, the organisation should purchase marketable securities (or place the cash in an interest-earning deposit account) or where a cash deficit is forecast, a portion of the organisation's marketable securities portfolio should be liquidated or short-term borrowings arranged to meet the deficit.

### 3.4.3 Reasons for holding cash



#### Topic highlights

There are three reasons for holding cash: First, to pay **transactions** arising in the ordinary course of business. Second, for **precautionary** reasons as a buffer to satisfy potential cash needs. Third, for **speculative** purposes in order to take advantage of potential profit making situations.

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### 3.4.4 Cash flows and performance

Managing the organisation's cash flow involves simultaneous and interrelated decisions regarding investments in current and non-current assets and the use of current liabilities. Cash flow measures indicate the dividend or debt-paying ability of the firm, the ability of the firm to provide for future growth opportunities and the general solvency of the firm.

#### Marginal cash flow

Marginal cash flow shows the net of the variable cash inflows generated by operations after financing the variable working capital used by these operations. Marginal cash flow is the difference between the margin of a product and the marginal working capital required to support the sale of the product which includes trade receivables and inventory, less trade payables required for the next unit of product or service. It helps to indicate what is likely to happen to cash flow in the future if these fundamental relationships are maintained.

**Key term**

The **Marginal Cash Flow (MCF)** calculation is:

$$\text{MCF} = \text{contribution margin} - \text{change in working capital}$$

(where the change in working capital is an increase in working capital, if not any decrease is added rather than subtracted).

**Operating cash flow**

Operating cash flow measures the cash generated from operations, less the cash invested to fund operations and indicates whether the business' ongoing ordinary operations are providing cash towards paying interest, tax, dividends, and so on. If operating cash flow is negative there is not necessarily a problem. The business may be investing in non-current assets for future growth. Operating cash outflows are funded by increased borrowings or equity.

**Key term**

The **Operating Cash Flow (OCF)** calculation is:

$$\text{OCF} = \text{EBIT} - \text{change in net operating assets}$$

**Net cash flow**

Net cash flow is the real cash flow, the change in borrowings for the year. Depreciation and other non-cash items are included in the determination of retained income and in the change in net assets.

**Key term**

**Net cash flow** is the operating cash flow less interest, tax, dividends and extraordinary items (if applicable) and changes in equity, provision for tax and provision for dividend (if applicable).



### Example: Cash flows

The following information relates to Company A .

#### COMPANY A : STATEMENT OF FINANCIAL POSITION AS AT 30 JUNE

	20X9	20X8	20X7
	\$	\$	\$
<i>Current assets</i>			
Accounts receivable	2,732,315	2,442,357	1,833,349
Inventory (Note)	1,412,935	1,256,225	1,107,726
Sundry receivables	189,700	170,540	102,300
	<u>4,334,950</u>	<u>3,869,122</u>	<u>3,043,375</u>
<i>Non-current assets</i>			
Non-current assets	4,599,772	4,385,123	3,980,421
Total assets	<u>8,934,722</u>	<u>8,254,245</u>	<u>7,023,796</u>
<i>Current liabilities</i>			
Bank overdraft	2,231,667	2,075,421	1,567,820
Accounts payable	684,426	1,261,348	897,931
Other current liabilities	133,900	62,500	39,420
	<u>3,049,993</u>	<u>3,399,269</u>	<u>2,505,171</u>
<i>Non-current liabilities</i>			
Commercial bill	3,500,000	2,500,000	2,000,000
Total liabilities	<u>6,549,993</u>	<u>5,899,269</u>	<u>4,505,171</u>
Net assets	<u>2,384,729</u>	<u>2,354,976</u>	<u>2,518,625</u>
<i>Shareholders' equity</i>			
Share capital	1,000,000	1,000,000	1,000,000
Retained profits	1,384,729	1,354,976	1,518,625
	<u>2,384,729</u>	<u>2,354,976</u>	<u>2,518,625</u>
<b>Note.</b> Inventory			
	\$	\$	\$
Raw materials	320,649	298,851	270,511
WIP	274,943	173,752	120,344
Finished goods	817,343	783,622	716,871
	<u>1,412,935</u>	<u>1,256,225</u>	<u>1,107,726</u>

## A LTD: INCOME STATEMENTS FOR THE YEARS ENDED 30 JUNE

	20X9 \$	20X8 \$
Revenue	10,259,006	10,456,640
<i>Cost of sales</i>		
Direct materials	3,276,495	3,439,624
Direct labour	1,919,093	2,051,656
Production overheads variable	404,258	424,150
Production overheads fixed	<u>1,063,775</u>	<u>1,131,185</u>
	<u>6,663,621</u>	<u>7,046,615</u>
Gross profit	3,595,385	3,410,025
<i>Overhead expenses</i>		
Administration staff salaries	838,572	881,010
Other overhead expenses	<u>2,160,977</u>	<u>2,225,549</u>
	<u>2,999,549</u>	<u>3,106,559</u>
Profit before interest and tax	595,836	303,466
Interest	551,429	467,115
Tax	14,654	–
Net profit (loss) after tax	<u>29,753</u>	<u>(163,649)</u>

## A LTD: STATEMENT OF CASH FLOWS FOR THE YEARS ENDED 30 JUNE

	20X9 <i>inflows</i> ( <i>outflows</i> ) \$'000	20X8 <i>inflows</i> ( <i>outflows</i> ) \$'000
<i>Cash flows from operating activities</i>		
Receipts from customers	9,950	9,779
Payments to suppliers and employees	(9,887)	(9,516)
Interest paid	(551)	(467)
Net cash used in operating activities (Note)	<u>(488)</u>	<u>(204)</u>
<i>Cash flows from investing activities</i>		
Payment for property, plant and equipment	(669)	(803)
Net cash used in investing activities	<u>(669)</u>	<u>(803)</u>
<i>Cash flows from financing activities</i>		
Proceeds from borrowings	1,000	500
Net cash provided by financing activities	<u>1,000</u>	<u>500</u>
Net decrease in cash held	(157)	(507)
Bank Overdraft at beginning of period	<u>(2,075)</u>	<u>(1,568)</u>
Bank Overdraft at end of period	<u>(2,232)</u>	<u>(2,075)</u>

**Note.** Reconciliation of net cash used in operating activities to operating profit after tax.

	20X9	20X8
	\$	\$
Operating profit (loss) after tax	30	(164)
Depreciation	454	399
Increase in tax payable	15	–
<i>Changes in assets and liabilities</i>		
Increase in accounts receivable	(290)	(609)
Increase in inventories	(157)	(148)
Increase in sundry receivables	(19)	(68)
Increase (decrease) in accounts payable	(577)	363
Increase in other current liabilities	71	23
Net cash used in operating activities	<u>(473)</u>	<u>(204)</u>

*Required*

Calculate and analyse the marginal, operating and net cash flows for A Ltd for 20X8 and 20X9.

**Solution****(a) Marginal cash flow**

	20X9	20X8
	\$	\$
Contribution margin	4,659,160	4,541,210
Less/(add) inventory increase/(decrease)	156,710	148,499
receivables increase/(decrease)	289,958	609,008
Add/(less) accounts payable decrease/increase	576,922	363,417
	<u>3,635,570</u>	<u>4,147,120</u>

Marginal cash flow has declined dramatically from 20X8 to 20X9 (a decrease of \$511,550 or 12.3% on 20X7 figures). This decline is largely due to an increase in receivables of approximately \$300,000 and a decrease in payables of almost \$600,000.

**(b) Operating cash flow**

	20X9	20X8
	\$	\$
Profit before interest and tax	595,836	303,466
Less increase in net operating assets *	1,185,999	843,952
	<u>(590,163)</u>	<u>(540,486)</u>

\* Net operating assets equals current assets plus non-current assets less current liabilities less cash-in-hand plus bank overdraft.

A Ltd's operating cash flow is negative in both years under review, underlining the increase in net debt over the period. The increase in net operating assets of \$1,186,000 in 20X9 is largely due to an increase in receivables of approximately \$300,000, non-current assets of \$200,000 and a reduction in payables of \$600,000.

**(c) Net cash flow**

	20X9	20X8
	\$	\$
Opening net debt	4,575,421	3,567,820
Less: closing net debt	5,731,667	4,575,421
	<u>(1,156,246)</u>	<u>(1,007,601)</u>

The cash flow or change in net debt can also be calculated for 20X9 as follows:

	\$
Retained income for the year ended 30 June 20X9	29,753
Less: increase in net operating assets	1,185,999
Net cash outflow	<u>(1,156,246)</u>

Net cash flow can be reconciled to operating cash flow in 20X9 as follows:

	\$
Operating cash flow	(590,163)
Less: interest	(551,429)
Less: tax	(14,654)
Net cash outflow	<u>(1,156,246)</u>

### 3.5 Common size trend analysis and index analysis

Analysing ratios over time can give valuable insights into a firm's performance, by indicating trends, such as a gradual decline in profit growth over time.

#### 3.5.1 Common size analysis

**Common size analysis** can be used to compare or benchmark financial performance against other firms within the same industry; and to get a different picture about trends for one firm. Using this approach for each line item in the income statement (or statement of financial position) is expressed as a percentage of sales (or total assets). Common size analysis is a useful way of comparing the financial results of organisations of different size, because percentage values are more easily compared.



#### Example: Trend analysis

Consider the following income statements and common size income statements for a company in the electronics industry for the past three years, Years 1 to 3.

	Year 3		Year 2		Year 1	
	\$'000	%	\$'000	%	\$'000	%
Sales	900.0	100.0	890.0	100.0	874.0	100.0
Cost of sales	579.6	64.4	587.4	66.0	586.8	67.1
Gross profit	<u>320.4</u>	<u>35.6</u>	<u>302.6</u>	<u>34.0</u>	<u>287.2</u>	<u>32.9</u>
R&D costs	37.8	4.2	37.4	4.2	37.6	4.3
Sales costs	148.5	16.5	146.0	16.4	142.5	16.3
Administration costs	83.7	9.3	66.7	7.5	53.8	6.2
	<u>270.0</u>	<u>30.0</u>	<u>250.1</u>	<u>28.1</u>	<u>233.9</u>	<u>26.8</u>
Operating profit	<u>50.4</u>	<u>5.6</u>	<u>52.5</u>	<u>5.9</u>	<u>53.3</u>	<u>6.1</u>

To calculate the percentages we divide each number by the total sales for the year.

An analysis of the trends over the three years shows that the gross profit margin has been increasing, but the operating profit margin has been falling. This is due mainly to an increase in administration costs, as a percentage of sales.

Common size analysis can be used either for making comparisons between different companies, or for within-company comparisons to identify any changes or trends over time. It can also be used for comparing statements of financial position as well as income statements, as shown in the table below:



### Example: Common size analysis

#### Company Zhou

	20X7		20X8		20X9	
	Amount \$'000	%	Amount \$'000	%	Amount \$'000	%
Cash	45	0.88	115	1.94	310	4.08
Receivables	1,515	29.65	1,700	28.66	2,315	30.49
Inventory	1,655	32.38	1,819	30.67	2,267	29.85
Other	145	2.84	138	2.33	141	1.86
Total current assets	<u>3,360</u>	<u>65.75</u>	<u>3,772</u>	<u>63.60</u>	<u>5,033</u>	<u>66.28</u>
Plant and equipment	1,600	31.31	2,000	33.72*	2,400	31.60
Other	150	2.94	159	2.68	161	2.12
Total non-current assets	<u>1,750</u>	<u>34.25</u>	<u>2,159</u>	<u>36.40</u>	<u>2,561</u>	<u>33.72</u>
Total assets	<u>5,110</u>	<u>100.00</u>	<u>5,931</u>	<u>100.00</u>	<u>7,594</u>	<u>100.00</u>
Payables	750	14.68	1,265	21.33	1,505	19.82
Short-term loan	500	9.79	420	7.08	420	5.53
Other	200	3.91	210	3.54	215	2.83
Total current liabilities	<u>1,450</u>	<u>28.38</u>	<u>1,895</u>	<u>31.95</u>	<u>2,140</u>	<u>28.18</u>
Long-term loan	1,000	19.57	1,100	18.55	1,300	17.12
Total non-current liabilities	<u>1,000</u>	<u>19.57</u>	<u>1,100</u>	<u>18.55</u>	<u>1,300</u>	<u>17.12</u>
Share capital	2,360	46.18	2,560	43.16	3,693	48.63
Retained profits	300	5.87	376	6.34	461	6.07
Total equity	<u>2,660</u>	<u>52.05</u>	<u>2,936</u>	<u>49.50</u>	<u>4,154</u>	<u>54.70</u>
<b>Total liabilities and equity</b>	<b>5,110</b>	<b>100.00</b>	<b>5,931</b>	<b>100.00</b>	<b>7,594</b>	<b>100.00</b>

\* To calculate the common size statement of financial position numbers we just divide each number by total assets. So, for example, the percentage for plant and equipment for 20X8 is:

$$33.72\% \left( \frac{2,000}{5,931} \times 100 = 33.72\% \right)$$

The best way to start this analysis is to look at the trends in the subtotals and the totals. For example, we see that non-current assets percentages have declined over time and we see that current assets percentages have increased. We would then look to the individual accounts to determine the main reasons for this pattern. Cash has increased over the three-year period, receivables fell for the first year and then increased. A decline in accounts receivable may be good news unless it has been caused by writing off bad (irrecoverable) debts or a decline in current-period sales or some combination of these.

Inventory also decreased slightly relative to total assets – good news as inventory earns no return sitting in a warehouse, yet some inventory levels need to be maintained in order to satisfy customer demand (unless the firm uses a JIT system and are very confident that their suppliers can deliver – but this is not always the case, especially in Hong Kong). Other current assets have remained relatively stable over the three-year period, while investment in non-current assets has decreased relative to total assets from 20X8 to 20X9. This may be due to accounting or to real economic reasons or both. Further investigation is required.

The mix of how the assets are funded can be seen in the total liabilities and equity section. Total debt (short and long-term debt) has fallen as a percentage of total assets, with some of this being taken up by share capital. This means less of a future cash burden on the company because share capital represents funding which does not attract a requirement to pay a regular cash payment. This is because dividends are paid at the discretion of the directors. Debt, on the other hand means the company must pay interest (and principal) each period regardless of how the company is performing. Zhou Company also seems to be making much better use of its accounts payable funding. Accounts payable is (usually), interest free so the longer the payment can be deferred the better. However, relationships with suppliers are very important and they must be nurtured and

maintained at a good level so the company can carry out its operations and satisfy its own customers. A balance needs to be achieved.

### 3.5.2 Index analysis

We can also perform an index analysis when looking at trends. Index analysis expresses the amounts of a particular income statement or statement of financial position item as a percentage of the amounts of that same item in the base year. The base year is selected by the analyst as the starting point for the trend analysis. With index analysis we see how an item has changed over time relative to itself.



#### Example: Index analysis

An index analysis, using the same figures as in the previous example, is shown in the following table. For example, the cash balance in 20X9 is 6.89 times the balance of cash in 20X7 (ie  $310/45$ ).

	20X7		20X8		20X9	
	Amount \$'000	Index	Amount \$'000	Index	Amount \$'000	Index
Cash	45	1.00	115	2.56	310	6.89
Receivables	1,515	1.00	1,700	1.12	2,315	1.53
Inventory	1,655	1.00	1,819	1.10	2,267	1.37
Other	145	1.00	138	0.95	141	0.97
Total current assets	<u>3,360</u>	1.00	<u>3,772</u>	1.12	<u>5,033</u>	1.50
Plant and equipment	1,600	1.00	2,000	1.25	2,400	1.50
Other	150	1.00	159	1.06	161	1.07
Total non-current assets	<u>1,750</u>	1.00	<u>2,159</u>	1.23	<u>2,561</u>	1.46
<b>Total assets</b>	<b>5,110</b>	<b>1.00</b>	<b>5,931</b>	<b>1.16</b>	<b>7,594</b>	<b>1.49</b>
Payables	750	1.00	1,265	1.69	1,505	2.01
Short-term loan	500	1.00	420	0.84	420	0.84
Other	200	1.00	210	1.05	215	1.08
Total current liabilities	<u>1,450</u>	1.00	<u>1,895</u>	1.31	<u>2,140</u>	1.48
Long-term loan	1,000	1.00	1,100	1.10	1,300	1.30
Total non-current liabilities	<u>1,000</u>	1.00	<u>1,100</u>	1.10	<u>1,300</u>	1.30
Share capital	2,360	1.00	2,560	1.08	3,693	1.56
Retained profits	300	1.00	376	1.25	461	1.54
Total equity	<u>2,660</u>	1.00	<u>2,936</u>	1.10	<u>4,154</u>	1.56
<b>Total liabilities and equity</b>	<b>5,110</b>	<b>1.00</b>	<b>5931</b>	<b>1.16</b>	<b>7,594</b>	<b>1.49</b>

While the cash balance has increased significantly relative to itself over the three-year period, its amount is not material when compared with total current assets. Of more interest are the index changes for receivables and for inventory. Based on the common size analysis percentages in the previous table, the trends in these accounts did not appear to stand out (both remained at around 30% of total assets). The 20X9 balance for receivables is about 1.5 times the balance in 20X7 and for inventory it is about 1.4 times. Further analysis of receivables could include inspection of an aged trial balance (if possible), to determine if the build up is due to an increase in cash collection times or changes in credit sales over the period. The inventory change is consistent with sales growth explaining the change because inventory would be expected to increase if sales and accounts receivable are also increasing, yet other factors need to be considered. The increase in plant and equipment seems to have been funded mainly from the increase in retained profits and paid up capital (total equity).



Common size and index analysis complement one another, yet the presentation of the information in different ways makes certain relationships easier to see.

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## 4 Non-Financial Performance Indicators (NFPIs)



### Topic highlights

Changes in cost structures, the competitive environment and the manufacturing environment have led to an **increased use of non-financial performance indicators (NFPIs)**.

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There has been a growing emphasis on NFPIs for a number of reasons:

- (a) **Concentration on too few variables.** If performance measurement systems focus entirely on those items which can be expressed in monetary terms, managers will concentrate on only those variables and ignore other important variables that cannot be expressed in monetary terms.
- (b) **Lack of information on quality.** Traditional responsibility accounting systems fail to provide information on the quality of operations or output.
- (c) **Changes in cost structures.** Modern technology requires massive investment and product life cycles have got shorter. A greater proportion of costs are sunk and a large proportion of costs are planned, engineered or designed into a product/service before production/delivery begins. At the time the product/service is made/delivered for the first time, it is therefore too late to control many (sunk) costs.
- (d) **Changes in competitive environment.** Financial measures do not convey the full picture of a company's performance, especially in a modern business environment.
- (e) **Changes in manufacturing environment.** New manufacturing techniques and technologies focus on minimising throughput times, inventory levels and set-up times. But managers can reduce the costs for which they are responsible by increasing inventory levels through maximising output. If a performance measurement system focuses principally on costs, managers may concentrate on cost reduction and ignore other important strategic manufacturing goals.
- (f) **NFPIs are a better indicator of future prospects.** Financial performance indicators tend to focus on the short term. They can give a positive impression of what is happening now but problems may be looming. For example, falling quality will ultimately damage profitability.

### 4.1 The value of NFPIs

Unlike traditional variance reports, NFPIs can be provided **quickly** for managers, per shift, daily or even hourly as required. They are likely to be easy to calculate, and easier for non-financial managers to **understand** and therefore to **use effectively**.

The beauty of non-financial indicators is that **anything can be compared** if it is **meaningful** to do so. The measures should be **tailored** to the circumstances so that, for example, number of coffee breaks per 20 pages read of a textbook might indicate to you how hard you are studying!

Many suitable measures combine elements from the chart shown below, by linking any element from the first column with any element from the second and/or third and/or fourth columns. The chart is not intended to be prescriptive or exhaustive.

Errors/failure	Time	Quantity	People
Defects	Second	Range of products	Employees
Equipment failures	Minute	Parts/components	Employee skills
Warranty claims	Hour	Units produced	Customers
Complaints	Shift	Units sold	Competitors
Returns	Cycle	Services performed	Suppliers
Stockouts	Day	Kilograms/litres/metres	
Lateness/waiting	Month	Minutes/hours	
Misinformation	Year	Documents	
Miscalculation		Deliveries	
Absenteeism		Enquiries	

Traditional measures derived from these lists like “kg (of material) per unit produced” or “units produced per hour” are fairly obvious, but what may at first seem a fairly **unlikely combination** may also be very revealing. “Absenteeism per customer”, for example, may be of no significance at all or it may reveal that a particularly difficult customer is being avoided, and hence that some action is needed.

There is clearly a need for the information provider to work more closely with the managers who will be using the information to make sure that their needs are properly understood. The measures used are likely to be **developed and refined over time**. It may be that some will serve the purpose of drawing attention to areas in need of improvement but will be of no further relevance once remedial action has been taken. A flexible, responsive approach is essential.

Using the above chart, five non-financial indicators might be:

- Services performed late vs. total services performed
- Total units sold vs. total units sold by competitors (indicating market share)
- Warranty claims per month
- Documents processed per employee
- Equipment failures per 1,000 units produced

These are just five indicators, showing you how to use the chart, but there are many other possibilities.

## 4.2 NFPIs in relation to employees



### Topic highlights

NFPIs can usefully be applied to **employees** and product/service **quality**.

One of the many criticisms of traditional accounting performance measurement systems is that they **do not measure the skills, morale and training of the workforce**, which can be as **valuable to an organisation as its tangible assets**. For example, if employees have not been trained in the manufacturing practices required to achieve the objectives of the new manufacturing environment, an organisation is unlikely to be successful.

Employee attitudes and morale can be measured by **surveying** employees. Education and skill levels, promotion and training, absenteeism and labour turnover for the employees for which each manager is responsible can also be monitored.

### 4.3 Performance measurement in a TQM environment

**Total Quality Management (TQM)** is a comprehensive and structured approach to organisational management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback. TQM requirements may be defined separately for a particular organisation or may be in adherence to established standards, such as the International Organisation for Standardisation's ISO 9000 series.

TQM can be applied to any type of organisation. It originated in the manufacturing sector and has since been adapted for use in almost any type of organisation (both commercial and non-commercial).

TQM is a highly significant trend in modern business thinking. Because **TQM embraces every activity** of a business, performance measures cannot be confined to the production process but must also cover the work of sales and distribution departments and administration departments, the efforts of external suppliers, and the reaction of external customers.

In many cases the measures used will be non-financial ones. They may be divided into three types:

- (a) **Measuring the quality of incoming supplies.** Quality control should include procedures for acceptance and inspection of goods inwards and measurement of rejects.
- (b) **Monitoring work done as it proceeds.** "In-process" controls include statistical process controls and random sampling, and measures such as the amount of scrap and reworking in relation to good production. Measurements can be made by product, by worker or work team, by machine or machine type, by department, or whatever is appropriate.
- (c) **Measuring customer satisfaction.** Complaints may be monitored in the form of letters of complaint, returned goods, penalty discounts, claims under guarantee, or requests for visits by service engineers. Some companies adopt a more pro-active approach to monitoring customer satisfaction by surveying their customers on a regular basis. They use the feedback to obtain an index of customer satisfaction which is used to identify quality problems before they affect profits.

### 4.4 Quality of service

Service quality is measured principally by **qualitative measures**, as you might expect, although some quantitative measures are used by some businesses.

- (a) If it were able to obtain the information, a retailer might use number of lost customers in a period as an indicator of service quality.
- (b) Lawyers use the proportion of time spent with clients.

#### 4.4.1 Measures of customer satisfaction

You have probably filled in **questionnaires** in fast food restaurants or on aeroplanes without realising that you were completing a customer attitude survey for input to the organisation's management information system.

**Other possible measures of customer satisfaction** include the following:

- Market research information on customer preferences and customer satisfaction with specific product features
- Number of defective units supplied to customers as a percentage of total units supplied
- Number of customer complaints as a percentage of total sales volume
- Percentage of products which fail early or excessively
- On-time delivery rate
- Average time to deal with customer queries
- New customer accounts opened
- Repeat business from existing customers

## 5 Short-termism and manipulation



### Key term

**Short-termism** is when there is a bias towards short-term rather than long-term performance. It is often due to the fact that managers' performance is measured on short-term results.

Organisations often have to make a trade-off between short-term and long-term objectives. Decisions which involve the **sacrifice of longer-term objectives** include the following:

- Postponing or abandoning capital expenditure projects, which would eventually contribute to growth and profits, in order to protect short-term cash flow and profits.
- Cutting R&D expenditure to save operating costs, and so reducing the prospects for future product development.
- Reducing quality control, to save operating costs (but also adversely affecting reputation and goodwill).
- Reducing the level of customer service, to save operating costs (but sacrificing goodwill).
- Cutting training costs or recruitment (so the company might be faced with skills shortages).

Managers may also **manipulate** results, especially if rewards are linked to performance. This can be achieved by changing the timing of capital purchases, building up inventories and speeding up or delaying payments and receipts.

### 5.1 Methods to encourage a long-term view

Steps that could be taken to encourage managers to take a long-term view, so that the “ideal” decisions are taken, include the following:

- Making short-term targets realistic.** If budget targets are unrealistically tough, a manager will be forced to make trade-offs between the short and long term.
- Providing sufficient management information** to allow managers to see what trade-offs they are making. Managers must be kept aware of long-term aims as well as shorter-term (budget) targets.
- Evaluating managers' performance** in terms of contribution to long-term as well as short-term objectives.
- Link managers' rewards to share price.** This may encourage goal congruence.
- Set quality based targets** as well as financial targets. Multiple targets can be used.

## 6 The balanced scorecard



### Key term

The **balanced scorecard** approach to performance measurement focuses on four different perspectives and uses financial and non-financial indicators.

Although segments of a business may be measured by a single performance indicator such as ROI, profit, or cost variances, it might be more suitable to use multiple measures of performance where each measure reflects a **different aspect of achievement**. Where multiple measures are used, several may be **non-financial**.

The most popular approach in current management thinking is the use of a “**balanced scorecard**” consisting of a variety of indicators both financial and non-financial.



## Topic highlights

The **balanced scorecard** approach emphasises the need to provide management with a set of information which covers all relevant areas of performance in an objective and unbiased fashion. The information provided may be both financial and non-financial and cover areas such as profitability, customer satisfaction, internal efficiency and innovation.

## 6.1 Perspectives

The balanced scorecard focuses on **four different perspectives**, as follows:

Perspective	Question	Explanation
<b>Financial</b>	How do we create value for our shareholders?	Covers traditional measures such as growth, profitability and shareholder value but set through talking to the shareholder or shareholders directly
<b>Customer</b>	What do existing and new customers value from us?	Gives rise to targets that matter to customers: cost, quality, delivery, inspection, handling and so on
<b>Internal</b>	What processes must we excel at to achieve our financial and customer objectives?	Aims to improve internal processes and decision making
<b>Innovation and learning</b>	Can we continue to improve and create future value?	Considers the business's capacity to maintain its competitive position through the acquisition of new skills and the development of new products

**Performance targets** are set once the key areas for improvement have been identified, and the balanced scorecard is the main monthly report.

The scorecard is "**balanced**" as managers are required to think in terms of **all four** perspectives, to prevent improvements being made in one area at the expense of another.

Important features of this approach are as follows:

- It looks at both **internal and external** matters concerning the organisation.
- It is related to the key elements of a company's **strategy**.
- Financial and non-financial** measures are linked together.

**Illustration: Balanced scorecard**

An example of how a balanced scorecard might appear is offered below:

**Balanced scorecard**

Financial Perspective		Customer Perspective	
GOALS	MEASURES	GOALS	MEASURES
Survive	Cash flow	New products	Percentage of sales from new products
Succeed	Monthly sales growth and operating income by division	Responsive supply	On time delivery (defined by customer)
Prosper	Increase market share and ROI	Preferred supplier	Share of key accounts' purchases Ranking by key accounts
		Customer partnership	Number of co-operative engineering efforts

Internal Business Perspective		Innovation and Learning Perspective	
GOALS	MEASURES	GOALS	MEASURES
Technology capability	Manufacturing configuration vs. competition	Technology leadership	Time to develop next generation of products
Manufacturing excellence	Cycle time Unit cost Yield	Manufacturing learning	Process time to maturity
Design productivity	Silicon efficiency Engineering efficiency	Design focus	Percentage of products that equal 80% sales
New product introduction	Actual Introduction schedule vs. plan	New product Introduction	New product introduction vs. competition

**Self-test question 1**

Spotlight Productions has in the past produced just one fairly successful product. Recently, however, a new version of this product has been launched. Development work continues to add a related product to the product list. Given below are some details of the activities during the month of November.

Units produced	– existing product	25,000
	– new product	5,000
Cost of units produced	– existing product	\$375,000
	– new product	\$70,000
Sales revenue	– existing product	\$550,000
	– new product	\$125,000
Hours worked	– existing product	5,000
	– new product	1,250
Development costs		\$47,000

**Required**

- Suggest and calculate performance indicators that could be calculated for each of the four perspectives on the balanced scorecard.
- Suggest how this information would be interpreted.

**(The answer is at the end of the chapter)**

## 7 Performance pyramid

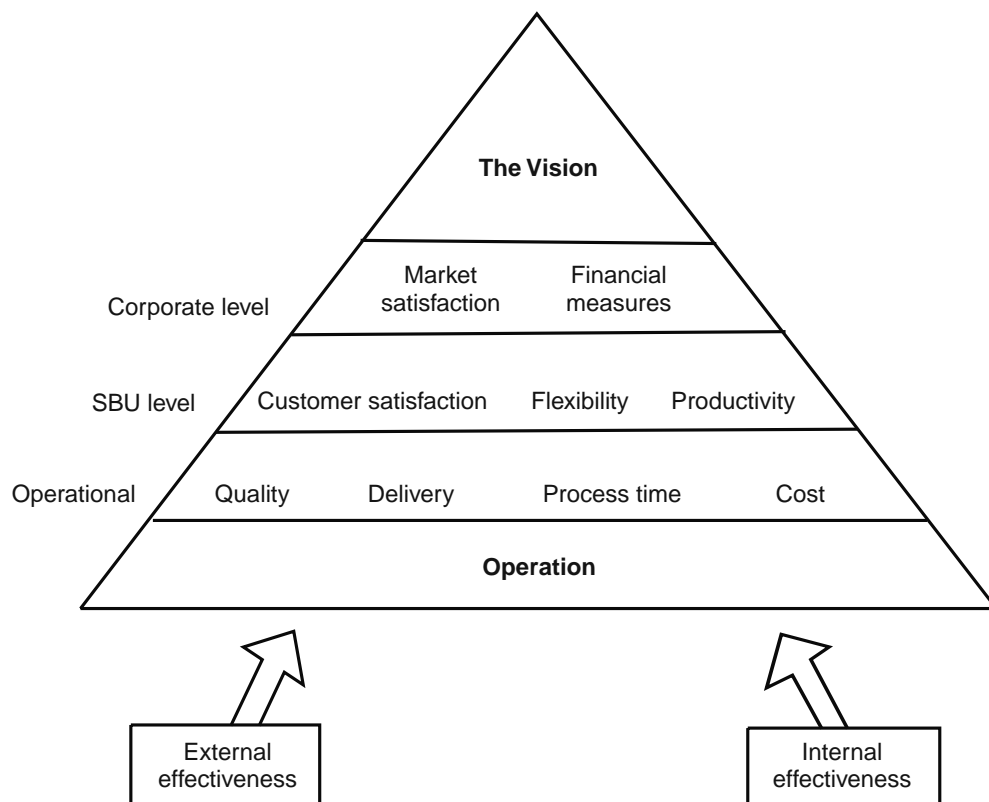


### Key term

The **performance pyramid** highlights the links running between an organisation's vision and its functional objectives.

The performance pyramid derives from the idea that an organisation operates at different levels, each of which has different concerns which should nevertheless support each other in achieving business objectives. The pyramid therefore links the overall strategic view of management with day-to-day operations.

It includes a range of objectives for both external effectiveness (such as related to customer satisfaction) and **internal efficiency** (such as related to productivity), which are achieved through measures at the various levels.



- (a) At **corporate level**, financial and market objectives are set.
- (b) At **strategic business unit level**, strategies are developed to achieve these financial and market objectives:
  - (i) **Customer satisfaction** is defined as meeting customer expectations.
  - (ii) **Flexibility** indicates responsiveness of the business operating system as a whole.
  - (iii) **Productivity** refers to the management of resources such as labour and time.
- (c) These in turn are supported by more specific **operational** criteria:
  - (i) **Quality** of the product or service, consistency of product and fit for the purpose
  - (ii) **Delivery** of the product or service (the method of distribution, its speed and ease of management)
  - (iii) **Process time** of all processes from cash collection to order processing to recruitment

- (iv) **Waste**, meaning the elimination of all non value added activities

The pyramid highlights the **links** running between the **vision for the company** and **functional objectives**. For example, a reduction in process time should lead to increased productivity and hence improved financial performance.

## 8 Building block model



### Key term

Fitzgerald and Moon's **building blocks** for **dimensions, standards** and **rewards** attempt to overcome the problems associated with performance measurement in service businesses.



### Self-test question 2

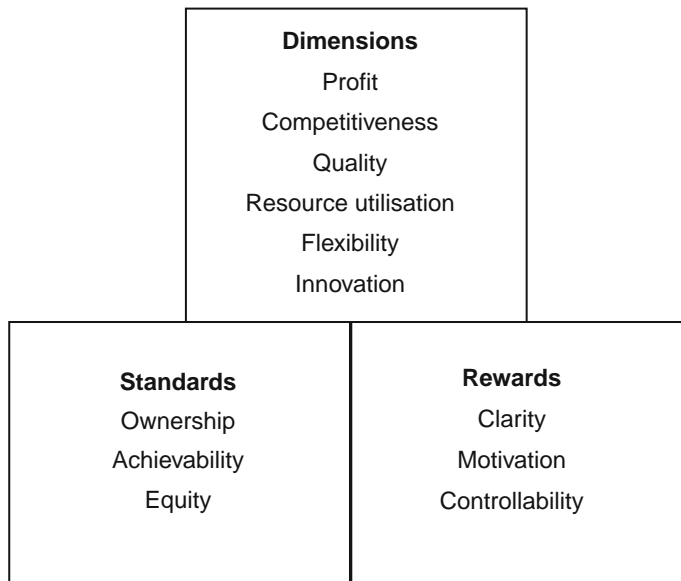
In Chapter 4 on cost measurement we looked at five major characteristics of services that distinguish services from manufacturing. Relate them to a firm that provides conducted guided tours in Paris, France.

**(The answer is at the end of the chapter)**

**Performance measurement** in service businesses has sometimes been perceived as difficult because of the five factors listed above, but the modern view is that if something is difficult to measure this is because it has not been clearly enough defined.

Fitzgerald and Moon adopted a framework for the design and analysis of performance measurement systems in service businesses, based on three building blocks:

- (a) **Dimensions** — critical success factors for the business. Suitable measures must be developed to measure each performance dimension.
- (b) **Standards** — key performance indicators. To ensure success it is vital that employees view standards as achievable, fair and take ownership of them.
- (c) **Rewards** — the incentives given to managers who achieve standards. To ensure that employees are motivated to meet standards, targets need to be clear and linked to controllable factors.





Source: Fitzgerald and Moon, 1996

## 8.1 Dimensions

According to Fitzgerald and Moon, the critical success factors for a business may include the following:

- (a) **Competitive performance**, focusing on factors such as sales growth and market share.
- (b) **Financial performance**, concentrating on profitability, capital structure and so on.
- (c) **Quality of service** looks at matters like reliability, courtesy and competence.
- (d) **Flexibility** is an apt heading for assessing the organisation's ability to deliver at the right speed, to respond to precise customer specifications, and to cope with fluctuations in demand.
- (e) **Resource utilisation**, not unsurprisingly, considers how efficiently resources are being utilised. This can be problematic because of the complexity of the inputs to a service and the outputs from it and because some of the inputs are supplied by the customer (he or she brings their own hair, for example). Many measures are possible, however, for example "number of customers per hairdresser". Performance measures can be devised easily if it is known what activities are involved in the service.
- (f) **Innovation** is assessed in terms of both the innovation process and the success of individual innovations.

These dimensions can be divided into two sets:

- The **results** (measured by financial performance and competitiveness)
- The **determinants** (the remainder)

By focusing on the determinants, the results should improve.

There is no need to elaborate on **competitive performance**, **financial performance** and **quality of service** issues, all of which have been covered already. The other three dimensions deserve more attention.

### 8.1.1 Flexibility

Fitzgerald and Moon suggest that flexibility has three aspects.

#### (a) Speed of delivery

**Punctuality** is vital in some service industries like passenger transport: in the UK, punctuality is currently one of the most widely publicised performance measures, because organisations like railway companies are making a point of it. **Measures** include waiting time in queues, as well as late trains. In other types of service it may be more a question of **timeliness**. Does the auditor turn up to do the annual audit during the appointed week? Is the audit done within the time anticipated by the partner or does it drag on for weeks? These aspects are all easily measurable in terms of "**days late**". Depending upon the circumstances, "days late" may also reflect on inability to cope with fluctuations in demand.

#### (b) Response to customer specifications

The ability of a service organisation to respond to **customers' specifications** is one of the criteria by which Fitzgerald *et al* distinguish between the three different types of service (mass, personal and either/or); you met these distinctions in Chapter 2. Clearly, a professional service such as legal advice and assistance must be tailored exactly to the customer's needs. Performance is partly a matter of customer perception and so **customer attitude surveys** may be appropriate. However, it is also a matter of the diversity of skills possessed by the service organisation and so it can be measured in terms of the **mix of staff skills** and the amount of time spent on **training**. In **mass service** business, customisation is not possible by the very nature of the service.

**(c) Coping with demand**

This is clearly measurable in quantitative terms in a mass service like a railway company which can ascertain the extent of **overcrowding**. It can also be very closely monitored in service shops: customer **queuing** time can be measured in banks and retailers, for example. Professional services can measure levels of **overtime** worked: excessive amounts indicate that the current demand is too great for the organisation to cope with in the long term without obtaining extra human resources.

**8.1.2 Resource utilisation measures**

Resource utilisation is usually measured in terms of **productivity**. The ease with which this may be measured varies according to the service being delivered.

The main resource of a firm of accountants, for example, is the **time** of various grades of staff. The main output of an accountancy firm is **chargeable hours**.

In a restaurant it is not nearly so straightforward. Inputs are highly **diverse**: the ingredients for the meal, the chef's time and expertise, the surroundings and the customers' own likes and dislikes. A **customer attitude survey** might show whether or not a customer enjoyed the food, but it could not ascribe the enjoyment or lack of it to the quality of the ingredients, say, rather than the skill of the chef.

Here are some of the resource utilisation ratios listed by Fitzgerald *et al.*

Business	Input	Output
Andersen Consulting	Man hours available	Chargeable hours
Commonwealth Hotels	Rooms available	Rooms occupied
Railway companies	Train miles available	Passenger miles
Barclays Bank	Number of staff	Number of accounts

**8.1.3 Innovation**

In a modern environment in which product quality, product differentiation and continuous improvement are the order of the day, a company that can find innovative ways of satisfying customers' needs has an important **competitive advantage**.

Fitzgerald *et al* suggest that **individual innovations** should be measured in terms of whether they bring about **improvements in the other five "dimensions"**.

The innovating **process** can be measured in terms of how much it **costs** to develop a new service, how **effective** the process is (that is, how innovative is the organisation, if at all?), and how **quickly** it can develop new services. In more concrete terms this might translate into the following:

- The amount of **R&D** spending and whether (and how quickly) these costs are recovered from new service sales
- The proportion of **new** services to **total** services provided
- The time between **identification** of the need for a new service and making it **available**.



### Self-test question 3: Competitiveness and resource utilisation

A service business has collected some figures relating to its year just ended.

		<i>Budget</i>	<i>Actual</i>
Customer enquiries:	New customers	6,000	9,000
	Existing customers	4,000	3,000
Business won:	New customers	2,000	4,000
	Existing customers	1,500	1,500
Types of services performed:	Service A	875	780
	Service B	1,575	1,850
	Service C	1,050	2,870
Employees:	Service A	5	4
	Service B	10	10
	Service C	5	8

*Required*

Calculate figures that illustrate competitiveness and resource utilisation.

**(The answer is at the end of the chapter)**

## 8.2 Standards

Fitzgerald and Moon provide for three aspects to standards: **ownership**, **achievability** and **equity**.

- To ensure that employees take **ownership** of standards, they need to **participate** in the budget and standard-setting processes. They are then more likely to **accept** the standards, feel more **motivated** as they perceive the standards to be achievable and **morale** is improved. The disadvantage to participation is that it offers the opportunity for the introduction of **budgetary slack**.
- Standards need to be set **high enough** to ensure that there is some **sense of achievement** in attaining them, but **not so high** that there is a **demotivating** effect because they are unachievable. It is management's task to find a **balance** between what the organisation perceives as achievable and what employees perceive as achievable.
- It is vital that **equity** is seen to occur when applying standards for performance measurement purposes. The performance of different business units should not be measured against the same standards if some units have an inherent advantage unconnected with their own efforts. For example, divisions operating in different countries should not be assessed against the same standards.



### Self-test question 4

Suggest two separate performance indicators that could be used to assess each of the following areas of a fast food chain's operations:

- Food preparation department
- Marketing department

**(The answer is at the end of the chapter)**

## 8.3 Rewards

The reward structure of the performance measurement system should guide individuals to work towards standards. Three issues need to be considered if the performance measurement system is to operate successfully: **clarity**, **motivation** and **controllability**.

- The organisation's objectives need to be **clearly understood** by those whose performance is being appraised (i.e. they need to know what goals they are working towards).

- (b) Individuals should be **motivated** to work in pursuit of the organisation's strategic objectives. Goal clarity and participation have been shown to contribute to higher levels of motivation to achieve targets, providing managers accept those targets. Bonuses can be used to motivate.
- (c) Managers should have a certain level of **controllability** for their areas of responsibility. For example, they should not be held responsible for costs over which they have no control.

## 9 External considerations



### Topic highlights

Performance management needs to allow for **external considerations** including stakeholders, market conditions and allowance for competitors.

### 9.1 Stakeholders

The stakeholder approach suggests that **corporate objectives** are, or should be, **shaped** and **influenced** by **those** who have **sufficient involvement or interest** in the organisation's operational activities. Stakeholders and their objectives were discussed in Chapter 2.

Organisations may need to develop performance measures to ensure that the needs of stakeholders are met.

Stakeholder	Measure
Employees	Morale index
Shareholders	Share price, dividend yield
Government	Percentage of products conforming to environmental regulations
Customers	Warranty cost, percentage of repeat customers

There is a strong link here to the balanced scorecard approach and the need to have a range of non-financial performance indicators as well as financial performance indicators.

### 9.2 Economic environment

Any performance analysis needs to take into account the external environment of the business and would include some of the following considerations:

#### Economic growth

- Has the economy grown or is there a recession?
- How has demand for goods/services been affected?

#### Local economic trends

- Are local businesses rationalising or expanding?
- Are office/factory rents increasing/falling?
- In what direction are house prices moving?
- Are labour rates on the increase?

### Inflation

- Is a high rate making it difficult to plan, owing to the uncertainty of future financial returns? Inflation and expectations of it help to explain short-termism.
- Is the rate depressing consumer demand?
- Is the rate encouraging investment in domestic industries?
- Is a high rate leading employees to demand higher money wages to compensate for a fall in the value of their wages?

### Interest rates

- How do these affect consumer confidence and liquidity, and hence demand?
- Is the cost of borrowing increasing, thereby reducing profitability?

### Exchange rates

- What impact do these have on the cost of overseas imports?
- Are prices that can be charged to overseas customers affected?

### Government fiscal policy

- Are consumers increasing/decreasing the amount they spend due to tax and government spending decisions?
- How is the government's corporation tax policy affecting the organisation?

### Government spending

Is the organisation a supplier to the government (such as a construction firm) and hence affected by the level of spending?

## 9.3 Competition

Performance management must consider information on competitors' prices and cost structures and identify which features of an organisation's products add most value. Management accounting information has to be produced speedily and be up to date so that managers can react quickly and effectively to **changing market conditions**.

# 10 Behavioural aspects of performance management



## Topic highlights

In designing any performance measurement system it is important to consider the **behavioural aspects**. Ideally, performance measures will be devised that **reward behaviour** that **maximises the corporate good**. Management performance **measures** should only include those items that are **directly controllable** by the manager in question.

If people **know** that their performance is being **measured** then this will **affect the standard** of their performance, particularly if they know that they will be **rewarded** for achieving a certain level of performance.

Ideally, performance **measures** will be devised that **reward behaviour** that **maximises the corporate good**. In practice, however, it is not quite so simple.

- (a) There is a danger that managers and staff will **concentrate** only upon what they know is **being measured**. This is not a problem if every important issue has a measure attached to it, but such a system is difficult to devise and implement in practice.

- (b) **Individuals** have their own goals, but good performance that satisfies their own sense of what is important will not necessarily work towards the **corporate good**. Each individual may face a **conflict** between taking action to ensure organisational goals and action to ensure personal goals.

Point (b) is the problem of **goal congruence**.



### Illustration: Performance measurement and behaviour

- (a) A divisional manager whose performance is assessed on the basis of his division's ROI might reject a proposal that produces an ROI greater than the group's target return if it reduces his division's overall return.
- (b) Traditional feedback control would seek to eliminate an adverse material price variance by requiring managers to source cheaper, possibly lower quality, suppliers. This may run counter to an organisational objective to implement a system of TQM with the aim of reducing quality costs.

## 10.1 Measuring managerial performance

It is difficult to devise performance measures that relate specifically to a manager to judge his or her performance as a manager. It is possible to calculate statistics to assess the manager as an employee like any other employee (days absent, professional qualifications obtained, personality and so on), but this is not the point. As soon as the issue of **ability as a manager** arises it is necessary to **consider him in relation to his area of responsibility**. If we want to know how good a manager is at marketing the only information there is to go on is the marketing performance of his division (which may or may not be traceable to his own efforts).

## 10.2 The controllability principle

As we have seen, the **controllability principle** is that managers of responsibility centres should only be held accountable for costs over which they have some influence. From a motivation point of view this is important because it can be very demoralising for managers who feel that their performance is being judged on the basis of something over which they have no control. It is also important from a control point of view in that control reports should ensure that information on costs is reported to the manager who is able to take action to control them.

## 10.3 Reward schemes and performance measurement

In many organisations, senior management try to motivate managers and employees by offering organisational rewards (more pay and promotion) for the achievement of certain levels of performance. The conventional theory of reward structures is that if the organisation establishes procedures for formal measurement of performance, and **rewards individuals for good performance**, individuals will be more likely to direct their efforts towards achieving the organisation's goals.

### 10.3.1 Problems associated with reward schemes

- (a) A serious problem that can arise is that performance-related pay and performance evaluation systems can **encourage dysfunctional behaviour**. Many investigations have noted the tendency of managers to pad their budgets either in anticipation of cuts by superiors or to make subsequent variances more favourable.
- (b) Perhaps of even more concern are the numerous examples of managers making **decisions that are contrary to the wider purposes of the organisation**.

- (c) Schemes designed to **ensure long-term achievements** (that is, to combat short-termism) **may not motivate** since efforts and reward are too distant in time from each other (or managers may not think they will be around that long!).
- (d) It is questionable whether any performance measures or set of measures can provide a **comprehensive assessment of what a single person achieves** for an organisation. There will always be the old chestnut of lack of goal congruence, employees being committed to what is measured, rather than the objectives of the organisation.
- (e) **Self-interested performance** may be encouraged at the **expense of team work**.
- (f) High levels of output (whether this is number of calls answered or production of product X) may be achieved at the expense of **quality**.
- (g) In order to make bonuses more accessible, **standards and targets may have to be lowered**, with knock-on effects on quality.
- (h) They **undervalue intrinsic rewards** (which reflect the satisfaction that an individual experiences from doing a job and the opportunity for growth that the job provides) given that they promote extrinsic rewards (bonuses and so on).

### 10.3.2 Agency theory and managerial incentive schemes

An agency relationship exists whenever one party (the principal) hires another party (the agent) to perform some service, and this service requires the principal to delegate some decision-making authority to the agent.

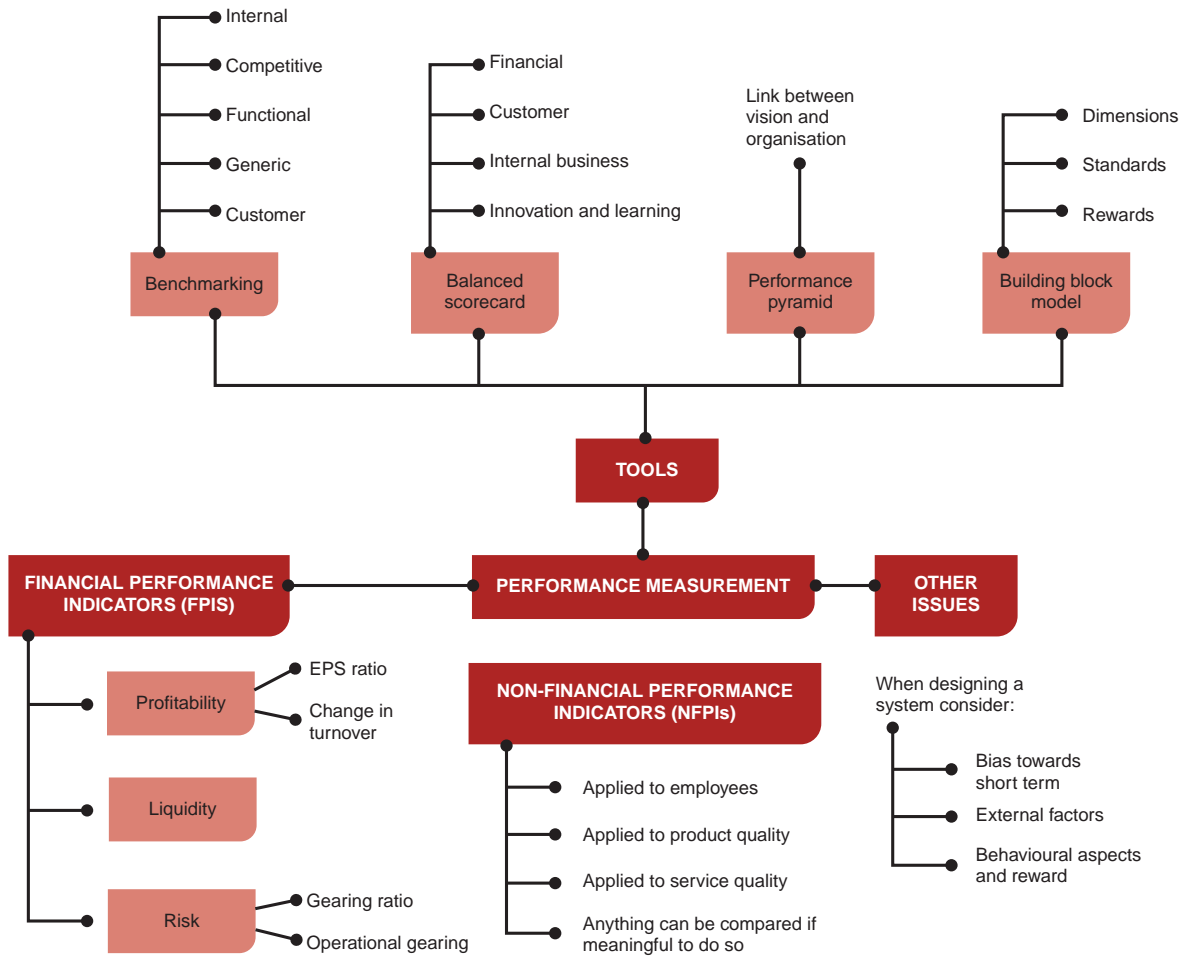
Two types of principal-agent relationships arise in connection with managerial incentive schemes. First, the organisation's owners or shareholders, acting as the principal (usually through the board of directors), hire the chief executive group to be their agents in managing the firm in their best interests. In the second principal-agent relationship, the firm's chief executive group acts as the principal and hires divisional managers as agents to manage sub-units of the organisation.

Agency theory assumes that all individuals – principals and agents – care not only about financial compensation but also about such properties as attractive working conditions and flexibility in hours worked. Managers are assumed to prefer leisure to hard or routine work, although for some top management an aversion to work may not be a realistic assumption. Nevertheless, the argument goes that agents require incentives to minimise the net costs of the divergence of interests between them and the principal. Among other things, the agency model argues that if top executives of the company are compensated only by straight salary, they may not be motivated to take actions that increase the value of the firm to the shareholders. They may over-consume in such areas as leisure, attractive working conditions, and company perquisites, or will not spend enough time and effort to increase shareholder wealth.

If the firm's owners knew what actions were optimal for the firm and could costlessly observe the actions of the top managers, they could direct the managers to implement these optimal actions, with the threat of withholding compensation or dismissal if these actions were not carried out. However, a dispersed group of owners will probably have inadequate information and will find monitoring costly. Accordingly, the owners are unlikely either to know what the optimal actions should be or to be able to direct and monitor the actions of the top executives. Therefore, to encourage managers to take actions that are in the firm's best interests, the owners may introduce incentive compensation plans that enable the managers to share in the firm's increased wealth. These schemes can take a variety of forms, including merit raises, bonuses based on reported performance, and various types of share ownership plans.

Executive incentive compensation bonus plans are designed to create common interests between the owners (principal) and the executives (agents). However, some divergence of interests will always exist between the principal and the agents. This is due to differences in their attitudes to risk, and the fact that managers always know more about the firm than shareholders. The principal will usually attempt to limit this divergence by establishing appropriate incentives for the agents, and by incurring monitoring costs designed to limit actions that increase the agents' welfare at the expense of the principal. Annual audited financial statements are an excellent example of costly monitoring of managerial behaviour.

# Topic recap





## Answers to self-test questions

### Answer 1

#### (a) Customer

$$\text{Percentage of sales represented by new products} = \frac{\$125,000}{\$550,000 + \$125,000} \times 100 = 18.5\%$$

#### Internal

$$\text{Productivity – existing product} = \frac{25,000 \text{ units}}{5,000 \text{ hours}} = 5 \text{ units per hour}$$

$$\text{– new product} = \frac{5,000 \text{ units}}{1,250 \text{ hours}} = 4 \text{ units per hour}$$

$$\text{Unit cost – existing product} = \frac{\$375,000}{25,000 \text{ units}} = \$15 \text{ per unit}$$

$$\text{– new product} = \frac{\$70,000}{5,000 \text{ units}} = \$14 \text{ per unit}$$

#### Financial

$$\text{Gross profit – existing product} = \frac{\$550,000 - \$375,000}{\$550,000} = 32\%$$

$$\text{– new product} = \frac{\$125,000 - \$70,000}{\$125,000} = 44\%$$

#### Innovation and learning

$$\text{Development costs as \% of sales} = \frac{\$47,000}{\$675,000} = 7\%$$

- (b) Using a range of performance indicators will allow Spotlight Productions to look at the success of the new product in wider terms than just its profitability. For example, productivity is lower for the new product than the existing product, so managers may wish to examine the processes involved in order to make improvements. Sales of the new product look very promising but some additional measure of customer satisfaction could provide a better view of long-term prospects.

### Answer 2

- (a) **Intangibility.** A conducted tour (guided tour) is intangible in itself, and the performance of the service involves many other intangible factors, like the weather, the personality of the tour guide, and the number of tourists in the tour group.
- (b) **Simultaneity/inseparability.** The production and consumption of a guided tour are simultaneous, therefore a tour cannot be inspected for quality in advance, nor returned if it is not what was required.
- (c) **Perishability.** Conducted tours are perishable, so they cannot be stored. You cannot buy them in bulk, or keep one in inventory after it has been completed.

- (d) **Heterogeneity/variability.** A conducted tour is heterogeneous and so the exact service received will vary each time: not only will different tour guides present their tour differently, but each tour guide will not deliver exactly the same guided tour every time they do one.
- (e) **No transfer of ownership.** A conducted tour does not become the property of the customer.

### Answer 3

**Competitiveness** can only be measured from these figures by looking at how successful the organisation is at converting enquiries into firm orders.

*Percentage of enquiries converted into firm orders*

	<i>Budget</i>	<i>Actual</i>
	<i>%</i>	<i>%</i>
New customers (W1)	33.00	44
Existing customers (W1)	37.50	50

**Resource utilisation** can be measured by looking at average services performed per employee.

	<i>Budget</i>	<i>Actual</i>	<i>Rise</i>
			<i>%</i>
Service A (W2)	175.00	195.00	+11.40
Service B (W2)	157.50	185.00	+17.50
Service C (W2)	210.00	358.75	+70.80

#### WORKINGS

1 For example  $\frac{2,000}{6,000} = 33\%$

2 For example  $\frac{875}{5} = 175$

What comments would you make about these results? How well is the business doing?

### Answer 4

Here are some suggestions:

- (a) Ingredient usage per meal  
Wastage levels  
Incidences of food poisoning
- (b) Market share  
Sales revenue per employee  
Growth in sales revenue

## Exam practice



## Performance analysis

63 minutes

ABC Company is a private company principally engaged in the information technology business. ABC was founded by the client executive officer, Mr. Leung, who is a typical information technology person with strong technical competence and most up-to-date knowledge of the market situation, but with little training in business management. Mr. Leung is the controlling shareholder of ABC, holding 60% of the share capital. Other shareholders are relatives or friends of Mr. Leung who do not have much interest in the operation of ABC.

### Business of ABC

In general, ABC provides a one-stop service to meet their clients' information technology needs. In a typical project, ABC technical staff help the client organisation identify its information needs, and provide advice on selection of appropriate hardware and software from ABC's list of principal suppliers. At this stage, ABC actually provides a free consulting service to prospective clients in the hope of proceeding to the next stage of system development. If prospective clients switch to information technology solutions proposed by other companies, the time cost invested by ABC's technical staff in these projects will not be recoverable.

When prospective clients proceed to the system development stage, ABC performs a more in-depth analysis of each client's requirements, purchases the hardware and software for them from the suppliers and sells the hardware and software to them at a mark up. ABC technical staff will install the hardware and modify the software to suit each client's operation. When ABC is short of technical staff, this work may be contracted out to outside parties.

Usually, clients will also use ABC's services for long-term system maintenance, such as regular programme modification, off-site back-up and emergency recovery. Some clients, however, have their own in-house system maintenance departments and will not use ABC's maintenance services.

About half of ABC's clients are in goods and services retailing business (served by ABC's Retailing Team), one-third in manufacturing and trading (served by ABC's Industrial Team), and the remaining in various businesses such as construction, logistics, schools and others (served by ABC's Specialist Team).

The retailing and industrial markets are rather mature, competition is keen and there is pressure to push down the sale price. On the other hand, since the clients' businesses are usually more specialised, ABC's Specialist Team has a higher bargaining power in setting the sale price.

In a typical project the Specialist Team's technical staff's time cost is usually higher than that of the Retailing and Industrial Teams. Idle time for the Specialist Team's technical staff is also higher since the team's business fluctuates more significantly. Mr. Leung is proud of his Specialist Team however and considers that the Team has a pool of specialists that can handle the most difficult projects.

ABC has a team of about 50 technical staff supported by 10 administrative staff, all working in an office in Central. The 50 technical staff are divided into three teams, each headed by a team manager. Except for salary, rental costs and depreciation of equipment, ABC's costs are principally variable.

### Management control of ABC

ABC's bookkeeping is done by an accounting clerk and a supervisor. Accounting information is produced to satisfy statutory reporting requirements and taxation purposes.

Although ABC has been in business for many years, its management control system is rather rudimentary. Other than the accounts and records that are necessary for statutory reporting

purposes, ABC does not produce any other financial or non-financial information for management control purposes. ABC does not have any formal long-term planning, annual budgeting or performance evaluation procedures.

Mr. Leung had rejected the idea of preparing management accounting information for internal use, opining that it would be too expensive and that he should not “waste his time on details”. He once said to one of the shareholders, who advised Mr. Leung to implement a more formal management control system that, “I know the business we are in. I am able to see what work we should be taking on. I know that the way to be successful and profitable is to expand the services we provide”.

Mr. Leung had been confident in his management style since in earlier years ABC had been successful. However, as ABC has been making a loss in the last few years, Mr. Leung has started to consider having a more formal internal management control system to help the company to turn around.

Summarised financial results of ABC Company for the three years ended 31 December are as follows:

Year ended 31 December	20X4	20X3	20X2
	HK\$'000	HK\$'000	HK\$'000
Sales	63,000	64,000	66,000
Hardware/software costs	<u>(47,780)</u>	<u>(48,910)</u>	<u>(48,810)</u>
	15,220	15,090	17,190
Salary costs	(16,200)	(14,750)	(14,600)
Depreciation of furniture and equipment	(800)	(750)	(700)
Office rentals	<u>(2,000)</u>	<u>(2,000)</u>	<u>(2,000)</u>
Loss before taxation	<u><u>(3,780)</u></u>	<u><u>(2,410)</u></u>	<u><u>(110)</u></u>

The accounting supervisor of ABC estimated that, for the year ended 31 December 20X4:

- (1) The relative percentages of turnover for the Retailing Team, Industrial Team and Specialist Team were 50%, 30% and 20% respectively;
- (2) The percentages of hardware and software costs to the turnover of the Retailing Team, Industrial Team and Specialist Team were approximately 80.0%, 75.0% and 66.71% respectively;
- (3) The percentages of technical staff salary costs to the turnover of the Retailing Team, Industrial Team and Specialist Team were approximately 18%, 23% and 35% respectively (the remaining salary costs were for administrative staff); and
- (4) It is reasonable to allocate office rentals and depreciation of furniture and equipment to the Retailing Team, Industrial Team and Specialist Team on the basis of the number of technical staff of 22, 14 and 14 respectively.

#### Required

You have recently been recruited by ABC as an accounting manager. Write a memo to Mr. Leung to:

- (a) demonstrate how the application of the principal management control processes of (1) strategic management, (2) budgeting, and (3) performance evaluation may help ABC achieve its turnaround objective to reverse the loss making position in the last few years. **(12 marks)**
- (b) advise on how the Retailing Team should prepare its annual budget. (You should explain how the Team should go through the usual steps in preparing an annual budget, addressing the specific operational characteristics of the Retailing Team.) **(8 marks)**
- (c) prepare an analysis of, and comment on, the performance of the three Teams in 20X4. Also explain the limitations of your analysis. (You should calculate, and comment on, the contribution margin and profit before tax of each of the three teams.) **(15 marks)**

**(Total = 35 marks)**

**HKICPA February 2005 (amended)**

## Balanced scorecard

14 minutes

Evergreen Company Limited ("E Ltd") is engaged in the manufacture and sale of paper, such as containerboard, in China. The operation is quite labour intensive. Raw materials for manufacturing paper consist of pulp and recycled paper, and for E Ltd, these account for 10% and 90% of the raw material cost respectively.

Pulp is produced from different kinds of trees. The operation itself is machine oriented with only 10 workers required to look after a production line. The gross profit margin for pulp business is fairly high, about 36% of sales, which is much higher than the margin of 25% for the paper business. The pulp business is regulated by various governments internationally due to environmental concerns. In order to get a licence for the business, strict regulations have to be met. In China, the State Environmental Bureau has stepped up controls for polluting businesses, requiring owners to install adequate procedures to handle wastes produced during production. However, the demand for containerboard and pulp has been on the rise. According to unauthenticated sources, there was a shortage of four (4) million tons of pulp in 20X3 and the shortage had increased to ten (10) million tons in 20X6. In order to meet demand in China, several importers have started to import pulp from Vietnam.

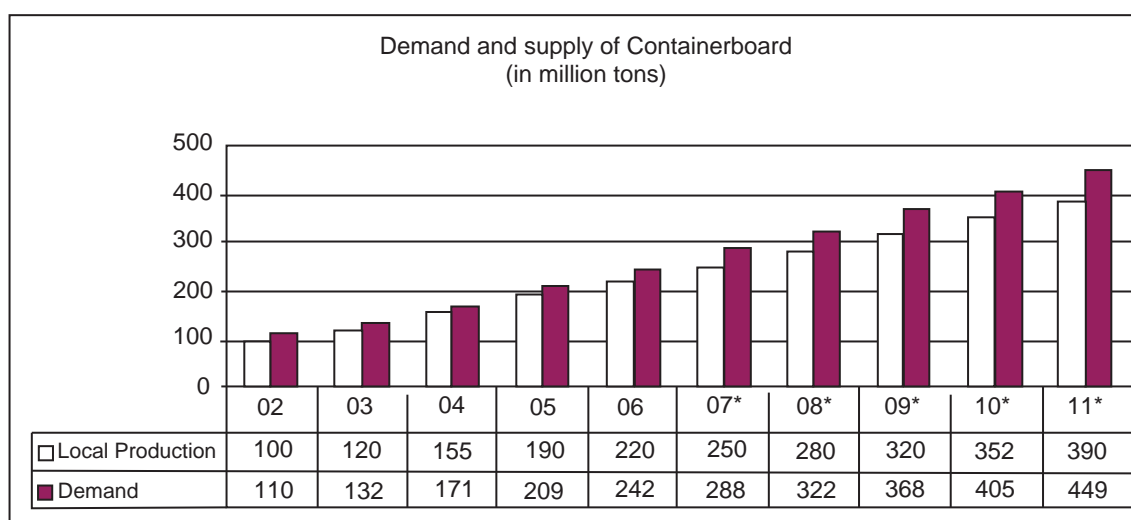
Another important material for producing paper is recycled paper. In terms of unit cost, it is cheaper than pulp. Recycled paper usually comes from developed countries, such as European countries, the United States and Japan. However, the selling price is subject to global demand, and is beyond the control of individual companies. As such, it is difficult to lower or control the cost of purchase. Therefore, cost increases are generally passed onto the customers.

Peter Lee, E Ltd's Chief Executive Officer, is planning to enter the pulp business. This can be achieved either by building a new factory or acquiring a local pulp company in China or Vietnam, depending on whether it is possible to get a licence and meet the strict environmental rules in these countries. To assist Mr. Lee in making a five-year investment plan, his financial controller, Eagle Wong, provided him with the financial data for the last four years and market statistics as follows:

### E Ltd

In million HK\$	20X6	20X5	20X4	20X3
Revenue	500	300	250	150
Cost of sales	375	231	198	117
Gross profit	125	69	52	33
Profit before tax	100	50	45	30

### Market Statistics (China)



\* Forecast (unauthenticated source)

During a cocktail party, Mr. Lee told his business friends that he envisioned his company becoming the second largest player in the market in the next five years and, at the same time, to be regarded by the public as an environmentally responsible corporation. His friends said that a Balanced Scorecard (BSC) system could help him realise his vision. Mr. Lee was puzzled by this idea. He thought that the accounting system at his company currently provided enough information for control and decision-making purposes and should be good enough to assist him to realise the vision. He thought that investing in a BSC system would just be a doubling of effort and a waste of money.

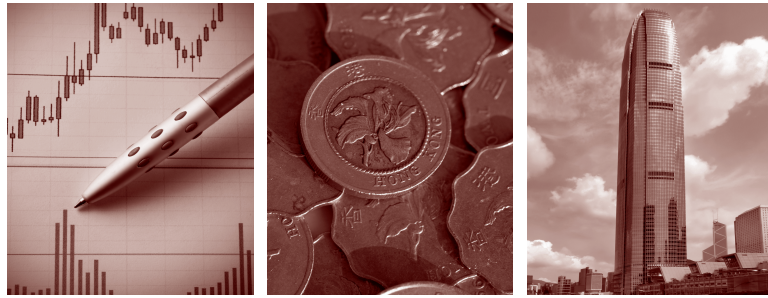
*Required*

Assume that you are the Financial Controller of E Ltd, Eagle Wong. Write a memo to Mr. Lee explaining how a BSC system may help Mr. Lee improve operations and guide the company to achieve its stated vision.

**(8 marks)**

**HKICPA September 2007 (amended)**





## chapter 6

# Performance measures for organisational units

### Topic list

- 1 Divisionalisation**
  - 1.1 Decentralisation
  - 1.2 Advantages of divisionalisation
  - 1.3 Disadvantages of divisionalisation
  - 1.4 Responsibility accounting
  - 1.5 The controllability principle
- 2 Return on investment (ROI)**
  - 2.1 Measuring ROI
  - 2.2 ROI and new investments
- 3 Residual income (RI)**
  - 3.1 The advantages and weaknesses of RI compared with ROI
  - 3.2 RI versus ROI: Marginally profitable investments
- 4 Divisional performance: Economic Value Added (EVA<sup>®</sup>)**
  - 4.1 Description
  - 4.2 Evaluation of EVA<sup>®</sup>
- 5 Transfer pricing**
  - 5.1 Introduction to transfer pricing
  - 5.2 Criteria for design of a transfer pricing policy
  - 5.3 The ideal transfer price
  - 5.4 Potential problems
  - 5.5 The “general rule”
- 6 Market value transfer price**
  - 6.1 Market price as the transfer price
  - 6.2 Adjusted market price
  - 6.3 The merits of market value transfer prices
  - 6.4 The disadvantages of market value transfer prices
- 7 Cost-based approaches to transfer pricing**
  - 7.1 Transfer prices based on full cost
  - 7.2 Transfer price at marginal cost
- 8 Fixed costs and transfer pricing**
  - 8.1 Sharing contribution
  - 8.2 Two-part charging system
  - 8.3 Dual pricing
- 9 Standard cost versus actual cost**
- 10 Cost-based approaches with no external market**
  - 10.1 Unlimited capacity and no external market
  - 10.2 Summary
- 11 Opportunity costs and transfer prices**
  - 11.1 An opportunity cost approach
- 12 Transfer pricing when intermediate products are in short supply**
- 13 Negotiated transfer prices**
- 14 Multinational transfer pricing**
  - 14.1 Factors to consider when setting multinational transfer prices
  - 14.2 Transfer prices and tax
  - 14.3 The pros and cons of different transfer pricing bases
- 15 Subsidiaries in mainland China**
  - 15.1 The Labour Law
  - 15.2 Transfer pricing regulations



**Learning focus**

This chapter looks at **divisional performance** and **transfer pricing** which is a system of charging other divisions of your organisation when you provide them with your division's goods or services.

In a **divisionalised organisation** structure of any kind, if one division does work that is used by another division, transfer pricing may be required. Do not be misled by the term “price”: there is not necessarily any suggestion of **profit** as there usually is with an external selling price. But as we shall see, transfer pricing is particularly appropriate where divisions are designated as **profit centres**.

You must be familiar with and be able to calculate and comment on a range of performance measures for divisionalised businesses and be able to calculate transfer prices. You also need to be proficient in explaining how and why different performance measures and transfer pricing methods are used and the problems they can create.

**Learning outcomes**

In this chapter you will cover the following learning outcomes:

		Competency level
	<b>Performance control</b> Design, implement and review performance measurement and control systems in organisations	
<b>2.04</b>	<b>Management of intra- and inter-organisational relationships</b>	2
2.04.01	Discuss the relative merits and performance measurement of centralisation vs decentralisation	
2.04.03	Discuss the impact of transfer prices on divisional performance assessment and explain how transfer prices can distort performance assessment and decisions made	

# 1 Divisionalisation



## Topic highlights

There are a number of advantages and disadvantages to **divisionalisation**.



## Key terms

In general, a large organisation can be structured in one of two ways. In a **functional structure**, all activities of a similar type within a company, such as production, sales, and research and development, are placed under the control of a departmental head. In a **divisional structure**, there are separate divisions for each group of products or services.

Divisional managers are responsible for all operations or functions (production, sales, and so on) relating to their product, and there is a functional structure within each division. Some activities such as administration and IT services may be organised centrally at “head office” on a functional basis, with the responsibility of providing services to *all* divisions.

## 1.1 Decentralisation

In general, a **divisional structure will lead to decentralisation** of the decision-making process and divisional managers may have the freedom to set selling prices, choose suppliers, make product mix and output decisions and so on. Decentralisation is, however, a matter of degree, depending on how much freedom divisional managers are given.

## 1.2 Advantages of divisionalisation

- (a) Divisionalisation can **improve the quality of decisions** made because divisional managers (those taking the decisions) know local conditions and are able to make more informed judgments. Moreover, with the personal incentive to improve the division's performance, they ought to take decisions in the division's best interests.
- (b) **Decisions should be taken more quickly** because information does not have to pass along the chain of command to and from top management. Decisions can be made on the spot by those who are familiar with the product lines and production processes and who are able to react to changes in local conditions quickly and efficiently.
- (c) The authority to act to improve performance should **motivate divisional managers**.
- (d) Divisional organisation **frees top management** from detailed involvement in day-to-day operations and allows them to devote more time to strategic planning.
- (e) Divisions provide **valuable training grounds for future members of top management** by giving them experience of managerial skills in a less complex environment than that faced by top management.
- (f) In a large business organisation, the central head office will not have the management resources or skills to direct operations closely enough itself. Some authority must be delegated to local operational managers.

### 1.3 Disadvantages of divisionalisation

- (a) A danger with divisional accounting is that the business organisation will divide into a number of self-interested segments, each acting at times against the wishes and interests of other segments. Decisions might be taken by a divisional manager in the best interests of his own part of the business, but against the best interest of other divisions and possibly against the interests of the organisation as a whole.

A task of **head office** is therefore to try to **prevent dysfunctional decision making** by individual divisional managers. To do this, head office must reserve some power and authority for itself so that divisional managers cannot be allowed to make entirely independent decisions. A **balance** ought to be kept **between decentralisation** of authority to provide incentives and motivation, **and retaining centralised authority** to ensure that the organisation's divisions are all working towards the same target, the benefit of the organisation as a whole (in other words, **retaining goal congruence** among the organisation's separate divisions).

- (b) It is claimed that the **costs of activities that are common** to all divisions such as running the accounting department **may be greater** for a divisionalised structure than for a centralised structure.
- (c) **Top management**, by delegating decision making to divisional managers, may **lose control** since they are not aware of what is going on in the organisation as a whole. (With a good system of performance evaluation and appropriate control information, however, top management should be able to control operations just as effectively.)

### 1.4 Responsibility accounting



#### Topic highlights

**Responsibility accounting** is the term used to describe a system in which there is decentralisation of authority, and “local” divisional managers are accountable to head office for the financial performance of their decentralised unit (division).

With a system of responsibility accounting there are three types of **responsibility centre: cost centre; profit centre; investment centre**.

The creation of divisions allows for the operation of a system of **responsibility accounting**. There are a number of types of responsibility accounting unit, or responsibility centre that can be used within a system of responsibility accounting.

In the weakest form of decentralisation a system of **cost centres** might be used. As decentralisation becomes stronger the responsibility accounting framework will be based around **profit centres**. In its strongest form **investment centres** are used.

Type of responsibility centre	Manager has control over (and is responsible and accountable for) ...	Principal performance measures
<b>Cost centre</b>	Controllable costs	Variance analysis Efficiency measures
<b>Revenue centre</b>	Revenues only	Revenues
<b>Profit centre</b>	Controllable costs Sales prices (including transfer prices)	Profit

Type of responsibility centre	Manager has control over (and is responsible and accountable for) ...	Principal performance measures
<b>Contribution centre</b>	As for profit centre except that expenditure is reported on a marginal cost basis	Contribution
<b>Investment centre</b>	Controllable costs Sales prices (including transfer prices) Output volumes Investment in non-current assets and working capital	Return on investment Residual income Other financial ratios

## 1.5 The controllability principle

The controllability principle is that managers of responsibility centres should only be held accountable for costs over which they have some influence. From a motivation point of view this is important because it can be very demoralising for managers who feel that their performance is being judged on the basis of something over which they have no control. It is also important from a control point of view in that control reports should ensure that information on costs is reported to the manager who is able to take action to control them.

### 1.5.1 Controllable or not controllable?

Most **variable costs** within a department are thought to be **controllable in the short term** because managers can influence the efficiency with which resources are used, even if they cannot do anything to raise or lower price levels.

**A cost which is not controllable by a junior manager might be controllable by a senior manager.** For example, there may be high direct labour costs in a department caused by excessive overtime working. The junior manager may feel obliged to continue with the overtime to meet production schedules, but his senior may be able to reduce costs by hiring extra full-time staff, thereby reducing the requirements for overtime.

**A cost which is not controllable by a manager in one department may be controllable by a manager in another department.** For example, an increase in material costs may be caused by buying at higher prices than expected (controllable by the purchasing department) or by excessive wastage (controllable by the production department) or by a faulty machine producing rejects (controllable by the maintenance department).

Some costs are **non-controllable**, such as increases in expenditure items due to inflation. Other costs are **controllable, but in the long term rather than the short term**. For example, production costs might be reduced by the introduction of new machinery and technology, but in the short term, management must attempt to do the best they can with the resources and machinery at their disposal.

### 1.5.2 The controllability of fixed costs

It is often assumed that all fixed costs are non-controllable in the short run. This is not so.

- (a) Committed fixed costs are those costs arising from the possession of plant, equipment, buildings and an administration department to **support the long-term needs of the business**. These costs (depreciation, rent, administration salaries) are largely **non-controllable in the short term** because they have been committed by longer-term decisions affecting longer-term needs. When a company decides to cut production drastically, the long-term committed fixed costs will be reduced, but only after redundancy terms have been settled and assets sold.

- (b) **Discretionary fixed costs**, such as advertising and research and development costs, are incurred as a result of a top management decision, but could be **raised or lowered at fairly short notice** (irrespective of the actual volume of production and sales).

### 1.5.3 Controllability and apportioned costs

**Managers should only be held accountable for costs over which they have some influence.** This may seem quite straightforward in theory, but it is not always so easy in practice to distinguish controllable from uncontrollable costs. **Apportioned overhead costs provide a good example.**

Suppose that a manager of a production department in a manufacturing company is made responsible for the costs of his department. These costs include **directly attributable overhead items** such as the costs of indirect labour employed in the department and indirect materials consumed in the department. The department's overhead costs also include an apportionment of costs from other cost centres, such as rent and rates for the building it shares with other departments and a share of the costs of the maintenance department.

Should the production manager be held accountable for any of these apportioned costs?

- (a) Managers should not be held accountable for costs over which they have no control. In this example, apportioned rent and rates costs would not be controllable by the production department manager.
- (b) Managers should be held accountable for costs over which they have some influence. In this example, it is the responsibility of the maintenance department manager to keep maintenance costs within budget. But their costs will be partly variable and partly fixed, and the variable cost element will depend on the volume of demand for their services. If the production department's staff treat their equipment badly we might expect higher repair costs, and the production department manager should therefore be made accountable for the repair costs that his department makes the maintenance department incur on its behalf.
- (c) Another argument for charging the production department with some of the costs of the maintenance department is that it prevents the production department from viewing the maintenance services as "free services". Over-use would be discouraged and the production manager is more likely to question the activities of the maintenance department and the result might be a reduction overall in maintenance costs or the provision of more efficient maintenance services.

### 1.5.4 Controllability and dual responsibility

Quite often a particular cost might be the **responsibility of two or more managers**. For example, raw materials costs might be the responsibility of the purchasing manager (prices) and the production manager (usage). A **reporting system must allocate responsibility appropriately**. The purchasing manager must be responsible for any increase in raw materials prices whereas the production manager should be responsible for any increase in raw materials usage.

## 2 Return on Investment (ROI)



### Topic highlights

The performance of an **investment centre** is usually monitored using either or both of **return on investment (ROI)** and **residual income (RI)**.

ROI is generally regarded as the **key performance measure**. The main reason for its **widespread use** is that it **ties in directly with the accounting process**, and is identifiable from the income statement and statement of financial position. However it does have limitations, as we will see later in this chapter.

**Key term**

**Return on investment (ROI)** shows how much profit has been made in relation to the amount of capital invested and is calculated as  $(\text{profit}/\text{capital employed}) \times 100\%$ .

For example, suppose that a company has two investment centres A and B, which show results for the year as follows:

	A	B
	\$	\$
Profit	60,000	30,000
Capital employed	400,000	120,000
ROI	15%	25%

Investment centre A has made double the profits of investment centre B, and in terms of profits alone has therefore been more “successful”. However, B has achieved its profits with a much lower capital investment, and so has earned a much higher ROI. This suggests that B has been a more successful investment than A.

## 2.1 Measuring ROI

**Topic highlights**

There is no generally agreed method of calculating ROI and it can have **behavioural implications** and lead to dysfunctional decision making when used as a guide to investment decisions. It focuses attention on short-run performance whereas investment decisions should be evaluated over their full life.

ROI can be measured in different ways.

### 2.1.1 Profit after depreciation as a percentage of net assets employed

This is probably the **most common method**, but it does present a problem. If an investment centre maintains the same annual profit, and keeps the same assets without a policy of regular replacement of non-current assets, its ROI will increase year by year as the assets get older. This **can give a false impression of improving performance over time**.

For example, the results of investment centre X, with a policy of straight line depreciation of assets over a five-year period, might be as follows:

Year	Non-current assets at cost \$'000	Depreciation in the year \$'000	Carrying amount (mid year) \$'000	Working capital \$'000	Capital employed \$'000	Profit \$'000	ROI %
0	100			10	110		
1	100	20	90	10	100	10	10.00
2	100	20	70	10	80	10	12.50
3	100	20	50	10	60	10	16.70
4	100	20	30	10	40	10	25.00
5	100	20	10	10	20	10	50.00

This table of figures is intended to show that an investment centre can **improve its ROI** year by year, simply **by allowing its non-current assets to depreciate**, and there could be a **disincentive to** investment centre managers to **reinvest in new or replacement assets**, because the centre's ROI would probably fall.

This example has used a mid year carrying amount but a year end or start of year carrying amount can also be used.



### Example: ROI calculation (1)

A new company has non-current assets of \$460,000 which will be depreciated to nil on a straight line basis over 10 years. Net current assets will consistently be \$75,000, and annual profit will consistently be \$30,000. ROI is measured as return on average net assets each year. Calculate the company's ROI in years 2 and 6.

### Solution

Year 2 – Net assets =  $460,000 - (46,000 + 46,000 \times 6/12) + 75,000 = 466,000$

ROI  $30,000/466,000 = 6.4\%$

Year 6 – Net assets =  $460,000 - (46,000 \times 5) - (46,000 \times 6/12) + 75,000 = 282,000$

ROI  $30,000/282,000 = 10.6\%$

A further disadvantage of measuring ROI as profit divided by net assets is that, for similar reasons, it is not **easy to compare** fairly the **performance of investment centres**.

For example, suppose that we have two investment centres:

	<i>Investment centre P</i>		<i>Investment centre Q</i>	
	\$	\$	\$	\$
Working capital		20,000		20,000
Non-current assets at cost	230,000		230,000	
Accumulated depreciation	<u>170,000</u>		<u>10,000</u>	
Carrying amount		<u>60,000</u>		<u>220,000</u>
Capital employed		<u>80,000</u>		<u>240,000</u>
Profit		\$24,000		\$24,000
ROI		30%		10%

Investment centres P and Q have the same amount of working capital, the same value of non-current assets at cost, and the same profit. But P's non-current assets have been depreciated by a much bigger amount (presumably P's non-current assets are much older than Q's) and so P's ROI is three times the size of Q's ROI. The conclusion might therefore be that P has performed much better than Q. This comparison, however, would not be "fair", because the difference in performance might be entirely attributable to the age of their non-current assets.

### The arguments for using carrying amounts for calculating ROI

- It is the "**normally accepted**" method of calculating ROI.
- Organisations are continually buying new non-current assets to replace old ones that wear out, and so on the whole, the **total carrying amount** of all non-current assets together **will remain fairly constant** (assuming nil inflation and nil growth).

### 2.1.2 Profit after depreciation as a percentage of gross assets employed

Instead of measuring ROI as return on net assets, we could measure it as return on gross assets i.e. before depreciation. This would **remove the problem of ROI increasing over time as non-current assets get older**.

Suppose that a company acquires a non-current asset costing \$40,000, which it depreciates by \$10,000 each year for four years. The asset earns a profit of \$8,000 each year (after depreciation). ROI might be calculated on carrying amounts or gross values, as follows:

Year	Profit \$	Carrying amount(mid- year value) \$	ROI based on Carrying amount	Gross value \$	ROI based on gross value %
1	8,000	35,000	22.90	40,000	20
2	8,000	25,000	32.00	40,000	20
3	8,000	15,000	53.30	40,000	20
4	8,000	5,000	160.00	40,000	20

The ROI based on **carrying amount** shows an **increasing trend over time**, simply because the asset's value is falling as it is depreciated. The ROI based on gross book value suggests that the asset has **performed consistently** in each of the four years, which is probably a more valid conclusion.



### Example: ROI calculation (2)

Repeat Example ROI calculation (1), measuring ROI as return on gross assets.

### Solution

Year 2 –  $30,000 / (460,000 + 75,000) = 5.6\%$

Year 6 – 5.6% (same as above)

However, using gross book values to measure ROI has its **disadvantages**. Most important of these is that measuring ROI as return on gross assets ignores the age factor, and **does not distinguish between old and new assets**.

- Older non-current assets** usually **cost more to repair and maintain**, to keep them running. An investment centre with old assets may therefore have its profitability reduced by repair costs, and its ROI might fall over time as its assets get older and repair costs get bigger.
- Inflation and technological change alter the cost of non-current assets**. If one investment centre has non-current assets bought 10 years ago with a gross cost of \$1 million, and another investment centre, in the same area of business operations, has non-current assets bought very recently for \$1 million, the quantity and technological character of the non-current assets of the two investment centres are likely to be very different.

### 2.1.3 Constituent elements of the investment base

Although we have looked at how the investment base should be valued, we need to consider its appropriate constituent elements.

- If a **manager's performance** is being **evaluated**, only those **assets** which can be **traced directly to the division** and are **controllable by the manager** should be included. Head office assets or investment centre assets controlled by head office should not be included. So, for example, only those cash balances actually maintained within an investment centre itself should be included.
- If it is the performance of the **investment centre** that is being appraised, **a proportion of the investment in head office assets** would need to be included because an investment centre could not operate without the support of head office assets and administrative backup.



### 2.1.4 Profits

We have looked at how to define the asset base used in the calculations but what about profit? If the **performance of the investment centre manager is being assessed** it should seem reasonable to **base profit on the revenues and costs controllable by the manager** and exclude service and head office costs except those costs specifically attributable to the investment centre. If it is the **performance of the investment centre that is being assessed, however, the inclusion of general service and head office costs would seem reasonable.**

The profit figure for ROI should always be the amount before any interest is charged.

## 2.2 ROI and new investments

If investment centre performance is judged by ROI, we should expect that the managers of investment centres will probably decide to undertake new capital investments **only if these new investments are likely to increase the ROI of their centre.**

Suppose that an investment centre, A, currently makes a return of 40% on capital employed. The manager of centre A would probably only want to undertake new investments that promise to yield a return of 40% or more, otherwise the investment centre's overall ROI would fall.

For example, if investment centre A currently has assets of \$1,000,000 and expects to earn a profit of \$400,000, how would the centre's manager view a new capital investment which would cost \$250,000 and yield a profit of \$75,000 pa?

	<i>Without the new investment</i>	<i>With the new investment</i>
Profit	\$400,000	\$475,000
Capital employed	\$1,000,000	\$1,250,000
ROI	40%	38%

The **new investment** would **reduce the investment centre's ROI** from 40% to 38%, and so the investment centre manager would probably decide **not to undertake** the new investment.

If the group of companies of which investment centre A is a part has a target ROI of, say, 25%, the new investment would presumably be seen as **beneficial for the group as a whole**. But even though it promises to yield a return of  $75,000/250,000 = 30\%$ , which is above the group's target ROI, it would still make investment centre A's results look worse. The manager of investment centre A would, in these circumstances, be motivated to do not what is best for the organisation as a whole, but what is **best for his division**.

ROI should not be used to guide investment decisions but there is a difficult **motivational** problem. If management performance is measured in terms of ROI, any decisions which benefit the company in the long term but which reduce the ROI in the immediate short term would reflect badly on the manager's reported performance. In other words, good investment decisions would make a manager's performance seem **worse** than if the wrong investment decision were taken instead.

## 3 Residual Income (RI)



### Key term

**Residual income (RI)** can sometimes give results that avoid the **behavioural** problem of **dysfunctionality**. Its weakness is that it does not facilitate comparisons between investment centres nor does it relate the size of a centre's income to the size of the investment.

An alternative way of measuring the performance of an investment centre, instead of using ROI, is residual income (RI). **Residual income** is a **measure of the centre's profits after deducting a notional or imputed interest cost**.

- (a) The centre's profit is **after deducting depreciation** on capital equipment.
- (b) The imputed cost of capital might be the organisation's cost of borrowing or its weighted average cost of capital.



### Key term

**Residual income** is a measure of the centre's profits after deducting a notional or imputed interest cost.



### Example: Residual income calculation

A division with capital employed of \$400,000 currently earns a return on investment (ROI) of 22%. It can make an additional investment of \$50,000 for a five-year life with nil residual value. The average net profit from this investment would be \$12,000 after depreciation. The division's cost of capital is 14%.

What are the residual incomes before and after the investment?

### Solution

	<i>Before investment</i>	<i>After investment</i>
	\$	\$
Divisional profit ( $\$400,000 \times 22\%$ )	88,000	100,000
Imputed interest ( $400,000 \times 0.14$ )	56,000	
( $450,000 \times 0.14$ )		63,000
Residual income	<u>32,000</u>	<u>37,000</u>

## 3.1 The advantages and weaknesses of RI compared with ROI

### The advantages of using RI

- (a) Residual income will **increase** when investments earning above the cost of capital are undertaken and investments earning below the cost of capital are eliminated.
- (b) Residual income is **more flexible** since a different cost of capital can be applied to investments with **different risk** characteristics.

### The disadvantage of using RI

The **weakness** of RI is that it **does not facilitate comparisons** between investment centres nor **does it relate the size of a centre's income to the size of the investment**.

## 3.2 RI versus ROI: Marginally profitable investments

Residual income will increase if a new investment is undertaken which earns a profit in excess of the imputed interest charge on the value of the asset acquired. Residual income will go up even if the investment only just exceeds the imputed interest charge, and this means that "marginally profitable" investments are likely to be undertaken by the investment centre manager.

In contrast, when a manager is judged by ROI, a marginally profitable investment would be less likely to be undertaken because it would reduce the average ROI earned by the centre as a whole.

**Example: ROI versus residual income**

Suppose that Department H has the following profit, assets employed and an imputed interest charge of 12% on operating assets:

	\$	
Operating profit	30,000	
Operating assets		\$100,000
Imputed interest (12%)	12,000	
Return on investment		30%
Residual income	<u>18,000</u>	

Suppose now that an additional investment of \$10,000 is proposed, which will increase operating income in Department H by \$1,400. The effect of the investment would be:

	\$	
Total operating income	31,400	
Total operating assets		\$110,000
Imputed interest (12%)	13,200	
Return on investment		28.5%
Residual income	<u>18,200</u>	

If the Department H manager is made responsible for the department's performance, he would **resist the new investment if he were to be judged on ROI**, but would **welcome the investment if he were judged according to RI**, since there would be a marginal increase of \$200 in residual income from the investment, but a fall of 1.5% in ROI.

The marginal investment offers a return of 14% (\$1,400 on an investment of \$10,000) which is above the "cut-off rate" of 12%. Since the original return on investment was 30%, the marginal investment will reduce the overall divisional performance. Indeed, any marginal investment offering an accounting rate of return of less than 30% in the year would reduce the overall performance.

## 4 Divisional performance: Economic Value Added (EVA<sup>®</sup>)

### 4.1 Description



#### Key term

**EVA<sup>®</sup>** is an alternative absolute performance measure. It is similar to RI and is calculated as follows:

$$\text{EVA}^{\circledR} = \text{net operating profit after tax (NOPAT)} \text{ less capital charge}$$

Where the capital charge = weighted average cost of capital  $\times$  net assets

Economic value added (EVA<sup>®</sup>) is a registered trade mark owned by Stern Stewart & Co.. It is a specific type of residual income (RI) calculated as follows:

EVA<sup>®</sup> and RI are similar because both result in an absolute figure, which is calculated by subtracting an imputed interest charge from the profit earned by the investment centre. Similar to RI, interest is excluded from NOPAT because interest costs are taken into account in the capital charge.

However there are differences as follows:

- (a) The profit figures are calculated differently. EVA<sup>®</sup> is based on an “**economic profit**” which is derived by making a series of adjustments to the accounting profit.
- (b) The notional capital charges use **different bases for net assets**. The net assets used in the calculation of EVA<sup>®</sup> are usually valued at their **replacement cost** and are **increased by any costs that have been capitalised** (see below).

The key differences in the way that NOPAT is calculated compared with the profit figure that is used for RI, are as follows:

- (a) Costs which would normally be treated as expenses, but which are considered within an EVA<sup>®</sup> calculation as **investments building for the future**, are added back to NOPAT to derive a figure for “economic profit”. These costs are included instead as assets in the figure for net assets employed, i.e. as investments for the future. Costs treated in this way include items such as **goodwill, research and development expenditure and advertising costs**.
- (b) Adjustments are sometimes made to the depreciation charge, whereby accounting depreciation is added back to the profit figures, and **economic depreciation** is subtracted instead to arrive at NOPAT. Economic depreciation is a charge for the fall in asset value due to wear and tear or obsolescence.
- (c) Any lease charges are excluded from NOPAT and added in as a part of capital employed.



### Example: Calculating EVA<sup>®</sup>

An investment centre has reported operating profits of \$21 million. This was after charging \$4 million for the development and launch costs of a new product that is expected to generate profits for four years. Taxation is paid at the rate of 25% of the operating profit.

The company has a risk adjusted weighted average cost of capital of 12% per annum and is paying interest at 9% per annum on a substantial long-term loan.

The investment centre's non-current asset value is \$50 million and the net current assets have a value of \$22 million. The replacement cost of the non-current assets is estimated to be \$64 million.

*Required*

Calculate the investment centre's EVA<sup>®</sup> for the period.

### Solution

#### Calculation of NOPAT

	\$m
Operating profit	21
Add back development costs	4
Less one year's amortisation of development costs (\$4 million/4)	(1)
	<u>24</u>
Taxation at 25%	(6)
NOPAT	<u>18</u>

#### Calculation of economic value of net assets

	\$m
Replacement cost of net assets (\$22 million + \$64 million)	86
Add back investment in new product to benefit future	3
Economic value of net assets	<u>89</u>

*Calculation of EVA<sup>®</sup>*

The capital charge is based on the **weighted average cost of capital**, which takes account of the cost of share capital as well as the cost of loan capital. Therefore the correct interest rate is 12%.

	\$m
NOPAT	18.00
Capital charge (12% × \$89 million)	(10.68)
EVA <sup>®</sup>	<u>7.32</u>

**Example: Calculating EVA<sup>®</sup> – demonstration of technique**

B division of Z Co. has operating profits and assets as below:

	\$'000
Gross profit	156
Less: non-cash expenses	8
amortisation of goodwill	5
interest @ 10%	15
Profit before tax	<u>128</u>
Tax @ 30%	38
Net profit	<u>90</u>
Total equity	350
Long-term debt	<u>150</u>
	<u>500</u>

Z Co. has a target capital structure of 25% debt/75% equity. The cost of equity is estimated at 15%. The capital employed at the start of the period amounted to \$450,000. The division had non-capitalised leases: these have an asset value of \$20,000 for the period. The charge in the income statement for these leases was \$3,000. Goodwill previously written off against reserves in acquisitions in previous years amounted to \$40,000.

*Required*

Calculate EVA<sup>®</sup> for B division and comment on your results.

**Solution**

<b>EVA<sup>®</sup></b>	\$'000	\$'000
NOPAT		
Net profit		90.00
Add back:		
Non-cash expenses	8.00	
Amortisation of goodwill	5.00	
Non-capitalised lease charges	3.00	
Interest (net of 30% tax) $15 \times 0.7$	<u>10.50</u>	
		<u>26.50</u>
		<u>116.50</u>
		\$'000
<b>Assets</b>		
At start of period		450
Non-capitalised leases		20
Amortised goodwill		40
		<u>510</u>
<b>WACC</b>		
Equity 15% × 75%		0.1125
Debt (10% × 0.7) × 25%		0.0175
WACC		<u>0.1300</u>

		\$'000
EVA <sup>®</sup>	NOPAT	116.50
	Capital charge	
	13% × \$510,000	66.30
		<u>50.20</u>
		\$'000
RI	Net profit	90.00
	Capital charge	
	13% × \$500,000	65.00
		<u>25.00</u>

The EVA<sup>®</sup> for B division in this example is \$50,200. This is higher than the residual income (RI), even though the economic value of the assets (\$510,000) is higher than their accounting value (\$500,000). The reason for the difference is the treatment of expenses, such as amortisation, which have been based on economic principles, not accounting principles.

The business has created value during the period because the return (EVA<sup>®</sup> and RI) is more than the WACC.

- In accounting terms, ROI is 18% (90,000/500,000) compared with WACC 18%.
- In economic terms, the economic ROI is 22.8% (116,500/510,000).

## 4.2 Evaluation of EVA<sup>®</sup>

The advantages of EVA<sup>®</sup> include the following:

- Real wealth for shareholders.** Maximisation of EVA<sup>®</sup> will create real wealth for the shareholders.
- Less distortion by accounting policies.** The adjustments within the calculation of EVA<sup>®</sup> mean that the measure is based on figures that are closer to cash flows than accounting profits.
- An absolute value.** The EVA<sup>®</sup> measure is an absolute value, which is easily understood by non-financial managers.
- Treatment of certain costs as investments thereby encouraging expenditure.** If management are assessed using performance measures based on traditional accounting policies they may be unwilling to invest in areas such as advertising and development for the future because **such costs will immediately reduce the current year's accounting profit.** EVA<sup>®</sup> recognises such costs as investments for the future and therefore they do not immediately reduce the EVA<sup>®</sup> in the year of expenditure.

EVA<sup>®</sup> does have some drawbacks:

- Focus on short-term performance.** It is still a relatively **short-term measure, which** can encourage managers to focus on short-term performance.
- Dependency on historical data.** EVA<sup>®</sup> is based on historical accounts, which may be of **limited use as a guide to the future.** In practice, the influences of accounting policies on the starting profit figure may not be completely negated by the adjustments made to it in the EVA<sup>®</sup> model.
- Number of adjustments needed to measure EVA<sup>®</sup>.** Making the necessary adjustments can be problematic as sometimes a **large number of adjustments** are required.
- Comparison of like with like.** Investment centres, which are larger in size, may have larger EVA<sup>®</sup> figures for this reason. **Allowance for relative size** must be made when comparing the relative performance of investment centres.

## 5 Transfer pricing



### Topic highlights

Where divisions trade with each other, their reported performance may be affected by the price at which inter-divisional goods or services are recorded. This is known as the **transfer price**. The level at which the transfer price is set may affect the behaviour of the individual divisions/divisional managers.

### 5.1 Introduction to transfer pricing

Where there are transfers of goods or services between divisions of a divisionalised organisation, the **transfers could be made “free” or “as a favour”** to the division receiving the benefit. For example, if a garage and car showroom has two divisions, one for car repairs and servicing and the other for car sales, the servicing division will be required to service cars before they are sold and delivered to customers. There is no requirement for this service work to be charged for: the servicing division could do its work for the car sales division without making any record of the work done.

Unless the cost or value of such work is recorded, however, management cannot keep a proper check on the amount of resources (like labour time) being used up on new car servicing. It is necessary for **control purposes** that some **record** of the inter-divisional services should be kept, and one way of doing this is **through the accounting system**. Inter-divisional work can be given a cost or charge: a transfer price.



### Key term

A **transfer price** is the price at which goods or services are transferred from one department to another, or from one member of a group to another.

### 5.2 Criteria for design of a transfer pricing policy



### Topic highlights

Transfer prices are a way of promoting **divisional autonomy**, ideally without prejudicing **divisional performance measurement** or discouraging overall **corporate profit maximisation**.

#### 5.2.1 Divisional autonomy

Transfer prices are particularly appropriate for **profit centres** because if one profit centre does work for another the size of the transfer price will affect the costs of one profit centre and the revenues of another.

However, a danger with profit centre accounting is that the business organisation will divide into a number of **self-interested segments**, each acting at times against the wishes and interests of other segments. A profit centre manager might take decisions in the best interests of his own part of the business, but against the best interests of other profit centres and possibly the organisation as a whole.

A task of head office is therefore to try to prevent dysfunctional decision making by individual profit centres. To do this, it must reserve some power and authority for itself and so profit centres **cannot** be allowed to make entirely **autonomous decisions**.

Just how much authority head office decides to keep for itself will vary according to individual circumstances. A **balance** ought to be kept between **divisional autonomy** to provide incentives and motivation, and retaining **centralised authority** to ensure that the organisation's profit centres are all working towards the same target, the benefit of the organisation as a whole (in other words, retaining **goal congruence** among the organisation's separate divisions).

### 5.2.2 Divisional profit maximisation

Profit centre managers tend to put their own profit **performance** above everything else. Since profit centre performance is measured according to the profit they earn, no profit centre will want to do work for another and incur costs without being paid for it. Consequently, profit centre managers are likely to dispute the size of transfer prices with each other, or disagree about whether one profit centre should do work for another or not. Transfer prices **affect behaviour and decisions** by profit centre managers.

### 5.2.3 Corporate profit maximisation

When there are disagreements about how much work should be transferred between divisions, and how many sales the division should make to the external market, there is presumably a **profit-maximising** level of output and sales for the organisation as a whole. However, unless each profit centre also maximises its own profit at this same level of output, there will be inter-divisional disagreements about output levels and the profit-maximising output will not be achieved.

## 5.3 The ideal transfer price

Ideally a transfer price should be set at a level that overcomes these problems.

- (a) The transfer price should provide an “artificial” selling price that enables the transferring division to **earn a return** for its efforts, and the receiving division to **incur a cost** for benefits received.
- (b) The transfer price should be set at a level that enables profit centre performance to be **measured “commercially”** (that is, it should be a **fair** commercial price).
- (c) The transfer price, if possible, should encourage profit centre managers to agree on the amount of goods and services to be transferred, which will also be at a level that is consistent with the organisation's aims as a whole such as **maximising company profits**.

In practice, it is very difficult to achieve all three aims.

## 5.4 Potential problems

What are the likely behavioural consequences of a head office continually imposing its own decisions on divisions?

Decentralisation recognises that those closest to a job are the best equipped to say how it should be done and that people tend to perform to a higher standard if they are given responsibility. Centrally-imposed decisions are likely to make managers feel that they do not really have any authority and therefore that they cannot be held responsible for performance. They will therefore make less effort to perform well.



## 5.5 The “general rule”



### Topic highlights

Transfer prices should be set at a level that ensures that profits for the organisation as a whole are maximised.

The limits within which transfer prices should fall are as follows:

- **The minimum.** The sum of the supplying division's marginal cost and opportunity cost of the item transferred.
- **The maximum.** The lowest market price at which the receiving division could purchase the goods or services externally, less any internal cost savings in packaging and delivery.

We shall see eventually that the ideal transfer price should reflect the **opportunity cost** of sale to the supplying division and the opportunity cost to the buying division. However, this “general rule” requires extensive qualification, and you will need to work through the rest of this chapter before we return to it in section 11 and you fully appreciate what it means.

In the meantime, be content with Horngren's formulation of the problem:

“Is there an all-pervasive rule for transfer pricing that leads toward optimal decisions for the organisation as a whole? No. Why? Because the three criteria of goal congruence, managerial effort, and subunit autonomy must all be considered simultaneously.”

## 6 Market value transfer price

Transfer prices may be based on **market price** (or an **adjusted market price**) where there is an external market for the item being transferred.

### 6.1 Market price as the transfer price

If an **external market** price exists for transferred goods, profit centre managers will be aware of the price they could charge or the price they would have to pay for their goods on the external market, and so will **compare** this price with the internal transfer price.



#### Example: Transferring goods at market value

A company has two profit centres, A and B. Centre A sells half of its output on the open market and transfers the other half to B. Costs and external revenues in an accounting period are as follows:

	A	B	Total
	\$	\$	\$
External sales	8,000	24,000	32,000
Costs of production	12,000	10,000	22,000
Company profit			<u>10,000</u>

*Required*

What are the consequences of setting a transfer price at market value?

## Solution

If the transfer price is at market price, A would be happy to sell the output to B for \$8,000, which is what A would get by selling it externally instead of transferring it.

	A		B		Total
	\$	\$	\$	\$	\$
Market sales		8,000		24,000	32,000
Transfer sales		8,000			
		<u>16,000</u>		<u>24,000</u>	
Transfer costs	–		8,000		
Own costs	<u>12,000</u>		<u>10,000</u>		22,000
		12,000		18,000	
Profit		<u>4,000</u>		<u>6,000</u>	<u>10,000</u>

The consequences, therefore, are as follows:

- A earns the same profit on transfers as on external sales. B must pay a commercial price for transferred goods, and both divisions will have their profit measured fairly.
- A will be indifferent about selling externally or transferring goods to B because the profit is the same on both types of transaction. B can therefore ask for and obtain as many units as it wants from A.

A **market-based** transfer price therefore seems to be the **ideal** transfer price.

## 6.2 Adjusted market price

However, internal transfers are often **cheaper** than external sales, with **savings** in selling and administration costs, bad debt risks and possibly transport/delivery costs. It would therefore seem reasonable for the buying division to expect a **discount** on the external market price.

The transfer price might be slightly less than market price, so that A and B could **share the cost savings** from internal transfers compared with external sales. It should be possible to reach agreement on this price and on output levels with a minimum of intervention from head office.

## 6.3 The merits of market value transfer prices

### 6.3.1 Divisional autonomy

In a decentralised company, divisional managers should have the **autonomy** to make output, selling and buying **decisions, which appear to be in the best interests of the division's performance**. (If every division optimises its performance, the company as a whole must inevitably achieve optimal results.) Therefore a **transferor division should be given the freedom to sell output on the open market**, rather than to transfer it within the company.

“Arm's length” transfer prices, which give profit centre managers the freedom to negotiate prices with other profit centres as though they were independent companies, will tend to result in a market-based transfer price.

### 6.3.2 Corporate profit maximisation

In most cases where the transfer price is at market price, **internal transfers** should be **expected**, because the **buying division** is likely to **benefit** from a better quality of service, greater flexibility, and dependability of supply. **Both divisions** may **benefit** from cheaper costs of administration, selling and transport. A market price as the transfer price would therefore **result in decisions, which would be in the best interests of the company or group as a whole**.

### 6.3.3 Divisional performance measurement

Where a **market price exists**, but the **transfer price is a different amount** (say, at standard cost plus), divisional managers will **argue** about the volume of internal transfers.

For example, if division X is expected to sell output to division Y at a transfer price of \$8 per unit when the open market price is \$10, its manager will decide to sell all output on the open market. The manager of division Y would resent the loss of his cheap supply from X, and would be reluctant to buy on the open market. A wasteful situation would arise where X sells on the open market at \$10, where Y buys at \$10, so that administration, selling and distribution costs would have been saved if X had sold directly to Y at \$10, the market price.

### 6.4 The disadvantages of market value transfer prices

Market value as a transfer price does have certain disadvantages.

- (a) The market price may be a **temporary** one, induced by adverse **economic conditions**, or dumping, or the market price might depend on the volume of output supplied to the external market by the profit centre.
- (b) A transfer price at market value might, under some circumstances, act as a disincentive to use up any **spare capacity** in the divisions. A price based on incremental cost, in contrast, might provide an incentive to use up the spare resources in order to provide a marginal contribution to profit.
- (c) Many products **do not have an equivalent** market price so that the price of a similar, but not identical, product might have to be chosen. In such circumstances, the option to sell or buy on the open market does not really exist.
- (d) The **external market** for the transferred item might be **imperfect**, so that if the transferring division wanted to sell more externally, it would have to **reduce** its price.

## 7 Cost-based approaches to transfer pricing



### Topic highlights

Problems arise with the use of **cost-based** transfer prices because one party or the other is liable to perceive them as unfair.

Cost-based approaches to transfer pricing are often used, because in practice the following conditions are common:

- (a) There is **no external market** for the product that is being transferred.
- (b) Alternatively, although there is an external market it is an **imperfect** one because the market price is affected by such factors as the amount that the company setting the transfer price supplies to it, or because there is only a limited external demand.

In either case there will not be a suitable market price upon which to base the transfer price.

### 7.1 Transfer prices based on full cost

Under this approach, the **full cost** (including fixed overheads absorbed) incurred by the supplying division in making the “intermediate” product is charged to the receiving division. If a **full cost plus** approach is used a **profit margin** is also included in this transfer price.

**Key term**

An **intermediate product** is one that is used as a component of another product, for example car headlights or food additives.

**Example: Transfers at full cost (plus)**

Consider the example introduced in section 6.1, but with the additional complication of imperfect intermediate and final markets. A company has two profit centres, A and B. Centre A can only sell **half** of its maximum output externally because of limited demand. It transfers the other half of its output to B, which also faces limited demand. Costs and revenues in an accounting period are as follows:

	A	B	Total
	\$	\$	\$
External sales	8,000	24,000	32,000
Costs of production in the division	12,000	10,000	<u>22,000</u>
Profit			<u>10,000</u>

There are no opening or closing inventories. It does not matter here whether marginal or absorption costing is used and we shall ignore the question of whether the current output levels are profit maximising and congruent with the goals of the company as a whole.

**7.1.1 Transfer price at full cost only**

If the transfer price is at full cost, A in our example would have “sales” to B of \$6,000 (costs of \$12,000 × 50%). This would be a cost to B, as follows:

**Example: Transfer price at full cost only**

	A		B		Company as a whole
	\$	\$	\$	\$	\$
Open market sales		8,000		24,000	32,000
Transfer sales		<u>6,000</u>		—	
Total sales, inc. transfers		14,000		24,000	
Transfer costs			6,000		
Own costs	<u>12,000</u>		<u>10,000</u>		22,000
Total costs, inc. transfers		12,000		16,000	
Profit		<u>2,000</u>		<u>8,000</u>	<u>10,000</u>

The transfer sales of A are self-cancelling with the transfer costs of B so that total profits are unaffected by the transfer items. The transfer price simply spreads the total profit of \$10,000 between A and B.

The obvious drawback to the transfer price at cost is that **A makes no profit** on its work, and the manager of division A would much prefer to sell output on the open market to earn a profit, rather than transfer to B, regardless of whether or not transfers to B would be in the best interests of the company as a whole. Division A needs a profit on its transfers in order to be motivated to supply B; therefore transfer pricing at cost is inconsistent with the use of a profit centre accounting system.

### 7.1.2 Transfer price at full cost (plus)

The transfer price may be at cost plus a profit margin. This will give a profit to the division making the transfers.



#### Example: Transfer price at full cost (plus)

In the previous example, if transfers are priced at cost plus a margin of 25%, A's sales to B would be \$7,500 (= \$12,000 × 50% × 1.25).

	\$	A	\$	B	\$	Total \$
Open market sales			8,000		24,000	32,000
Transfer sales			7,500			
			<u>15,500</u>		<u>24,000</u>	
Transfer costs				7,500		
Own costs	<u>12,000</u>			<u>10,000</u>		22,000
Profit		<u>12,000</u>		<u>17,500</u>		<u>10,000</u>
		<u>3,500</u>		<u>6,500</u>		<u>10,000</u>

Compared to a transfer price at cost, **A gains some profit** at the expense of B. However, A makes a bigger profit on external sales in this case because the profit mark-up of 25% is less than the profit mark-up on open market sales. The choice of 25% as a profit mark-up was arbitrary and unrelated to external market conditions.

### 7.1.3 Divisional autonomy, divisional performance measurement and corporate profit maximisation

In the above case the transfer price **fails on all three criteria** for judgment.

- Arguably, it does not give A fair revenue or charge B a reasonable cost, and so their profit **performance** is distorted. It would certainly be unfair, for example, to compare A's profit with B's profit.
- Given this unfairness it is likely that the **autonomy** of each of the divisional managers is under threat. If they cannot agree on what is a fair split of the external profit a decision will have to be imposed from above.
- It would seem to give A an incentive to sell more goods externally and transfer less to B. This may or may not be in the best interests of the **company as a whole**.



#### Example: Minimum price

Suppose, in the previous example, that the cost per unit of A's output is \$9 in variable costs and \$6 in fixed costs. B's own costs are \$25 including a fixed element of \$10. What is the minimum price that B should charge for its products to break even?

#### Solution

A produces  $\$12,000/(\$9 + \$6) = 800$  units and transfers half of them to B for \$6,000. The cost for each unit that B buys is therefore  $\$6,000/400 = \$15$ . From B's perspective this is a **variable** cost. B's costs are as follows:

	Cost per unit
Variable cost: transfers from A	\$ 15
Own variable costs	15
	<u>30</u>

From B's perspective it must charge more than \$30 per unit to earn a contribution. However, from the overall perspective, \$6 of the "variable" cost of transfers is **fixed**. The variable cost is really \$9 + \$15 = \$24, and any price above this will earn a contribution for the organisation as a whole.

## 7.2 Transfer price at marginal cost

With a marginal cost approach, the transfer price is the marginal cost that has been incurred by the supplying division.



### Example: Marginal cost

Continuing with the example above, we shall suppose that A's cost per unit is \$15, of which \$6 is fixed and \$9 variable. The transfers are at the marginal cost to A.

	\$	A	\$	B	\$	Company as a whole	\$
Market sales			8,000		24,000		32,000
Transfer sales							
(\$6,000 × <sup>9</sup> / <sub>15</sub> )			<u>3,600</u>		<u>—</u>		
			11,600		24,000		
Transfer costs		—		3,600			
Own variable costs	7,200			6,000		13,200	
Own fixed costs	<u>4,800</u>			<u>4,000</u>		<u>8,800</u>	
Total costs and transfers			<u>12,000</u>		<u>13,600</u>		<u>22,000</u>
(Loss)/Profit			<u>(400)</u>		<u>10,400</u>		<u>10,000</u>

### 7.2.1 Divisional autonomy, divisional performance measurement and corporate profit maximisation

- This result is deeply unsatisfactory for the manager of division A who could make an additional \$4,400 (\$8,000 – 3,600) profit if no goods were transferred to division B.
- Given that the manager of division A would prefer to transfer externally, head office are likely to have to insist that internal transfers are made.
- For the company overall, external transfers only would cause a large fall in profit, because division B could make no sales at all.

The problem is that with a transfer price at marginal cost, the **supplying division does not cover its fixed costs**.

## 8 Fixed costs and transfer pricing

**Fixed costs** in the supplying division can be accounted for in a number of ways to ensure that it at least breaks even.

### 8.1 Sharing contribution

Each division can be given a **share** of the overall contribution earned by the organisation, but it is probably necessary for head office to decide what the shares should be. This undermines **divisional autonomy**. Alternatively, central management could impose a range within which the

transfer price should fall, and allow divisional managers to **negotiate** what they felt was a fair price between themselves.

## 8.2 Two-part charging system

With a two-part transfer charging system, transfer prices are at variable cost and once a year there is a transfer charge of a fixed fee for the supplying division, representing an allowance for its fixed costs. Care is needed with this approach. It risks sending the message to the supplying division that it need not control its fixed costs because the company will **subsidise any inefficiencies**. On the other hand, if fixed costs are incurred because spare capacity is kept available for the needs of other divisions it is reasonable to expect those other divisions to pay a fee if they “booked” that capacity in advance but later failed to utilise it. The main problem with this approach once more is that it is likely to conflict with **divisional autonomy**.

## 8.3 Dual pricing

Be careful not to confuse this term with “two-part” transfer pricing. Dual pricing means that two separate transfer prices are used.

- For the transfer of goods from the supplying division to the receiving division the transfer price is set at variable cost. This ensures that the receiving division makes optimal **decisions** and it leads to corporate profit maximisation.
- For the purposes of **reporting results** the transfer price is based on the *total* costs of the transferring division, thus avoiding the possibility of reporting a loss.

This method is not widely used in practice.

# 9 Standard cost versus actual cost



## Topic highlights

**Standard costs**, rather than actual costs, should be used for transfer prices when transfer prices are at cost or cost plus. This is to avoid encouraging inefficiency in the supplying division.

When a transfer price is based on cost, **standard cost** should be used, not actual cost. A transfer of actual cost would give no incentive to **control costs**, because they could all be passed on. Actual cost-*plus* transfer prices might even encourage the manager of A to overspend, because this would increase the divisional profit, even though the company as a whole (and division B) suffers.



## Example: Standard vs. actual cost

The previous example will be used again. This time the transfer price is cost plus 25%. Suppose that A's costs should have been \$12,000, but actually were \$16,000. Transfers (50% of output) would cost \$8,000 actual, and the cost plus transfer price would be \$10,000 (= \$8,000 × 125%).

	A		B		Total
	\$	\$	\$	\$	\$
Market sales		8,000		24,000	32,000
Transfer sales		10,000		—	
		<u>18,000</u>		<u>24,000</u>	
Transfer costs	—		10,000		
Own costs	<u>16,000</u>		<u>10,000</u>		<u>26,000</u>
		16,000		20,000	
Profit		<u>2,000</u>		<u>4,000</u>	<u>6,000</u>

A's overspending by \$4,000 has reduced the total profits from \$10,000 to \$6,000.

In this example, B must bear much of the cost of A's overspending, which is clearly unsatisfactory for responsibility accounting. If, however, the transfer price were at standard cost plus instead of actual cost plus, the transfer sales would have been \$7,500 (standard cost \$6,000 plus 25%), regardless of A's overspending.

	A		B		Total
	\$	\$	\$	\$	\$
Market sales		8,000		24,000	32,000
Transfer sales		7,500		–	
		<u>15,500</u>		<u>24,000</u>	
Transfer costs	–		7,500		
Own costs	<u>16,000</u>		<u>10,000</u>		
		16,000		17,500	26,000
Profit/(loss)		<u>(500)</u>		<u>6,500</u>	<u>6,000</u>

The entire cost of the overspending by A of \$4,000 is now borne by division A itself as a comparison with the first table of figures in this section will show.

Why has A's profit fallen by \$2,500, not \$4,000?

A was already bearing 50% of its overspending. The fall in profit is  $\$2,000 \times 125\% = \$2,500$ , which represents the other 50% of its overspending and the loss of the profit margin on transfers to B.

## 10 Cost-based approaches with no external market



### Topic highlights

With **no external market**, the transfer price should be set in the range where variable cost in the supplying division is equal or less than net marginal revenue in the receiving division.

### 10.1 Unlimited capacity and no external market

So far we have considered the use of cost-based approaches where the following factors applied:

- There was a **limit on the maximum output** of the supplying division.
- There was a **limit** to the amount that could be sold in the **intermediate market**.

We found that a **marginal cost**-based approach led to the **best decisions** for the organisation overall, but that this was **beset with problems** in maintaining divisional autonomy and measuring divisional performance fairly.

We shall now consider whether this finding changes in different conditions. We shall remove the limit on output and demand for the final product, but assume that there is no intermediate market at all.



### Example: Unlimited capacity and no intermediate market

Motivate Ltd has two profit centres, P and Q. P transfers *all* its output to Q. The variable cost of output from P is \$5 per unit, and fixed costs are \$1,200 per month. Additional processing costs in Q are \$4 per unit for variable costs, plus fixed costs of \$800. Budgeted production is 400 units per month, and the output of Q sells for \$15 per unit. The transfer price is to be based on standard full



cost plus. From what *range* of prices should the transfer price be selected, in order to motivate the managers of both profit centres to both increase output and reduce costs?

### Solution

Any transfer price based on **standard** cost plus will motivate managers to cut costs, because favourable variances between standard costs and actual costs will be credited to the division's profits. Managers of each division will also be willing to increase output above the budget of 400 units provided that it is profitable to do so. Transferring extra units will increase profits:

- (a) for P, provided that the transfer price exceeds the variable cost of \$5 per unit.
- (b) for Q, provided that the transfer price is less than the difference between the fixed selling price (\$15) and the variable costs in Q itself (\$4). This amount of \$11 (\$15 – \$4) is sometimes called **net marginal revenue**.

The range of prices is therefore between \$5.01 and \$10.99.

Let's do a check. Suppose the transfer price is \$9. With absorption based on the **budgeted** output of 400 units what would divisional profits be if output and sales are 400 units or 500 units?

Overheads per unit are  $\$1,200/400 = \$3$ , so the full cost of sales is  $\$(5 + 3) = \$8$  in division P. In division Q, full cost is  $\$(4 + 2) = \$6$ , plus transfer costs of \$9.

At 400 units:

	P \$	Q \$	Total \$
Sales	–	6,000	6,000
Transfer sales	3,600	–	
Transfer costs	–	(3,600)	
Own full cost of sales	(3,200)	(2,400)	(5,600)
	<u>400</u>	<u>0</u>	<u>400</u>
Under/over absorbed overhead	0	0	0
Profit/(loss)	<u>400</u>	<u>0</u>	<u>400</u>

At 500 units:

	P \$	Q \$	Total \$
Sales	–	7,500	7,500
Transfer sales	4,500	–	–
Transfer costs	–	(4,500)	–
Own full cost of sales	(4,000)	(3,000)	(7,000)
	<u>500</u>	<u>0</u>	<u>500</u>
Over absorbed overhead (100 × \$3; 100 × \$2)	300	200	500
Profit/(loss)	<u>800</u>	<u>200</u>	<u>1,000</u>

Increasing output improves the profit performance of both divisions and the company as a whole, and so decisions on output by the two divisions are likely to be **goal congruent**.

## 10.2 Summary

To summarise the transfer price should be set in the range where:

$$\text{Variable cost in supplying division} \leq \text{Selling price minus variable costs (net marginal revenue) in the receiving division}$$

In fact, if there is no external market, and if the transferred item is the major product of the transferring division, there is a strong argument for suggesting that profit centre accounting is a waste of time.

Profit centres cannot be judged on their commercial performance because there is no way of gauging what a fair revenue for their work should be. It would be more appropriate, perhaps, to treat the transferring “division” as a cost centre, and to judge performance on the basis of cost variances.

## 11 Opportunity costs and transfer prices



### Topic highlights

If a profit-maximising output level has been established, the transfer price should be set such that there is not a more profitable opportunity for individual divisions. In other words, transfer prices should include **opportunity costs** of transfer.

Ideally, a transfer price should be set that enables the individual **divisions** to maximise their profits at a level of output that maximises profit for the **company as a whole**. The transfer price which achieves this is unlikely to be a market-based transfer price (if there is one) and is also unlikely to be a simple cost plus based price.

### 11.1 An opportunity cost approach

If optimum decisions are to be taken transfer prices should reflect **opportunity costs**.

- (a) If profit centre managers are given sufficient autonomy to make their own output and selling decisions, and at the same time their performance is judged by the company according to the profits they earn, they will be keenly aware of all the commercial opportunities.
- (b) If transfers are made for the good of the company as a whole, the commercial benefits to the company ought to be **shared** between the participating divisions.

Transfer prices can therefore be reached by:

- (a) recognising the levels of output, external sales and internal transfers that are best for the **company as a whole**, and
- (b) arriving at a transfer price that ensures that all divisions maximise their profits at this same level of output. The transfer price should therefore be such that there is **not a more profitable opportunity** for individual divisions. This in turn means that the opportunity costs of transfer should be covered by the transfer price.

## 12 Transfer pricing when intermediate products are in short supply



### Topic highlights

When an **intermediate resource is in short supply** and **acts as a limiting factor** on production in the supplying division, the cost of transferring an item is the variable cost of production plus the contribution obtainable from using the scarce resource in its next most profitable way.



### Example: Scarce resources

Suppose, for example, that division A is a profit centre that produces three items, X, Y and Z. Each item has an external market.

	X	Y	Z
External market price, per unit	\$48	\$46	\$40
Variable cost of production in division A	\$33	\$24	\$28
Labour hours required per unit in division A	3	4	2

Product Y can be transferred to division B, but the maximum quantity that might be required for transfer is 300 units of Y.

The maximum **external** sales are 800 units of X, 500 units of Y and 300 units of Z.

Instead of receiving transfers of product Y from division A, division B could buy similar units of product Y on the open market at a slightly cheaper price of \$45 per unit.

What should the transfer price be for each unit if the total labour hours available in division A are 3,800 hours or 5,600 hours?

### Solution

Hours required to meet maximum demand:

	<i>Hours</i>
External sales X (3 × 800)	2,400
Y (4 × 500)	2,000
Z (2 × 300)	<u>600</u>
	5,000
Transfers of Y (4 × 300)	<u>1,200</u>
	<u><u>6,200</u></u>

Contribution from external sales:

	X	Y	Z
Contribution per unit	\$15	\$22	\$12
Labour hours per unit	3 hrs	4 hrs	2 hrs
Contribution per labour hour	\$5.00	\$5.50	\$6.00
Priority for selling	3 <sup>rd</sup>	2 <sup>nd</sup>	1 <sup>st</sup>
Total hours needed	2,400	2,000	600

- (a) If only **3,800 hours** of labour are available, division A would choose, **ignoring transfers** to B, to sell:

	<i>Hours</i>
300 Z (maximum)	600
500 Y (maximum)	2,000
	<u>2,600</u>
400 X (balance)	<u>1,200</u>
	<u><u>3,800</u></u>

To transfer 300 units of Y to division B would involve forgoing the sale of 400 units of X because 1,200 hours would be needed to make the transferred units.

**Opportunity cost** of transferring units of Y, and the appropriate transfer price:

Variable cost of making Y	\$ per unit
	24
Opportunity cost (contribution of \$5 per hour available from selling X externally): benefit forgone (4 hours × \$5)	<u>20</u>
Transfer price for Y	<u><u>44</u></u>

The transfer price for Y should, in this case, be less than the external market price.

- (b) If **5,600 hours** are available, there is enough time to meet the full demand for external sales (5,000) and still have 600 hours of spare capacity, before consideration of transfers. However, 1,200 hours are needed to produce the full amount of Y for transfer (300 units), and so 600 hours need to be devoted to producing Y for transfer instead of producing X for external sale.

This means that the **opportunity cost** of transfer is:

- (i) the variable cost of 150 units of Y produced in the 600 “spare” hours (\$24/unit);
- (ii) the variable cost of production of the remaining 150 units of Y (\$24 per unit), plus the **contribution forgone** from the external sales of X that could have been produced in the 600 hours now devoted to producing Y for transfer (\$5 per labour hour). An average transfer price per unit could be negotiated for the transfer of the full 300 units (see below), which works out at \$34 per unit.

	\$
150 units × \$24	3,600
150 units × \$24	3,600
600 hours × \$5 per hour	<u>3,000</u>
Total for 300 units	<u>10,200</u>

In both cases, the opportunity cost of receiving transfers for division B is the price it would have to pay to purchase Y externally – \$45 per unit. Therefore:

	<i>Opportunity cost to A of transfer</i>	<i>Opportunity cost to B of transfer</i>
<i>Maximum labour hours in A</i>	\$	\$
3,800	44	45
5,600	34 (average)	45

In each case any price between the two opportunity costs would be sufficient to persuade B to order 300 units of Y from division A and for division A to agree to transfer them.

## 13 Negotiated transfer prices



### Topic highlights

In practice, **negotiated** transfer prices, **market-based** transfer prices and **full cost-based** transfer prices are the methods normally used.

A transfer price based on opportunity cost is often **difficult to identify**, for lack of suitable information about costs and revenues in individual divisions. In this case it is likely that transfer prices will be set by means of **negotiation**. The agreed price may be finalised from a mixture of accounting arithmetic, politics and compromise.

The process of negotiation will be improved if **adequate information** about each division's costs and revenues is made available to the other division involved in the negotiation. By having a free flow of cost and revenue information, it will be easier for divisional managers to identify opportunities for improving profits, to the benefit of both divisions involved in the transfer.

A negotiating system that might enable **goal congruent plans** to be agreed between profit centres is as follows:

- (a) Profit centres **submit plans** for output and sales to head office, as a preliminary step in preparing the annual budget.
- (b) Head office **reviews these plans**, together with any other information it may obtain. Amendments to divisional plans might be discussed with the divisional managers.
- (c) Once divisional plans are acceptable to head office and **consistent** with each other, head office might let the divisional managers arrange budgeted transfers and transfer prices.
- (d) Where divisional plans are **inconsistent** with each other, head office might try to establish a plan that would maximise the profits of the company as a whole. Divisional managers would then be asked to negotiate budgeted transfers and transfer prices on this basis.
- (e) If divisional managers fail to agree a transfer price between themselves, a head office “**arbitration**” manager or team would be referred to for an opinion or a decision.
- (f) Divisions **finalise their budgets** within the framework of agreed transfer prices and resource constraints.
- (g) Head office **monitors the profit performance** of each division.

## 14 Multinational transfer pricing



### Topic highlights

**Globalisation**, the rise of the **multinational corporation** and the fact that more than **60% of world trade takes place within multinational organisations** mean that international transfer pricing is very important.

### 14.1 Factors to consider when setting multinational transfer prices

The level at which a transfer price should be set is even less clear cut for organisations operating in a number of countries, when even more factors need to be taken into consideration. Moreover, the manipulation of profits through the use of transfer pricing is a common area of confrontation between multinational organisations and host country governments.

Factors to consider	Explanation
<b>Exchange rate fluctuation</b>	The value of a transfer of goods between profit centres in different countries could depend on fluctuations in the currency exchange rate.
<b>Taxation in different countries</b>	<p>If taxation on profits is 20% of profits in Country A and 50% on profits in Country B, a company will presumably try to “manipulate” profits (by means of raising or lowering transfer prices or by invoicing the subsidiary in the high-tax country for “services” provided by the subsidiary in the low-tax country) so that profits are maximised for a subsidiary in Country A, by reducing profits for a subsidiary in Country B.</p> <p>Some multinationals set up marketing subsidiaries in countries with low tax rates and transfer products to them at a relatively low transfer price. When the products are sold to the final customer, a low rate of tax will be paid on the difference between the two prices.</p>

Factors to consider	Explanation
<b>Import tariffs</b>	Suppose that Country A imposes an import tariff of 20% on the value of goods imported. A multinational company has a subsidiary in Country A which imports goods from a subsidiary in Country B. In such a situation, the company would minimise costs by keeping the transfer price to a minimum value.
<b>Exchange controls</b>	If a country imposes restrictions on the transfer of profits from domestic subsidiaries to foreign multinationals, the restrictions on the transfer can be overcome if head office provides some goods or services to the subsidiary and charges exorbitantly high prices, disguising the “profits” as sales revenue, and transferring them from one country to the other. The ethics of such an approach should, of course, be questioned.
<b>Anti-dumping legislation</b>	Governments may take action to protect home industries by preventing companies from transferring goods cheaply into their countries. They may do this, for example, by insisting on the use of a fair market value for the transfer price.
<b>Competitive pressures</b>	Transfer pricing can be used to enable profit centres to match or undercut local competitors.
<b>Repatriation of funds</b>	By inflating transfer prices for goods sold to subsidiaries in countries where inflation is high, the subsidiaries' profits are reduced and funds repatriated, thereby saving their value.

## 14.2 Transfer prices and tax

Tax authorities obviously recognise the **incentive to set transfer prices to minimise taxes and import tariffs**. Many **tax authorities** have the **power to modify transfer prices in computing tariffs or taxes on profit**, although a **genuine arm's-length market price should be accepted**.

For example, in the USA multinational organisations must follow an Internal Revenue Code specifying that transfers must be priced at “arm's length” market values, or at the values that would be used if the divisions were independent companies. Even with this rule, companies have some leeway in deciding an appropriate “arm's length” price.

To meet the multiple objectives of transfer pricing, companies may choose to maintain **two sets of accounting records, one for tax reporting and one for internal management reporting**. The tax authorities may interpret the use of two sets of records as **suggestive of profit manipulation**, however.

**Double taxation agreements** between countries mean that companies pay tax on specific transactions in one country only. If a company sets an unrealistically low transfer price, however, the company will pay tax in both countries (double taxation) if it is spotted by the tax authorities.



### Example: Arm's length transfer price

Suppose division A produces product B in a country where the income tax rate is 30% and transfers it to division C, which operates in a country with a 40% rate of income tax. An import duty equal to 25% of the price of product B is also assessed. The full cost per unit is \$290, the variable cost \$160.

The tax authorities allow either variable or full cost transfer prices. Determine which should be chosen.

## Solution

### Effect of transferring at \$290 instead of \$160

	\$
Income of A is \$130 higher and so A pays $\$130 \times 30\%$ more income tax	(39.0)
Income of C is \$130 lower and so C pays $\$130 \times 40\%$ less income tax	52.0
Import duty is paid by C on an additional \$130, and so C pays $\$130 \times 25\%$ more duty	<u>(32.5)</u>
Net effect (cost) of transferring at \$290 instead of \$160	<u>(19.5)</u>

Conclusion: The company should choose a transfer price of £160.

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## 14.3 The pros and cons of different transfer pricing bases

- (a) A transfer price at **market value** is usually encouraged by the tax and customs authorities of both host and home countries as they will receive a fair share of the profits made, but there are problems with its use:
- (i) Prices for the same product may vary considerably from one country to another.
  - (ii) Changes in exchange rates, local taxes and so on can result in large variations in selling price.
  - (iii) A division will want to set its prices in relation to the supply and demand conditions present in the country in question to ensure that it can compete in that country.
- (b) A transfer price at **full cost** is usually acceptable to tax and customs authorities since it provides some indication that the transfer price approximates to the real cost of supplying the item and because it indicates that they will therefore receive a fair share of tax and tariff revenues.
- (c) Transfer prices at **variable cost** are unlikely to be acceptable to the tax authorities of the country in which the supplying division is based as all the profits are allocated to the receiving division and the supplying division makes a loss equal to the fixed costs incurred.
- (d) In a multinational organisation, **negotiated** transfer prices may result in overall sub-optimisation because no account is taken of factors such as differences in tax and tariff rates between countries.



### Illustration: Example of policy

RBN is a Hong Kong parent company with an overseas subsidiary. The directors of RBN wish to transfer profits from Hong Kong to the overseas company. They are considering changing the level of the transfer prices charged on goods shipped from the overseas subsidiary to Hong Kong subsidiaries and the size of the royalty payments paid by Hong Kong subsidiaries to the overseas subsidiary.

What should the directors of RBN do in order to transfer profit from Hong Kong to the overseas subsidiary?

They should increase both the transfer prices and royalty payments.

To increase the overseas subsidiary's profit, the transfer price needs to be higher (since it is the overseas subsidiary doing the selling) and the royalty payments by the Hong Kong subsidiaries to the overseas subsidiary company should also be higher. Both would add to the overseas subsidiary's revenue without affecting its costs.

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## 15 Subsidiaries in mainland China

Many Hong Kong entrepreneurs and companies have subsidiaries in mainland China. This is due in part to take advantage of the lower production costs which exist in some parts of the Mainland. This lower cost is being eroded as parts of the country become more affluent, particularly the Eastern areas. To address this issue many Hong Kong companies are moving their Mainland operations further into the hinterland.

Among the factors that Hong Kong companies operating Mainland subsidiaries need to consider are the impact of certain items of legislation, including the Labour Law, the Transfer Pricing Regulations, Double Tax Relief, and Withholding Tax issues.

### 15.1 The Labour Law

China's labour laws underwent a major overhaul, the first overhaul in 15 years, when on January 1, 2008, a new Labour Contract Law ("LCL") became effective. Implementing Regulations were adopted in September 2008.

The overall design of the legislation is to protect the rights of employees. The 1995 Labour Laws lacked any mechanism to protect and enforce employee rights. To correct this problem the LCL was adopted to assure that employees have written employment contracts with enforceable terms. There are significant penalties that can be assessed against an employer for failing to conclude written employment contracts with its employees.

The law further gives employees support through the role of the trade unions.

The LCL provides that employers must consult with trade unions on matters relating to the implementation of a new rule or regulation, and that the trade unions serve as a "collective consultation mechanism" with employers to protect the rights of employees as well as guide employees in the negotiation and performance of their employment contracts.

The LCL requires that all employees receive a written employment contract. It also requires the employer to conclude the contract, including obtaining the signature of the employee. The burden is on the employer to ensure that written employment contracts are concluded and signed. Failure to conclude a written employment contract with an employee within 30 days of the employee's commencement of work causes the employer to be liable for twice the salary of the employee. If no written contract is obtained within a year of commencement of work, in addition to being liable for twice the salary, the employment relationship will be deemed an open-ended contract.

From July 2013, China changed the law relating to 'dispatch workers'. Under the system of dispatch working, available workers sign labour contracts with a labour dispatch agency which then 'dispatches' them to a business that is looking for workers. Business using dispatch workers have fewer responsibilities for them than for full-time 'contract' employees, and dispatch workers have also been paid less than contract workers for the same work. When no longer needed, they are easily returned to the labour dispatch agencies without any severance pay. In 2011, it is estimated that there were 37 million dispatch workers in China.

A change to the Labour Contract Law in China in 2013 restricts the use of dispatch workers to specific types of employment, such as temporary employment (less than six months) and requires businesses to apply the rule of 'equal pay for equal work'.

#### 15.1.1 Employment term

The law allows for three kinds of contracts based on the employment term: fixed-term, open-ended and project-based. A fixed-term contract has an agreed upon termination date while an open-ended contract has no termination date. A project-based contract has a termination date based upon completion of the project or task.



### 15.1.2 Mandatory terms of an employment contract

There are a number of mandatory terms required in an employment contract under the LCL. These include such terms as scope and place of work; working hours, rest and leave; social insurance; and labour protection, working conditions, and protection against occupational hazards.

### 15.1.3 Probation period

The LCL has reduced the length of an employee's probation period. If the employment contract is for less than six months, the probation period cannot exceed one month. For employment contracts greater than a year and less than three years, the probationary period can be two months. For contracts greater than three years and open-ended, the probationary period can be six months.

### 15.1.4 Training

Employers often provide professional training to employees. The LCL allows employers to enter into a training agreement with the employee stipulating a service period. In the event of the employee terminating the service period early, the employer can claim liquidated damages against the employee. Liquidated damages include training costs, travel costs and direct expenses.

### 15.1.5 Confidentiality and non-competition

The LCL allows confidentiality provisions included in the employment contract. Non-competition provisions may be included in the employment contract or in a confidentiality agreement, but these are limited to senior management, senior technicians and individuals with confidential obligations. Under the LCL, the employer must pay the employee compensation on a monthly basis during the period of non-competition, which shall not exceed two years. The minimum compensation varies depending upon local regulations.

### 15.1.6 Termination of employment contract

Both employer and employee can terminate the employment contract, but only upon the conditions set forth under the LCL.

Where the employee terminates the employment contract due to the employer being in breach of the LCL, the employee will not be subject to liquidated damages. But if the employer terminates the contract due to the employee's fault, then the employer can seek liquidated damages from the employee.

An employer is entitled to terminate employment upon 30 days' notice to the employee, except under certain circumstances cited in the LCL (e.g. employee is pregnant, worker is suffering from occupational disease, etc.). The LCL also requires that the employer informs the union of the termination.

Termination of the employment contract by the employer triggers severance payment. The usual rate of severance payment is one month of pay for each year of service up to 12 years.

## 15.2 Transfer pricing regulations

### 15.2.1 Hong Kong Regulations

The Inland Revenue Department (IRD) in Hong Kong issued new transfer pricing guidelines on 4 December 2009. These were contained in a 52-page "Departmental Interpretation and Practice Note No. 46" (DIPN 46). This DIPN outlined the IRD's views of the legislative framework for transfer pricing in Hong Kong, the methodologies that taxpayers may apply, the documentation that taxpayers should consider retaining to support their arrangements and some thoughts on (to their mind) transfer pricing related issues such as tax avoidance schemes.

DIPN 46 is significant, in that it signals that transfer pricing has "arrived" in Hong Kong. The IRD has clearly stated that transfer pricing principles apply in Hong Kong, explained what these are and how it expects to apply them.

The overriding principle is that of an arm's length transaction among related parties, such as a Hong Kong company with an operating subsidiary in mainland China. The actual wording in DIPN 46 paragraph 36 is; "The principle requires associated enterprises to charge the same price, royalty and other fee in relation to a controlled transaction as that which would be charged by independent enterprises in an uncontrolled transaction in comparable circumstances. It represents the closest approximation to open market and economic reality and would produce a reasonable allocation of profits and income within a multinational enterprise."

DIPN 46 refers to the OECD Transfer Pricing Guidelines, which identify a set of suggested transfer pricing methods for a variety of circumstances. These comprise the traditional transaction methods; the comparable uncontrolled price method, the resale price method, and the cost plus method. They also extend to the transactional profit methods; the profit-split method and the transactional net margin method, which are considered to satisfy the arm's length principle.

### 15.2.2 Mainland China Regulations

The transfer pricing regulations in China reflect the arm's length principle. Allowable transfer methods "include the comparable uncontrolled price method (CUP method), the resale price method, the cost plus method, the transactional net margin method, the profit split method, and other methods in compliance with the arm's length principle".

China's tax authorities have strengthened transfer pricing enforcement efforts and issued guidance to taxpayers about a number of issues. The impetus, in part, has been the belief that transfer pricing has been used improperly, especially by some foreign investment companies, to shift profits out of China and avoid tax liabilities.

As a result, the tax authorities are scrutinising taxpayers' transfer pricing policies and practices closely and proposing much larger adjustments. These adjustments often result in an additional tax liability, a shortening of the remaining life of tax holidays and, in some cases even more serious consequences.



#### Example: Transfer pricing between mainland China and Hong Kong

Peter Yeung (CPA), a newly appointed Management Accountant at IT Products Limited is considering ways to impress his boss, CFO Pamela Soon (CPA). Peter is aware that IT sources a significant proportion of their products from suppliers in Xiamen in mainland China, and ships them to IT in Hong Kong. He is also aware that corporate income tax rates in Hong Kong are 16.5%, whereas they are 25% in mainland China.

This knowledge has led him to consider suggesting to Pamela that IT might look at establishing a wholly-owned merchandising subsidiary company in mainland China. This company would purchase products from Xiamen suppliers and on-sell them to IT in Hong Kong. He decides to research this possibility and put together a proposal to submit to Pamela. This proposal would involve the idea that the majority of profits could potentially be located in the Hong Kong company with a view to minimising overall taxes for the IT Group.

Peter is aware that there may be some ethical, commercial and financial issues in relation to this proposal. It would also need to be acceptable to the Inland Revenue Department in Hong Kong, which essentially requires transfer prices to be at arm's length. In order to develop a case for his idea, Peter has focused on a major product line – hard disk drives (HDD).

Peter has sourced the following representative data in relation to the HDD product line:

Input (HK\$ monetary units)	Hong Kong
Unit cost in mainland China	\$1,000
Unit cost to freight to Hong Kong (paid by IT in Hong Kong)	\$20
Selling price in Hong Kong	\$2,250
Annual sales volume	20,000

Peter has decided to test the effect of this scenario by examining two possible approaches to pricing the transfers, one – cost in mainland China plus 5%, two – cost in mainland China plus 100%.

*Required*

Assume the role of Peter Yeung and prepare a report to Pamela Soon which contains the following sections:

- (a) A quantitative analysis of the potential impact of each of the two transfer pricing proposals on the overall after-tax profits of IT.
- (b) Brief bullet point notes on the following:
  - (i) The likely acceptability of each of the two transfer pricing proposals to the Hong Kong Inland Revenue Department and the China SAT regimes on transfer pricing.
  - (ii) The impact of each of the two transfer pricing proposals on the evaluation of the performance of management in the Hong Kong company and the China subsidiary company.
  - (iii) Any other ethical, commercial and financial issues relating to the proposals.

**Solution**(a) **Quantitative analysis****Input (HK\$ monetary units)**

Unit cost in China	\$1,000
Unit cost to freight to destination	\$20
Selling price in Hong Kong	\$2,250
Corporate income tax in China	25.00%
Corporate income tax in Hong Kong	16.50%
Customs tariff in destination	0.00%
Annual sales volume	20,000

**Transfer Price 1:****Cost plus 5%**

	<i>China</i>		<i>Hong Kong</i>		<i>Total</i>
	<i>Unit</i>	<i>20k Units</i>	<i>Unit</i>	<i>20k Units</i>	
	\$	\$	\$	\$	\$
Selling price	1,050	21,000,000	2,250	45,000,000	
Cost (or transfer price plus freight)	1,000	20,000,000	1,070	21,400,000	
Profit Before Tax		1,000,000		23,600,000	
Income Tax (25% and 16.5%)		250,000		3,894,000	
Profit After Tax		750,000		19,706,000	20,456,000

**Transfer Price 2:****Cost plus 100%**

	<i>China</i>		<i>Hong Kong</i>		
	<i>Unit</i>	<i>20k Units</i>	<i>Unit</i>	<i>20k Units</i>	
	\$	\$	\$	\$	
Selling price	2,000	40,000,000	2,250	45,000,000	
Cost (or transfer price plus freight)	1,000	20,000,000	2,020	40,400,000	
Profit Before Tax		20,000,000		4,600,000	
Income Tax (25% and 16.5%)		5,000,000		759,000	
Profit After Tax		15,000,000		3,841,000	18,841,000
Difference in favour of cost plus 5%					<u>1,615,000</u>

(b) **Brief bullet point notes**

Acceptability to Inland Revenue Department and SAT:

- The Inland Revenue Department in Hong Kong and the SAT in China does allow the cost plus method to be used for transfer pricing.
- However, the Regulations require that the transfer price which results must be based on the equivalent of an arm's length transaction. In particular, the Hong Kong Regulations state: "The cost plus method uses the costs incurred by the supplier in a controlled transaction. An appropriate cost plus mark-up is added to this cost, to make an appropriate profit in light of functions performed taking into account assets used and risks assumed and the market conditions. What is arrived at after adding the cost plus mark-up to the above costs may be regarded as an arm's length price of the controlled transaction."
- The cost plus 5% price proposed in the quantitative analysis above is unlikely to be approved by the Inland Revenue authorities in either China or Hong Kong.

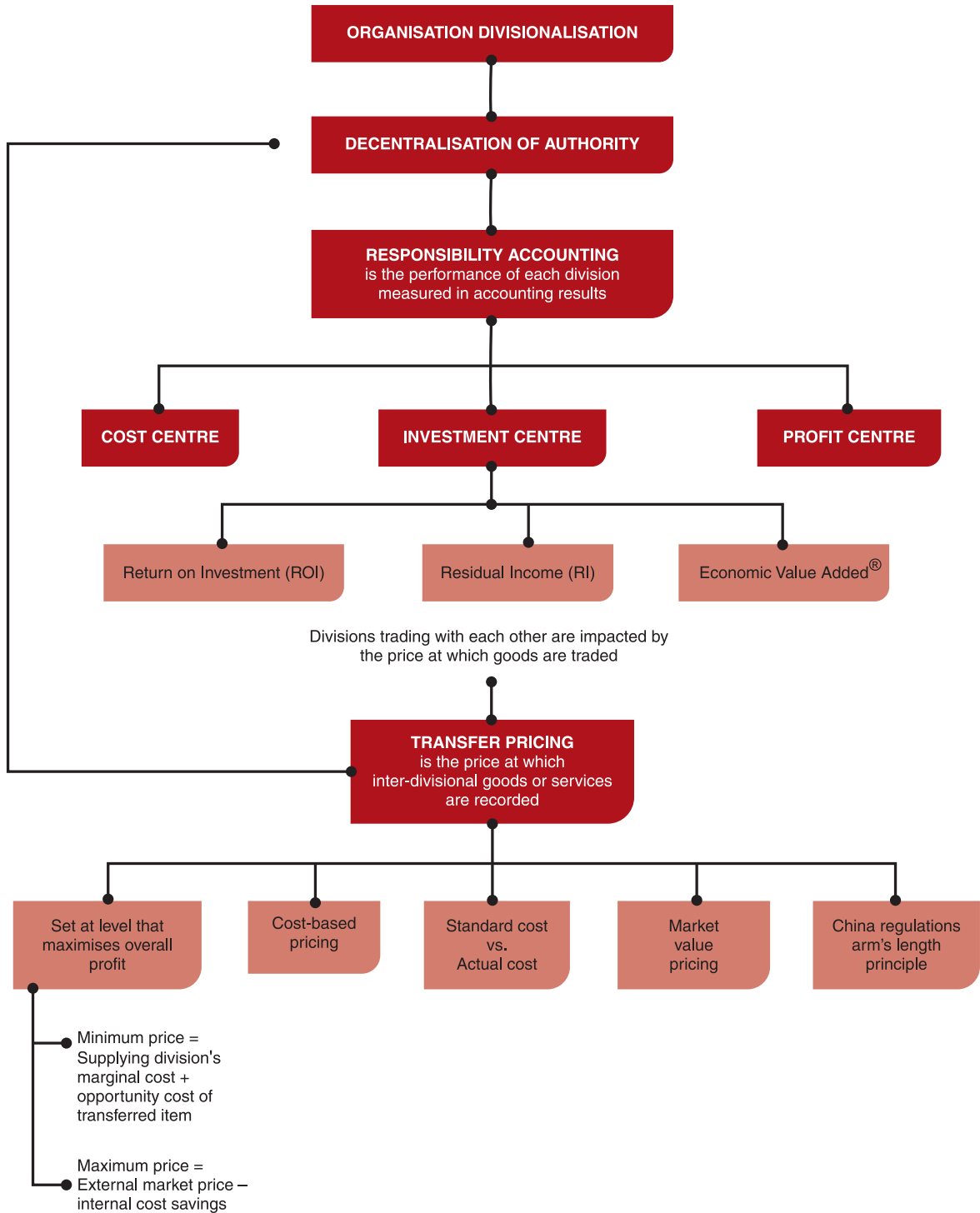
Impact on performance evaluation:

- When transfer prices are designed to maximise the company-wide after-tax profits, care must be taken in evaluating the performance of participating subsidiaries and their management.
- If a cost plus 5% transfer price is used, substantially more of the total profits reside in the Hong Kong company rather than in the China subsidiary. This issue will be particularly relevant if the managers of the subsidiaries within the IT Group are paid bonuses on the basis of their profits. Clearly the managers of the China subsidiary would not be pleased with the cost plus 5% price, as that would have the effect of lowering the subsidiary's profit, and hence the managers' bonuses.
- If transfer prices are imposed on operating subsidiaries by top management, other ways must be found to evaluate the performance of the subsidiaries and their management.

Other ethical, commercial and financial issues:

- There is a potential ethical issue relating to a Hong Kong CPA devising a scheme which may contravene the Inland Revenue Department's Transfer Pricing Regime. Only if the transfer price clearly meets the strictures of the Regime, preferably via an Advanced Pricing Agreement, will there be no ethical issue to address. Otherwise the scheme may result in both Peter Yeung and Pamela Soon falling foul of the HKICPA *Code of Ethics*, particularly those sections of the *Code* relating to integrity, objectivity, and professional competence and due care.
- Among the potential commercial and financial issues are:
  - the costs of setting up and administering the proposed Mainland subsidiary company. These costs have not been factored into the analysis in part (a).
  - the impact of possible exchange rate fluctuations has not been addressed.

# Topic recap



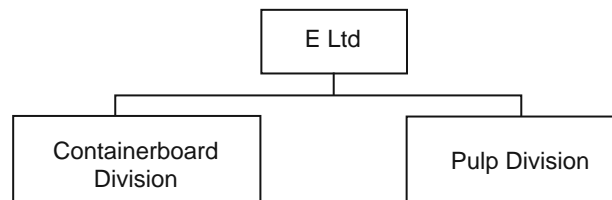
## Exam practice



## Containerboard Division

45 minutes

E Ltd has just acquired a company that manufactures containerboard. This newly acquired company will be treated as a profit centre (the “Containerboard Division”) with full authority for purchase decisions. In other words, the Containerboard Division can purchase internally within the group or from external suppliers, depending on price and quality. Currently, the Containerboard Division is purchasing 5,000 tons of pulp per year from a supplier at a cost of \$80 per ton, less a 10% quantity discount.



The Containerboard Division has approached the Pulp Division (a subsidiary of E Ltd) about internal transfer pricing issues. Currently, the Pulp Division is operating at full capacity of 50,000 tons per year.

It sells all its pulp to a few major customers at \$80 per ton. At year-end, the management team will be rewarded according to the performance of the company, which is 10% of residual value (RI).

RI is a measure of the operating profit minus the cost of the division's capital.

Description	Pulp Division
Production capacity (tons per year)	50,000
Utilised capacity (tons per year)	50,000
Market price (HK\$ per ton)	80
Variable production cost (HK\$ per ton)	25
Fixed cost (HK\$ per ton)	15
Operating profit (HK\$ per ton)	40
Capital employed (HK\$)	4,000,000
Cost of capital	12%
Performance bonus (% of residual income)	10%

### Required

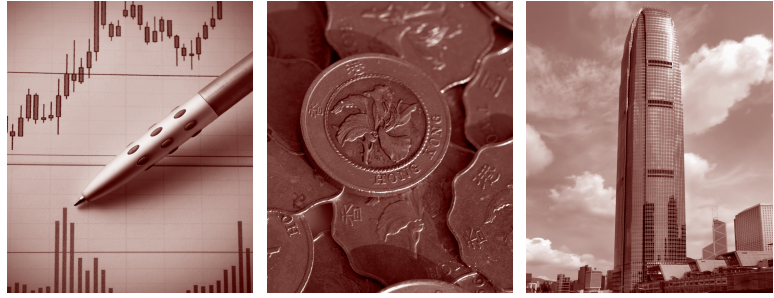
- (a) Given that all the production requirements have been *fully utilised*, the Pulp Division sells all its pulp to outside customers for \$80 per ton:
- (i) Assume that the Pulp Division is autonomous in pricing decisions.
    - (1) Comment on the possibility of agreeing an internal transfer price with the Containerboard Division. Justify your comments with calculations.
    - (2) Calculate the Pulp Division's operating profit.
    - (3) Calculate the Pulp Division's performance bonus.
    - (4) Is the decision by the Pulp Division sub-optimal (i.e. of less benefit) to the group as a whole?

- (ii) Following instructions from head office (E Ltd), assume that the Pulp Division agrees to transfer 5,000 tons to the Containerboard Division at \$72 per ton. In other words, only 45,000 tons would be sold to outside customers.
- (1) What will the effect be on the operating profit of the Pulp Division, Containerboard Division and the company as a whole?
  - (2) Calculate the Pulp Division's performance bonus.
  - (3) Is head office's decision to give instructions on the transfer price correct?
- (10 marks)**
- (b) Due to unforeseen adverse business situations, the Pulp Division can *only utilise* 30,000 tons production capacity in the year. However, it can still sell all its pulp to outside customers for \$80 per ton:
- (i) Assume that the Pulp Division is autonomous in pricing decisions.
- (1) Comment on the possibility of agreeing an internal transfer price with the Containerboard Division. Justify your comments with calculations.
  - (2) What will the effect be on the operating profit of Pulp Division, Containerboard Division and the company as a whole?
  - (3) Calculate the Pulp Division's performance bonus.
  - (4) Is the decision by the Pulp Division sub-optimal (i.e. of less benefit) to the group as a whole?
  - (5) For decision-making purposes, what will be the acceptable range of transfer price that the Pulp Division can charge the Containerboard Division? Explain the rationale.
- (ii) Following instructions from the head office (E Ltd), assume that the Containerboard Division is required to purchase 5,000 tons of pulp at \$80 per ton.
- (1) What will the effect be on the operating profit of the Pulp Division, Containerboard Division and the company as a whole?
  - (2) Calculate the Pulp Division's performance bonus.
  - (3) Is head office's decision to give instructions on the transfer price correct?

**(15 marks)**

**(Total = 25 marks)**

**HKICPA September 2007 (amended)**



## Part D

# Treasury operations

The emphasis in this section is on an in-depth understanding of the three key functions of treasury operation, comprising liquidity management, financing and financial risk management. The purpose of this section is to develop the candidates' ability to apply various financial ratios to analyse working capital and financial position; to evaluate liquidity and dividend policy; to identify and manage financial risks and to recommend possible actions to improve the company's financial position.







## chapter 7

# Treasury management

### Topic list

- 1 Introduction to treasury management
- 2 Information needs in a changing environment
- 3 The structure of the treasury function
- 4 Treasury as a cost centre or a profit centre
- 5 Treasury policies requiring board level approval
  - 5.1 Financial policy
  - 5.2 Funding
  - 5.3 Banking
  - 5.4 Liquidity
  - 5.5 Foreign exchange
  - 5.6 Interest rate hedging policy
  - 5.7 Instruments and techniques
  - 5.8 Other policy areas
- 6 Monitoring the risk profile in a changing environment
  - 6.1 Treasury performance measurement
  - 6.2 Monitoring and reporting
  - 6.3 Frequency of board reporting
  - 6.4 Treasury management information systems
- 7 Recommended appropriate actions for risk management: a case study
  - 7.1 CITIC Pacific: background
  - 7.2 Foreign exchange losses in 2008
- 8 Treasury performance and reporting
  - 8.1 Background
  - 8.2 Treasury performance measures
- 9 Auditing the treasury function
- 10 Treasury and external banker relations

### Learning focus

This chapter covers all the essential operations performed within a treasury function, how that function is structured and how its performance is audited and assessed.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Treasury function</b>		
Outline the objectives and operations of a treasury function in an organisation:		
<b>5.01</b>	<b>Objectives and internal management</b>	2
5.01.01	Explain the key objectives of treasury management	
5.01.02	Explain the different approaches to structuring and managing treasury activities	
<b>5.02</b>	<b>Information systems – internal and external</b>	2
5.02.01	Advise on the main steps and issues to be considered in selecting an information system	
5.02.02	Explain how an organisation can use information systems to identify the internal and external factors that will impact on financial management, the treasury function and risk management	
<b>5.03</b>	<b>Controls</b>	2
5.03.01	Explain how the performance of the treasury function can be controlled and measured	
5.03.02	Recommend appropriate quantitative and qualitative measures of risk and performance that can be used to monitor treasury activities	
<b>5.04</b>	<b>Governance, audit and reporting</b>	2
5.04.01	Identify the key areas of treasury management that require board level decisions	
5.04.02	Outline reporting information that can be used for monitoring and control purposes	
5.04.03	Discuss the rationale for auditing treasury	
<b>5.05</b>	<b>Relationship management</b>	2
5.05.01	Identify the implications of external developments on the finance and treasury function and recommend appropriate actions for risk management	
5.05.02	Explain the importance of two-way relationships between treasury and key external parties	

# 1 Introduction to treasury management



## Topic highlights

The treasury function is responsible for the following areas:

- **Liquidity (i.e. working capital) management:** Measuring, monitoring and managing cash flow to protect solvency
- **Funding (i.e. long-term finance):** Creating an optimal mix of equity and debt to meet capital expenditure and investment requirements
- **Financial risk management:** Identifying potential risks and their impact and taking action to mitigate these

The treasury management function within an organisation is responsible for the management of the cash flows of the company, which is the most important measure of the financial health of a company.

Treasury tends to concentrate on the physical flow of funds, cash and financial risk as compared to accounting and corporate finance, which deal predominantly with the recording or evaluation of transactions.



## Key term

The essence of **treasury management** is the management of company cash flows and the risks of these cash flows to determine how much of the company's cash flow is to be placed at risk.

The stability of the company's cash flows to achieve the company's profit and solvency objectives is the key aim of treasury.

Working capital management is covered in detail in Chapter 8 and Risk management is covered in detail in Chapter 11.

# 2 Information needs in a changing environment

Financial markets can move quickly in response to political and economic forces. The Asian currency collapse in the late 1990s demonstrated the dangers of significant financial market movements. Perceptions of the importance and potential impact of information that becomes available, or is anticipated, cause financial markets to move in an upward or downward direction. For this reason, the corporate treasurer must know where to gain information on a relevant and timely basis.

To develop a company's relationship with its bankers, the treasurer should encourage the banker to understand the key issues relating to the company so that the banker understands what information is both required and vital to the company.



## Topic highlights

The corporate treasurer must be able to access the key information that assists in the management of cash flows and risk management, especially relating to financial markets, taxation and financial reporting.

Information can come from many sources:

- (a) **Commercial banks:** These provide primarily domestic economy information. The corporate treasurer should ensure that the company has access to the information sources of the bank and that it is kept abreast of key issues that could affect its cash flows and financial risks, in domestic financial markets (for example, borrowing, investment, foreign exchange, risk management and so on).
- (b) **International banks:** These have the ability to deal in many international financial markets. They collect timely information so that they can manage their own risk profiles (for example, employing an economist to monitor country risk around the globe). The corporate treasurer should ensure that the company is informed of relevant market data in the markets relevant to the company's operations, cash flows and risk profiles.
- (c) **Investment and merchant banks:** These, in addition to having information of a global nature, have access to the latest financing techniques, which may be important in the development of suitable strategies for merger, acquisition, equity and debt fund raising, divestment, financing and risk management.
- (d) **Stockbrokers:** These are a key source of information about the equity market. This could be vital for issues relating to capital structure, cost of capital and the willingness of investors to purchase the company's equity.
- (e) **Accountants:** Access to the profession and professionals who can keep the company abreast of all developments in reporting and disclosure, including the development of new accounting standards, is essential to ensure that developments in the accounting field do not impinge on the company's risk management and disclosure practices and to ensure there is no illegality in reporting through lack of knowledge (ignorance). The professional pronouncements issued by HKICPA are important. These include Exposure Drafts that may impact on treasury activity reporting. The accounting issues will usually be handled by the accounting function but the corporate treasurer needs to understand the accounting impact of actions taken and so requires strong internal links to the accounting function.
- (f) **Taxation experts:** These professionals can provide timely information to assist in the management of taxation cash flow.
- (g) **Professional bodies:** These provide a forum for people with similar professional backgrounds to meet to discuss issues of importance and interest, initiate lobby groups on areas of concern and interest, provide publications among other activities. The networking part of membership is a key source of information.
- (h) **Consultants:** These are experts in their particular field and are a good source of information.
- (i) **Other information sources:** There are many other external sources of information including central banks, government agencies, financial market information vendors (for example, Thomson, Reuters and Bloomberg), financial market associations (for example, The Stock Exchange of Hong Kong Ltd), universities, published books and articles. The Internet is a source of information on financial markets. There are many reputable sites that provide information. Three suggestions are:



- [www.tma.org.hk/en\\_market\\_info.asp](http://www.tma.org.hk/en_market_info.asp)
- [www.gtnews.com/](http://www.gtnews.com/)
- [www.treasury-management.com](http://www.treasury-management.com)

### 3 The structure of the treasury function



#### Topic highlights

The structure of treasury is integral in the policy formulation stage. Smaller companies often do not have a specific treasury department, the finance and accounting areas performing the treasury tasks.

Larger companies tend to have a specific treasury department.

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Treasury tends to concentrate on the physical flow of funds, cash and financial risk as compared to accounting and corporate finance, which deal predominantly with the recording or evaluation of transactions. In general, treasury usually adopts a more active role in the organisation than other sections of the finance function.

Some companies centralise their treasury department, others do not, preferring a more decentralised approach.

There are these **advantages** to having a **specialist centralised treasury department** with control over the treasury functions of the entire group:

- (a) It avoids having a mix of cash surpluses and overdrafts in different localised bank accounts.
- (b) It facilitates bulk cash flows, so that lower bank charges can be negotiated.
- (c) Larger volumes of cash are available to invest, giving better short-term investment opportunities (for example, money markets, high-interest accounts etc.).
- (d) Any borrowing can be arranged in bulk, at lower interest rates than for smaller borrowings, perhaps on the global bank or capital markets.
- (e) Foreign exchange risk management is likely to be improved in a group of companies. A central treasury department can match foreign currency income earned by one subsidiary with expenditure in the same currency by another subsidiary. In this way, the risk of losses on adverse exchange rate movements can be avoided without the expense of forward exchange contracts or other hedging methods.
- (f) A specialist treasury department can employ experts with knowledge of dealing in forward contracts, futures, options, Eurocurrency markets, swaps and so on. Localised departments could not have such expertise.
- (g) The centralised pool of funds required for precautionary purposes will be smaller than the sum of separate precautionary balances which would need to be held under decentralised treasury arrangements.
- (h) Through having a separate profit centre, attention will be focused on the contribution to group profit performance that can be achieved by good cash, funding, investment and foreign currency management.

There are these possible **advantages** to **decentralised cash management**:

- (a) Sources of finance can be diversified and can match local assets.
- (b) Greater autonomy can be given to subsidiaries and divisions because of the closer relationships they will have with the decentralised cash management function.
- (c) A decentralised treasury function may be more responsive to the needs of individual operating units.
- (d) Since cash balances will not be aggregated at group level, there will be more limited opportunities to invest such balances on a short-term basis.

## 4 Treasury as a cost centre or a profit centre

If the treasury function is established as a **cost centre**, the costs of the department can be charged to the various other departments/subsidiaries on some basis that is seen to fairly reflect the benefits the other department/subsidiary obtains from the treasury department and the use it makes of the treasury services. If it is not possible to allocate costs on a basis that is seen to be fair, the company may simply treat the costs as a head office expense.

Alternatively, the treasury function could be established as a **profit centre** if revenues arising from treasury can be identified. Revenues could be recognised as follows:

- (a) Treasury could charge all other departments/subsidiaries and other head office departments a fee for its services based on current market rates (the total value charged to the group as a whole should exceed the treasury's costs enabling it to report a profit).
- (b) Treasury could also earn a profit through its management of the group's exposure to interest rate and foreign exchange risk. Specialists at the treasury department may decide not to hedge group exposure to these risks in certain circumstances. If interest rates or exchange rates subsequently move in the company's favour the benefits could be credited to the treasury department. On the other hand, if such decisions resulted in subsequent losses these would be charged to treasury.
- (c) Deciding not to hedge all currency and interest rate risks. Experts in the treasury could decide which risks not to hedge, hoping to profit from un-hedged favourable exchange rate and interest rate movements.
- (d) If the treasury department decided to take on additional exchange rate or other risks purely as a speculative activity (for example, writing options on currencies or on shares held) the profits or losses from these transactions could be credited or debited to the treasury function. The board must specify the policy framework within which such speculative trades are carried out and stringent procedures would need to be in place to ensure that these guidelines are adhered to.

The following **advantages** may result from establishing the treasury function as a **profit centre**:

- (a) Treasury function may be able to make a significant contribution to group profit through undertaking some of the actions described above.
- (b) Motivation of the specialists employed in treasury may be improved, as they will now be assessed in terms of their contribution to group profit (as compared with the situation if treasury is treated as a cost centre and its costs are simply allocated throughout the group).

The **disadvantages** of establishing a separate treasury department as a **profit centre** are as follows:

- (a) The group will incur additional administrative cost if it has to collect data on the revenues of the treasury function as well as its costs.
- (b) Problems are likely to arise in establishing a satisfactory charge for treasury's services to other departments/subsidiaries.
- (c) The risks of speculation. In practice, many treasury functions have run into difficulties speculating in derivative products and then have tried to trade their way out of the problem. The result has been some disastrous and well-publicised losses. If the group treasury function is to be allowed to engage in such speculative trades it must be closely supervised by trained management to ensure that risk exposure limits are not exceeded.

## 5 Treasury policies requiring board level approval

### 5.1 Financial policy



#### Topic highlights

Financial policy should address gearing and maturity issues, fixed and variable interest rate obligations, foreign exchange risk management, dividend policy and covenants. The company requires as much operational and financial flexibility as possible.

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Changes in financial policy are the prerogative of the board. Treasury personnel must be encouraged to use their knowledge of financial markets and of internal techniques to indicate useful potential changes to policy.

### 5.2 Funding



#### Topic highlights

The board should have regular, informed discussions about funding possibilities to put currency, maturity, cost and equity/debt character into a wider context.

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This lets the board delegate fund raising decisions and actions to treasury. Treasury, however, must still have final board approval for:

- the types of instruments that may be used in debt, investment and risk management
- their use, and under what conditions they may be used.

Board policy statements should clarify what types of covenants it is prepared to agree to in loan documentation and the board should seek regular confirmation of compliance by treasury with loan covenants, representations and warranties.

### 5.3 Banking

Banks chosen by the treasurer must be able to meet the needs of the organisation, both domestically and internationally. The board should approve the organisation's list of bankers annually while resisting the temptation to interfere in the relationships.

### 5.4 Liquidity

The board must approve of commercial paper programmes. The board should also approve treasury's policy on the investment of surplus funds, the choice of instruments, the list of institutions used, the maximum amount and maturity that can be placed with one counterparty, any hedging, swaps and other financial instrument arrangements entered into.

### 5.5 Foreign exchange

Treasury policies in this area must be clearly explained to and understood by the board. Treasury must alert the board to external changes and internal strategic developments, which may have long-term implications for the organisation and to make proposals for managing them. The board must approve the hedging policy, the company's foreign exchange management philosophy and its attitude to risk.



## 5.6 Interest rate hedging policy

Managing interest rate exposure requires a forward projection to be taken of the prospective future movements in interest rates. The board should fully consider the risks involved in the company's activities and develop a level of awareness among senior management of possible unexpected losses that may result from adverse movements in interest rates.

An explicit board policy is ideal. From the board's viewpoint, staff are made aware of its philosophy and objectives and are provided with the working guidelines to achieve those objectives.

## 5.7 Instruments and techniques

In all areas of funding and liquidity, foreign exchange, interest and commodity price risk, the board must understand and approve the strategies and instruments used, setting appropriate limits for their use. The board needs to ensure that treasury has not sacrificed long-term flexibility or survival for short-term gain, especially in view of the current financial markets situation.

The board must examine the company's activities and structure to determine the types of risks to which it is exposed. It should estimate the size of these exposure risks, providing an indicator as to their importance to the overall operations and financial performance of the company.

## 5.8 Other policy areas

Other common areas that need to be approved by the board on an *ad hoc* basis include:

- financing major projects (domestic and international)
- performance bonds and guarantees
- off-balance-sheet financing
- acquisitions and sales of assets and liabilities
- controls and performance measurement

# 6 Monitoring the risk profile in a changing environment

## 6.1 Treasury performance measurement



### Topic highlights

Monitoring the risk profile in changing financial markets and business is largely done via comparing actual performance against any performance benchmark, such as the approved budget in the business plan.

The act of measuring (and monitoring) performance and risk profile is one of the fundamental responsibilities of a corporate treasury function. This can be problematical due to the:

- (a) difficulty of obtaining information on managerial and risk performance measures
- (b) need to focus on current profit-making decisions rather than backward-looking performance measures
- (c) lack of industry standards by which to judge performance
- (d) moving targets in a dynamic, fast-moving industry

## 6.2 Monitoring and reporting



### Topic highlights

Regular reports should include a description of conditions in the financial markets over the period, make comparisons with previous periods and highlight any potential influence on the company's performance that may require adjustments to policy.

Typically the following areas will require monitoring:

- Liquidity and funding risk
- Interest rate risk
- Foreign exchange risk
- Commodity price risk
- Credit risk
- Financial structure
- Market conditions
- Compliance with corporate policy
- Financial results of treasury transactions

For each key measurable exposure identified, the report should include:

- (a) the current level and nature of hedged and un-hedged exposures
- (b) sensitivity analysis showing the effect of movements in key variables on the company's exposures and positions. This could be done as a prospective income statement effect or on a "mark to market" basis, revaluing current exposure to current market rates.

## 6.3 Frequency of board reporting

A listed company board would normally meet monthly while small- or medium-sized companies (with only executive directors) may meet quarterly. The frequency of treasury reporting will depend on the nature of the information required in a particular company, including the degree and magnitude of risks. Results of transactions and assessment of risk exposures will be reported to the monthly or other meeting at which financial results are reviewed. Exception reporting may be required between meetings if significant occurrences have, or could have, a major impact on financial results (for example, a dealer exceeding authorised limits).

Some of these reports may be:

- (a) **daily reports** of any significant impact on the business arising from movements in market rates as they occur, or substantial fluctuations in the value of completed transactions
- (b) **monthly reports** showing profit or loss calculations, market conditions, performance against benchmarks, sensitivity analysis and compliance
- (c) **quarterly reviews** of policy in light of financial markets or other external influences
- (d) **annual reviews** of policies, suitability of treasury objectives and risk parameters, funding plan and treasury performance

## 6.4 Treasury management information systems

Many large organisations make use of an automated Treasury management system (TMS). A TMS can be used to process transactions; forecast and manage cash positions; assist with financing decisions; and provide reporting information. Such systems facilitate the flow of data internally through the organisation and may also interact externally with the information systems of the organisation's bank and other financial institutions.

A good TMS can increase treasury efficiencies, improve treasury controls and financial risk management, and even reduce the cost of borrowings through better cash management.

In selecting a TMS, key factors to consider (in addition to cost) are:

- functionality (ability to meet critical business requirements)
- flexibility (ability to adapt to a rapidly changing environment)
- ability to integrate with other systems internally and externally
- security of information
- available software support

## 7 Recommended appropriate actions for risk management: a case study



### 7.1 CITIC Pacific: background

CITIC Pacific, formerly the China International Trust and Investment Company, is a Hong Kong based conglomerate holding company. It is 29% owned by the State-owned CITIC Group. This Group was established in China in 1979 with the approval of Deng Xiaoping. It was set up originally to “attract and utilise foreign capital, introduce advanced technologies, and adopt advanced and scientific international practice in operation and management”. It now owns 44 subsidiaries, including many banks, in China, Hong Kong, USA, Canada, Australia and New Zealand.

CITIC Pacific, a major non-banking subsidiary of the CITIC Group, is engaged in special steel manufacturing and iron ore mining, which supplies the raw material needed for industry in mainland China. CITIC Pacific's operating segments include special steel, iron ore mining, property, aviation, civil infrastructure and power generation. CITIC Pacific's subsidiaries include DCH Holdings and CITIC1616 Holdings. DCH is a distributor of motor vehicles, food and consumer products. CITIC 1616 owns and operates a telecoms hub.

### 7.2 Foreign exchange losses in 2008

It was disclosed in October 2008 that CITIC Pacific had lost HK\$15 billion due to “unauthorised trades” in foreign exchange. These trades were hedges with a contract value of AU\$ 9 billion against the Australian dollar, taken out to cover an AU\$1.6 billion prospective acquisition and related capital expenditure. Substantial losses were incurred on the foreign exchange contracts when the Australian dollar declined against the US dollar from 0.985 to less than 0.70.

Apparently the Board of CITIC Pacific became aware of the situation on 7 September 2008, but disclosure was not made to the financial markets until after trading in its shares was suspended on 20 October 2008. The company and the SFC faced questions by legislators about the lengthy delay in the disclosure after it became clear that on 9 September the company stated; “The Directors are not aware of any material adverse change in the financial or trading position of the Group since 31 December 2007”. When the shares resumed trading, the share price had fallen by approximately 75% since the previous close.

As a result of this, two officers of the company were forced to resign in disgrace. Due to her involvement in the foreign exchange losses, the Chairman's daughter was demoted – the Chairman claimed that his daughter had not informed him about the situation before its discovery. The Managing Director was temporarily relieved of a number of high profile public positions with effect from 24 October 2008.

On 3 April 2009, trading was again suspended in the company's shares, and the Hong Kong police searched the company's premises. This was part of an investigation into whether the company's directors had made false statements about the foreign exchange contracts, as well as company announcements made between July 2007 and March 2009. On 8 April the Chairman resigned, citing the effect of the police visit to the company on public opinion, and the Managing Director resigned at the same time. They were replaced by the Vice-Chairman and President of the CITIC Group.

It is clear that there were severe shortcomings in the risk management and internal control procedures of CITIC Pacific. It is believed that these have now been remedied with a view to preventing a repeat of the problems encountered.

## 8 Treasury performance and reporting

### 8.1 Background



#### Topic highlights

Strategic performance management involves evaluating the performance of all units in the company, including risk management. Although risk management is increasingly a joint responsibility of all senior management, it is traditionally part of the treasury function.

Treasuries within many companies are established as cost centres and use their treasuries to manage financial risk and co-ordinate financial resources within the company, often as a back-office administrative function. Treasury generally has responsibility to manage relationships with banks and provide new sources of capital to enable the company to concentrate on its core business. In a more proactive organisation, the treasury can act as an internal consultant to provide analytical financial assistance to operating divisions and subsidiaries.

It is quite common today for treasury to assume responsibility for a wider range of risk management beyond simply liquidity, foreign currency and interest rates. The treasurer's skills are now being used to assume responsibility for commodity, insurance and company-wide risk management.

Many major companies have treasury operations as profit centres due to a significant amount of the organisation's capital and cash flow requiring management of exchange and interest rate risks. They sometimes also engage in investment and/or trading of equities, finance and commodity instruments.

### 8.2 Treasury performance measures



#### Topic highlights

The treasury function should be subject to the same structures of performance measurement as other functions in the firm. There should be benchmarks for measuring performance.

This is important to be able to:

- compare current performance against previous results
- allocate resources
- clarify objectives and definition of roles and responsibilities
- motivate staff

If operated as a **profit centre**, treasury performance measures might include:

- overall profitability (for example, return on capital employed)
- actual profit generated versus budget
- profitability of each type of instrument traded within given time periods
- profitability for each dealer and section
- number of times that pre-set authority dealing and/or counterparty limits breached

If operated as a **cost centre**, treasury performance measures might include:

- return on capital employed
- actual profit or loss generated versus budgeted rate
- measurement of actual versus budget interest rate return
- measurement of actual versus budget foreign currency rate obtained

## 9 Auditing the treasury function

Ensuring control of the treasury environment is a function of ensuring that the risks entered into by treasury are under control. This requires an understanding of what treasury is and how it is managed, how treasury operations should be monitored and controlled and what the implications are both for internal and external auditors.

One of the key controls in ensuring compliance in the treasury operation is an effective internal audit process. This then provides direction for the role of external audit in ensuring that the risks are under control. The roles of the internal auditors and external auditors are:

- An internal audit is geared more towards the objectives and goals of management.
- An external audit is geared towards the objectives of parties external to the company.

Internal audit duties are periodic and continual throughout the year. Internal auditors may have a far broader assignment scope than external auditors and may include performance evaluation. Checking procedures performed within the treasury department should be performed on a daily, weekly and monthly basis and operation of these procedures confirmed through internal audit. On the other hand, external audits are generally once a year and have a more clearly defined scope.

## 10 Treasury and external banker relations

The banker/corporate relationship has undergone significant transformation over the past twenty years due to vastly increased competition in the banking and financial services industry. This is even more pronounced today in view of the recent financial tsunami and its effects on companies.

Banks are running their businesses with higher regulatory capital to guard against market risk and liquidity risk. They are also careful in avoiding concentration risk through lending to one particular customer or industry sector. Therefore treasurers will expect a higher cost and banks to be more discriminate in their choice of lending. As a result treasurers have to build up strong relationships with banks to ensure that they can obtain secured funding support. They may wish to diversify the number of banks they deal with so that their ability to borrow may not be compromised.

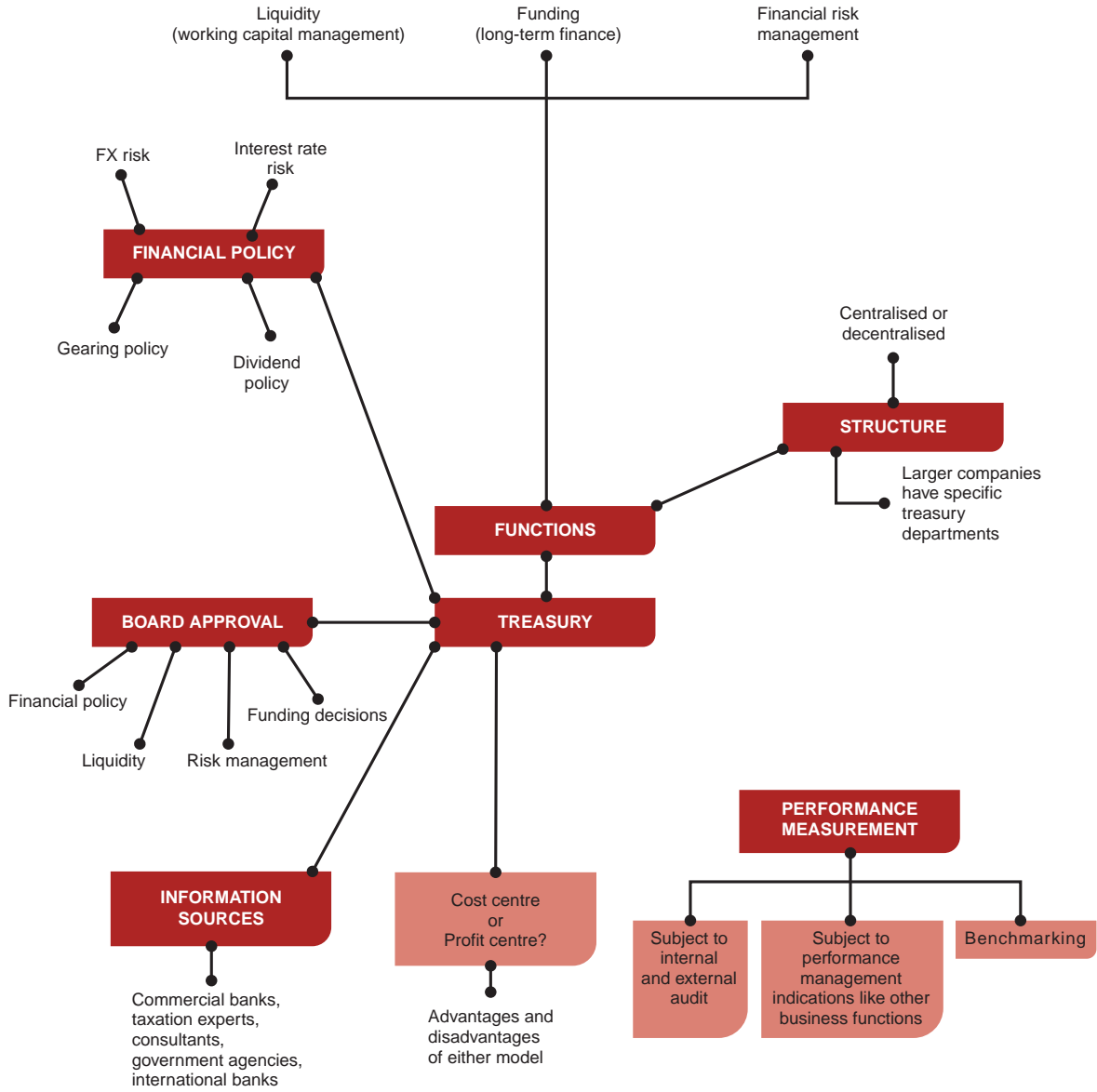
Banking relationships have a key role to play for a company to achieve an effective and efficient treasury operation. Cash management (all transactional activities both domestic and international) is the area directly affected by banking processes. In addition, funding, availability of appropriate treasury risk management products and specialist services also involve banks.

Treasurers may be wise to review periodically the service provided by their bankers. They may wish to standardise and streamline their banking processes (such as payment outsourcing) by consolidating multiple bank relations into a few so that their company has more bargaining power with its banks.

A successful banker/corporate relationship is dependent on objective advice, regular contact, rapid problem resolution, fair compensation and the bank's operational capabilities. Treasurers have to ensure they have the flexibility to switch banks by having flexibility in their treasury operations.

The banking relationship must be a two-way process. Corporate treasurers expect to receive objective advice from their bankers in all areas covering the provision of financial services and *vice versa*. Any problems being encountered by the company should be discussed openly and honestly with bankers, especially when a borrowing situation exists and in difficult economic times. Neither the company nor the banker wants any surprises in their relationship with each other.

Topic recap



## Exam practice



## Treasury management

18 minutes

In a recent internal audit exercise, the audit manager reported the following findings on the treasury department to the Audit Committee:

- (a) There is no mechanism to ensure the foreign exchange transactions and interest rate transactions are carried out at favourable rates;
- (b) The dealing records on two transactions were missing; and
- (c) 60% of the outstanding transactions were with a bank with BBB credit rating.

Knowing that you are a consultant in treasury management, the CFO of the company has approached you for the directions (i.e. relating to (a), (b) and (c)) that he should give to the treasury department so as to strengthen the internal controls for weaknesses identified by the internal auditor.

**(10 marks)**

HKICPA May 2008

## Inter-company fund transfers

14 minutes

Grow Fast is a multi-national company with 24 group companies located in Europe and the US. Due to inter-company transactions, many of the group companies often make payments to each other by electronic fund transfers each month. Recently, the banks have raised the fee for each transfer by 20% to cover their increasing operating costs. The finance manager of Grow Fast, Tim Macoy, was asked by the CFO to review the costs related to these inter-company fund transfers. Tim has gathered the following data:

Group companies required to make inter-company fund transfers	: 24
Average number of transfers that each group company makes to every other firm per month	: 40
Transaction fee charged by the banks for each fund transfer	: HK\$100

*Required*

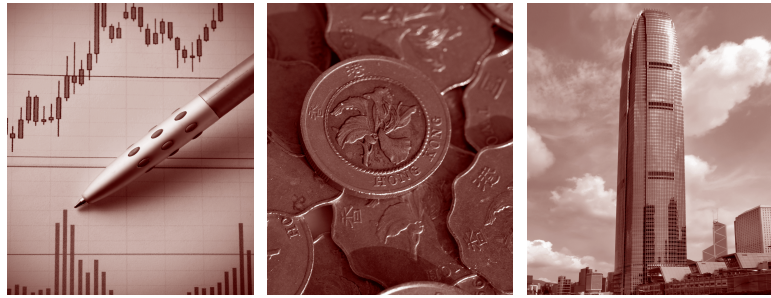
- (a) How much does Grow Fast incur each month on making the inter-company fund transfers?  
**(3 marks)**
- (b) Explain a technique that Grow Fast can adopt to reduce the number of fund transfers between the group companies without the need for any change in the number of inter-company transactions?  
**(3 marks)**
- (c) What will the cost of fund transfers to Grow Fast be if it adopts the above technique?  
**(2 marks)**

**(Total = 8 marks)**

HKICPA December 2010







## chapter 8

# Working capital management

### Topic list

- 1 Working capital management**
- 2 Objectives of working capital management**
  - 2.1 Approaches to working capital management
  - 2.2 Other factors
- 3 The cash operating cycle**
  - 3.1 Managing the length of the cycle
- 4 The working capital requirement**
- 5 Working capital liquidity ratios**
  - 5.1 The current ratio
  - 5.2 The quick ratio (sometimes called the acid test ratio)
  - 5.3 The accounts receivable collection period
  - 5.4 The inventory holding period
  - 5.5 The accounts payable payment period
  - 5.6 The sales revenue/net working capital ratio
  - 5.7 Interpretation and evaluation
  - 5.8 Overtrading
- 6 Inventory management**
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  - 6.3 Economic order quantity
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  - 6.5 Maximum and minimum inventory levels
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  - 7.2 Assessment of creditworthiness
  - 7.3 Managing accounts receivable
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  - 7.5 Collection of receivables
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  - 7.10 Foreign trade
- 8 Payables management**
- 9 Cash forecasting**
  - 9.1 Motives for companies to hold cash
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  - 9.3 Cash forecasting
  - 9.4 Cash flow deviations
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- 10 Cash and treasury management**
  - 10.1 Introduction
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  - 10.3 The Miller-Orr model
  - 10.4 Investing surplus cash
- 11 Working capital funding strategy**
  - 11.1 Aggressive
  - 11.2 Conservative
  - 11.3 Matching or moderate approach

### Learning focus

In this chapter, we consider functions of the financial manager relating to the **management of working capital** in general terms, including the elements of working capital and the objectives and role of working capital management.

This chapter also explains the cash operating cycle and working capital ratios.

This chapter deals with specific techniques in the management of accounts receivable, accounts payable and inventory. These include overall **credit control policies** (should the business offer credit – if so how much and to whom), and ensuring amounts owed are not excessive.

While working through this chapter, try not to think of accounts receivable and accounts payable in isolation; they are part of working capital, each element of which will have **knock-on effects** when there is a change in another. For example, an increase in the credit period taken by accounts receivable will reduce the amount of cash available to pay accounts payable and invest in inventory.

This chapter concludes our study of working capital management methods by considering how cash is managed. This involves looking at the various **reasons for holding cash**, the **preparation of cash flow forecasts** and relevant techniques for **managing cash**. We revisit how working capital needs are determined and finally in this area, we consider working capital **funding strategies**.

Adequate working capital and working capital management is critical to the survival and success of small and medium-sized enterprises. Many enterprises will at some point have to deal with the impact of lost sales and business opportunities due to the inability to purchase stock; or having to juggle payments between suppliers or long delays in collecting receivables and finding the right balance between sales and credit to customers.

The global financial crisis in the credit markets made credit harder to access and cash a scarce resource. This increased the focus on working capital management as a key component in enhancing financial and operational performance and made unlocking cash in working capital an imperative.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
	<b>Financial analysis</b> Analyse and advise upon an organisation's financial strategy	
<b>3.04</b>	<b>Liquidity and solvency positions</b>	2
3.04.01	Analyse the impact of an organisation's financial strategy on its liquidity and solvency through the use of ratios and other techniques	
3.04.02	Explain the problem of overtrading and describe the symptoms and remedies	
	<b>Short and medium term financial management</b> Identify and evaluate the short and medium term financial requirements of an organisation	
<b>4.01</b>	<b>Cash management and forecasting</b>	3
4.01.01	Identify and discuss the main factors to be taken into account when deciding upon the level of cash to be held by an organisation	
4.01.02	Describe and apply the processes that an organisation can use to monitor cash flows and manage cash	
4.01.03	Explain and illustrate how cash forecasts can be used to identify an organisation's short and medium term financial requirements	
4.01.04	Identify and discuss the range of short and medium term sources of finance available to an organisation	

		Competency level
4.01.05	Assess the suitability of different short and medium term financing options and advise on the appropriate finance package for a given business scenario	
4.01.06	Assess the benefits and drawbacks of centralised treasury management and cash control	
<b>4.03</b>	<b>Working capital management</b>	<b>3</b>
4.03.01	Describe the nature of working capital and discuss the role of working capital management in financial strategy	
4.03.02	Calculate the level of working capital investment for a given situation and discuss the key factors that determine this level	
4.03.03	Explain and apply relevant accounting ratios, including current ratio and quick ratio, inventory turnover ratio, average collection period and average payable period	
4.03.04	Discuss, apply and evaluate the use of relevant techniques in managing inventory, accounts receivable, accounts payable and cash balances	
4.03.05	Discuss the key factors in determining working capital funding strategies	

## 1 Working capital management



### Topic highlights

The amount tied up in **working capital** is equal to the value of raw materials, work-in-progress, finished goods inventories and accounts receivable less accounts payable. The size of this net figure has a direct effect on the liquidity of a business. Net working capital of a business is its current assets less its current liabilities.

Working capital management involves managing the relationship between a firm's current assets and its current liabilities so that cash flows and returns are acceptable. For an extensive and contemporary coverage of this topic, candidates may wish to access the HSBC Guide to Cash Supply and Treasury Management. This is available on the HSBC web site ([www.hsbc.com](http://www.hsbc.com)) as pdf file number 120404-hsbc-guide-to-treasury-management.pdf

The key current assets in a typical business might be:

- cash
- inventory of raw materials
- work in progress
- inventory of finished goods
- amounts receivable from customers
- marketable securities

The key current liabilities in a typical business might be:

- amounts payable to suppliers
- taxation payable
- dividend payments due
- bank overdraft
- short-term loans
- long-term loans maturing within one year
- lease rentals due within one year

The long-term capital investment decisions that a firm makes to enhance its shareholders' wealth have implications in terms of cash flow. In the context of financial strategy, effective working capital management is required to ensure that the firm is able to operate and that it has sufficient cash available to meet its short and long-term requirements (servicing debt and covering operational expenses).

Different businesses will have different working capital characteristics. There are three main aspects to these differences:

- (1) Holding inventory (from its purchase from external suppliers, through production and warehousing of finished goods, up to the time of sale)
- (2) Taking time to pay suppliers and other accounts payable
- (3) Allowing customers (accounts receivable) time to pay

Supermarkets and other retailers receive much of their sales in cash, via credit card or debit card. Typically, however, they will buy from their suppliers on credit. They may, therefore, have the advantage of significant cash holdings, which they could invest. A company that supplies to other companies (for example, a wholesaler) is likely to be selling and buying mainly on credit. Co-ordinating the flow of cash may be quite a problem. Such a company may make use of short-term borrowings (such as an overdraft) to manage its cash. Smaller companies with a limited trading record may face particularly severe problems, such as finding difficulty in getting credit from suppliers. At the same time, customers will expect to receive the length of credit period that is normal for the particular business concerned and the company may find itself squeezed in its management of cash.

## 2 Objectives of working capital management



### Topic highlights

The two main objectives of working capital management are to ensure it has **sufficient liquid resources** to continue in business and to **increase its profitability**. Essentially, this involves achieving a balance between the requirement to minimise the risk of insolvency (liquidity) and the requirement to maximise the return on assets (profitability).

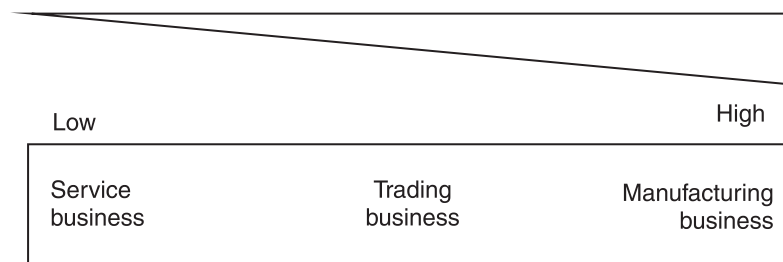
All companies need adequate liquid resources to maintain day-to-day cash flow, enough to pay wages and suppliers (accounts payable) if they are to keep their workforce and ensure inflow of supplies.

Maintaining adequate working capital is not just important in the short term. Adequate liquidity is needed to ensure the survival of the business in the long term. A profitable company may fail without adequate cash flow to meet its liabilities. On the other hand, excessively conservative working capital management with high levels of cash holdings may harm profits because the opportunity to make a return on the assets tied up in cash will have been missed.

A company must have clear policies for the management of each component of working capital, as these policies are a key factor in long-term success. The management of cash, marketable securities, accounts receivable, accounts payable, accruals and other means of short-term financing are the responsibility of the treasury department/financial manager requiring continuous day-to-day supervision.

As an example of the policies required, a manufacturing company will need to invest heavily in spare parts and may be owed large amounts of money by its customers. On the other hand, a bookseller will have a large inventory of goods for resale but will have low accounts receivable. The manufacturing company will therefore need a carefully considered policy on the management of accounts receivable that will need to reflect the credit policies of its close competitors whereas the bookseller will be more concerned with inventory management.

As a general guide, the requirement of working capital for different industries can be ranked as follows:



This is because many service businesses do not require large inventories.

## 2.1 Approaches to working capital management

Organisations have to decide what are the most important risks relating to working capital, and therefore whether to adopt a **conservative**, **aggressive** or **moderate** approach.

### 2.1.1 A conservative approach

A conservative working capital management policy aims to reduce the risk of system breakdown by holding high levels of working capital.

Customers are allowed generous payment terms to stimulate demand, finished goods inventories are high to ensure availability for customers, and raw materials and work in progress are high to minimise the risk of running out of inventory and consequent downtime in the manufacturing process. Suppliers are paid promptly to ensure their goodwill, again to minimise the chance of stock-outs.

The cumulative effect on these policies can be that the firm carries a high burden of unproductive assets, resulting in a financing cost that can destroy profitability. A period of rapid expansion may also cause severe cash flow problems as working capital requirements outstrip available finance. Further problems may arise from inventory obsolescence and lack of flexibility to customer demands.

### 2.1.2 An aggressive approach

An aggressive working capital management policy aims to reduce this financing cost and increase profitability by cutting inventories, speeding up collections from customers, and delaying payments to suppliers.

The potential disadvantage of this policy is an increase in the chances of system breakdown through running out of stock or loss of goodwill with customers and suppliers.

However, modern manufacturing techniques encourage inventory and work in progress reductions through just-in-time policies, flexible production facilities and improved quality management. Improved customer satisfaction through quality and effective response to customer demand can also mean that credit periods are shortened.

### 2.1.3 A moderate approach

A moderate working capital management policy is a middle way between the aggressive and conservative approaches.

## 2.2 Other factors

The overall approach to working capital management will be complicated by the following factors:

- (a) **Industry norms.** These are of particular importance for the management of receivables. It will be difficult to offer a much shorter payment period than competitors.

- (b) **Products.** The production process, and hence the amount of work in progress is obviously much greater for some products and in some industries.
- (c) **Management issues.** How working capital is managed may have a significant impact upon the actual length of the working capital cycle whatever the overall strategy might be. Factors to consider include:
  - (i) the size of the organisation
  - (ii) the degree of centralisation (which may allow a more aggressive approach to be adopted, depending though on how efficient the centralised departments actually are)
  - (iii) management attitudes to risk
  - (iv) previous funding decisions.

### 3 The cash operating cycle

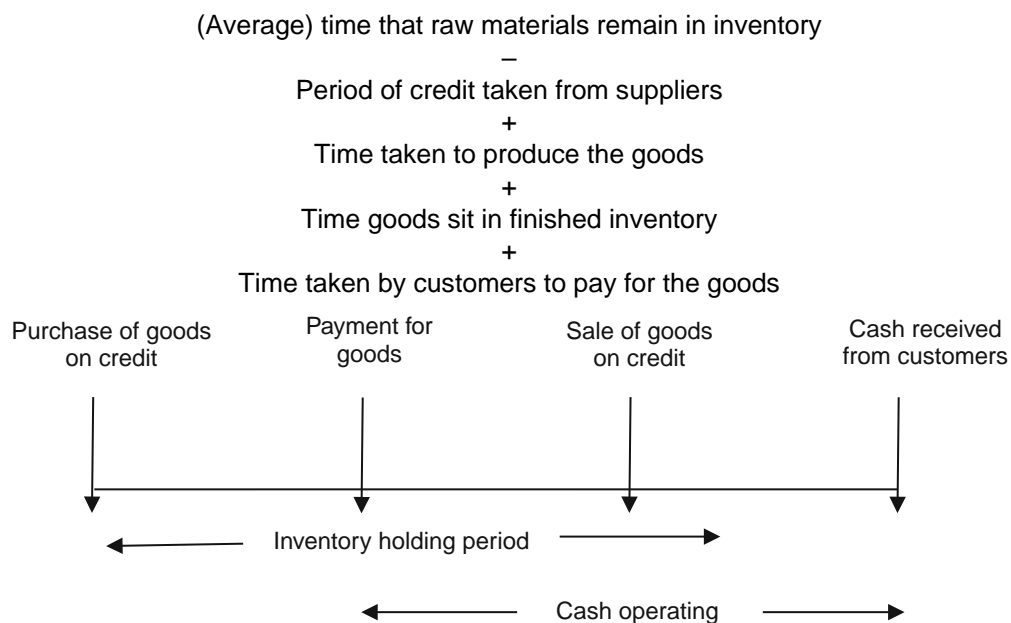


#### Key term

The **cash operating cycle** is the period of time that elapses between the point when cash starts to be spent on the production of a product and the collection of cash from a purchaser.

The connection between investment in working capital and cash flow may be illustrated by means of the cash operating cycle (also called the working capital cycle, cash cycle, operating cycle or trading cycle).

The cash operating cycle in a manufacturing business equals:



If the time periods for inventories and accounts receivable lengthen, or the time period for accounts payable shortens, the operating cycle will lengthen and the investment in working capital will increase.



#### Topic highlights

A business needs to have clear policies for the management of each component of working capital.



### Illustration: Cash operating cycle

A company buys raw materials from suppliers on 75 days' credit. The raw materials remain in inventory for 30 days and it takes the company 60 days to produce its goods. The goods are sold within 10 days of completion of production and customers take on average 45 days to make payment.

	<i>Time Days</i>
<i>Activity</i>	
Average time that raw materials remain in inventory	30
Period of credit taken from suppliers	(75)
Time taken to produce the goods	60
Time goods remain in finished inventory	10
Time taken by customers to pay for the goods	45
Cash operating cycle	<u>70</u>

Financing is required for 145 days in total but 75 of these days are 'financed' by the period of time taken to pay suppliers.

## 3.1 Managing the length of the cycle

Ideally, a business should aim to minimise the length of its cash operating cycle, consistent with the need for sufficient liquidity. This can be achieved by managing the various components of working capital (considered in more detail later in this chapter).

### 3.1.1 Inventory

Inventory days can be reduced by minimising the holding of raw materials and finished goods and ensuring production processes are efficient so as to reduce work-in-progress.

Some manufacturing companies have sought to reduce their inventories of raw materials and components to as low a level as possible. Just-in-time procurement is a term which describes a policy of obtaining goods from suppliers at the latest possible time (i.e. just as they are needed) and so avoiding the need to carry any significant materials or components inventory. This is extended into a complete production philosophy where the finished goods are produced to customer order rather than being stockpiled in the warehouse.

### 3.1.2 Accounts receivable

Offering credit has a cost: the value of the interest charged on an overdraft to fund the period of credit, or the interest lost on the cash not received and deposited in the bank. It is also likely to lead to an increase in bad debts which do not arise if all sales are for cash. An increase in profit from extra sales arising as a result of offering credit could offset this cost. Insurance, particularly of overseas debts, can also help reduce the risk of bad debts.

A business must find the least costly balance between enticing customers, whose use of credit entails costs, and refusing opportunities for profitable sales.

If offering credit generates extra sales, then those extra sales will have additional repercussions on:

- (a) the amount of inventory maintained in the warehouse, to ensure that the extra demand must be satisfied.
- (b) the amount of money the company owes to its accounts payable (as it will be increasing its supply of raw materials).





*Required*

Compute the average working capital requirement of Corn assuming the labour force is paid for 50 working weeks a year. Working capital is defined for the purpose of this exercise as inventories (raw materials, work in progress and finished goods) plus receivables minus current liabilities.

Note that in this example, turnover periods are given in months rather than days, and the turnover ratios therefore use “× 12” (months) rather than “× 365” (days).

**Solution**

(a) The annual costs incurred will be as follows:

		\$
Direct materials	30% × \$1,500,000	450,000
Direct labour	25% × \$1,500,000	375,000
Variable overheads	10% × \$1,500,000	150,000
Fixed overheads	15% × \$1,500,000	225,000
Selling and distribution	5% × \$1,500,000	75,000

(b) The average value of current assets will be as follows:

		\$	\$
<b>Raw materials</b>	3/12 × \$450,000		112,500
<b>Work-in-progress</b>			
Materials (50% complete)	1/12 × \$450,000	37,500	
Labour (50% complete)	1/12 × \$375,000	31,250	
Variable overheads (50% complete)	1/12 × \$150,000	<u>12,500</u>	
			81,250
<b>Finished goods</b>			
Materials	1/12 × \$450,000	37,500	
Labour	1/12 × \$375,000	31,250	
Variable overheads	1/12 × \$150,000	<u>12,500</u>	
			81,250
Receivables	2.5/12 × \$1,500,000		<u>312,500</u>
			<u>587,500</u>

(c) Average value of current liabilities will be as follows:

		\$	\$
Materials	2/12 × \$450,000	75,000	
Labour	1/50 × \$375,000	7,500	
Variable overheads	1/12 × \$150,000	12,500	
Fixed overheads	1/12 × \$225,000	18,750	
Selling and distribution	0.5/12 × \$75,000	<u>3,125</u>	
			<u>116,875</u>

(d)

Working capital required is (\$587,500 – 116,875)	<u>470,625</u>
---	----------------

Longer turnover periods for inventories or receivables mean a higher investment in these items. A shorter period of credit taken from suppliers means lower trade payables. Lower trade payables means that a larger proportion of inventories and receivables must be financed by the long-term capital of the company.

An important point to understand is that the investment in working capital is related to the length of the cash cycle. Management of working capital therefore involves controlling the turnover cycles and avoiding excessively slow inventory turnover and allowing customers an excessive amount of time to pay.

## 5 Working capital liquidity ratios



### Topic highlights

**Working capital liquidity** ratios can indicate whether a company is over-capitalised (with excessive working capital) or if a business is likely to fail (with insufficient working capital). A company that is trying to expand too quickly with too little long-term capital is “**overtrading**”.

Some of the ratios considered in this section were introduced in Chapter 5 on performance measurement.

### 5.1 The current ratio

This is a standard test of liquidity.



#### Key term

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

A company should have sufficient current assets that will be turned into cash in the short term to meet its commitments to pay its current liabilities. In practice, a ratio comfortably in excess of 1 should be expected, but what is “comfortable” varies between different types of businesses.

### 5.2 The quick ratio (sometimes called the acid test ratio)



#### Key term

$$\text{Quick ratio} = \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$$

Companies cannot always convert all their current assets into cash quickly. In some businesses, with slow inventory turnover, most inventories are not very liquid because the cash cycle is so long. The quick ratio is therefore calculated.

This ratio should ideally be at least 1 for companies with a slow inventory turnover. For companies with a fast inventory turnover, a quick ratio can be less than 1 without suggesting that the company is in cash flow difficulties.

### 5.3 The accounts receivable collection period



#### Key term

$$\text{Accounts receivable collection period} = \frac{\text{Trade receivables}}{\text{Credit sales revenue}} \times 365 \text{ days}$$

This is an approximation of the average time it takes for a company's customers (accounts receivable) to settle what they owe. The trade accounts receivable figure will be itemised in an analysis of the total accounts receivable, in a note to the accounts.

## 5.4 The inventory holding period



### Key terms

$$\text{Inventory turnover} = \frac{\text{Cost of sales}}{\text{Average inventory}}$$

$$\text{Finished goods (FG) inventory holding period} = \frac{\text{Average FG inventory}}{\text{Cost of sales}} \times 365 \text{ days}$$

$$\text{Raw materials inventory holding period} = \frac{\text{Average raw materials inventory}}{\text{Annual purchases}} \times 365 \text{ days}$$

$$\text{Production/work-in-progress (WIP) period} = \frac{\text{Average WIP}}{\text{Cost of sales}} \times 365 \text{ days}$$

These indicate (approximately) the average number of days that items of inventory are held. Although approximations, these averages should be sufficiently reliable to spot changes over time.



### Topic highlights

A lengthening inventory holding period may indicate a slowdown in trading or a build-up in inventory levels, perhaps suggesting that the investment in inventories is becoming excessive.

## 5.5 The accounts payable payment period



### Key term

$$\text{Accounts payable payment period} = \frac{\text{Average trade payables}}{\text{Purchases or cost of sales}} \times 365 \text{ days}$$

The accounts payable payment period can help to assess a company's liquidity.



### Topic highlights

An increase in accounts payable days can be a sign of lack of long-term finance or poor management of current assets, resulting in the use of extended credit from suppliers, increased bank overdraft facilities or other indicators.

Trade accounts payable do not usually have an interest cost and are therefore a cheap method of finance. Companies may consider in the interest of higher profits, that it is worth accepting some risk of illiquidity/insolvency by taking the maximum credit possible from suppliers.

## 5.6 The sales revenue/net working capital ratio



### Key term

$$\text{Sales revenue/net working capital} = \frac{\text{Sales revenue}}{\text{Current assets} - \text{current liabilities}}$$

This shows the level of working capital supporting sales. Working capital must increase in line with sales to avoid liquidity problems and this ratio can be used to forecast the level of working capital needed for any given projected level of sales revenues.

## 5.7 Interpretation and evaluation



### Topic highlights

Liquidity ratios are a guide to the risk of cash flow problems (illiquidity) and insolvency. If a company suddenly finds that it is unable to renew its short-term liabilities (for example, if the bank withdraws the overdraft facilities) there is a danger of insolvency unless the company is able to quickly turn enough of its current assets into cash.

Care must be taken when interpreting ratios which are calculated from figures taken from the statement of financial position, since this is only representative of a single date in time. It is important to establish trends by considering ratios from previous years and previous months, particularly if the business is seasonal. Comparing the ratios to budgets or targets, e.g. the stated credit terms for accounts receivable, will also aid interpretation.

All the ratios calculated above will vary by industry; hence comparisons of ratios calculated with other similar companies in the same industry are important.

Different types of businesses have different optimum working capital profiles resulting from what they are selling and their methods of doing business. Businesses with a lot of cash sales and few credit sales should have minimal accounts receivable. Businesses that solely trade will only have finished goods in inventory, whereas manufacturers will, in addition, have raw materials and work in progress. Some companies carry very short shelf-life inventory (for example, perishable foodstuffs) and these must be sold within a few days.

Large companies may be able to use their strength as customers to obtain extended credit periods from their suppliers whereas small companies, particularly those that have recently commenced trading, may be required to pay their suppliers immediately.

Some businesses receive most of their monies at certain times of the year, while incurring expenses throughout the year. Examples include toy retailers with peak sales at Christmas or travel agents that might have peaks reflecting demand for holidays in Easter and summer.

If a company invests in excessive inventories, has a large amount of accounts receivable and cash, and very few accounts payable, there is an over-investment in current assets. Working capital will be excessive and the company is said to be over-capitalised. Some indicators of over-capitalisation are:

- Sales/working capital ratio reduced compared with previous years, or less than similar companies
- High level of liquidity, indicated by high current ratio (perhaps >2:1) and high quick ratio (perhaps >1:1)
- Long turnover periods for inventory and accounts receivable



### Example: Working capital ratios

Excerpts from the recent financial statements of a company are as follows:

#### INCOME STATEMENT

	20X2	20X1
	\$m	\$m
Revenue	15,600	11,100
Cost of sales	9,300	6,600
Gross profit	<u>6,300</u>	<u>4,500</u>
Administration expenses	1,000	750
Operating profit	<u>5,300</u>	<u>3,750</u>
Interest	100	15
Profit before tax	<u><u>5,200</u></u>	<u><u>3,735</u></u>

#### STATEMENTS OF FINANCIAL POSITION

	20X2	20X2	20X1	20X1
	\$m	\$m	\$m	\$m
Non-current assets		5,750		5,400
<i>Current assets</i>				
Inventories	3,000		1,300	
Receivables	3,800		1,850	
Cash	<u>120</u>		<u>900</u>	
		6,920		4,050
<i>Current liabilities</i>				
Bank overdraft	1,000		150	
Trade payables	2,870		1,600	
		<u>(3,870)</u>		<u>(1,750)</u>
Total assets less current liabilities		<u><u>8,800</u></u>		<u><u>7,700</u></u>

All sales were on credit. The company has no long-term debt. Credit purchases in each year were 95% of cost of sales. The company pays overdraft interest at an annual rate of 8%. Current sector averages are:

Inventory days: 90 days  
 Receivables days: 60 days  
 Payables days: 80 days

#### Required

Calculate and comment on the same ratios for the company for each year.

Calculate and explain the significance of the length of the cash operating cycle for each year.

### Solution

#### Ratio calculations

	20X2	20X1
Inventory days	$\frac{3,000}{9,300} \times 365 = 118 \text{ days}$	$\frac{1,300}{6,600} \times 365 = 72 \text{ days}$
Sector average: 90 days		
Receivables days	$\frac{3,800}{15,600} \times 365 = 89 \text{ days}$	$\frac{1,850}{11,100} \times 365 = 61 \text{ days}$
Sector average: 60 days		
Payables days	$\frac{2,870}{9,300 \times 95\%} \times 365 = 119 \text{ days}$	$\frac{1,600}{6,600 \times 95\%} \times 365 = 93 \text{ days}$
Sector average: 80 days		

### Ratio commentary

In each case, the ratio in 20X2 is higher than the ratio in 20X1, indicating that deterioration has occurred in the management of inventory, receivables and payables in 20X2.

Inventory days have increased by 46 days or 64%, moving from below the sector average to 28 days above the sector average. Given the rapid increase in turnover (40%) in 20X2, the company may be expecting a continuing large increase in the future and may have built up inventory in preparation for this (i.e. inventory levels reflect future sales rather than past sales). Accounting statements from several previous years and sales forecasts for the next period would help to clarify this point.

Receivables days have increased by 28 days or 46% in 20X2 and are now 29 days above the sector average. It is possible that more generous credit terms have been offered in order to stimulate sales. The increased revenue does not appear to be due to offering lower prices, since both gross profit margin (40%) and net profit margin (34%) are unchanged.

In 20X1, only the management of creditors was a cause for concern. In 20X1 the company took 13 days more than the sector average to settle its liabilities with trade creditors. This increased to 39 days more than the sector in 20X2. This could lead to difficulties between the company and its suppliers if it is exceeding the credit periods they have specified. The company has no long-term debt and the statement of financial position indicates an increased reliance on short-term finance, since cash has reduced by \$780m or 87% and the overdraft has increased by \$850m to \$1,000m.

Perhaps the company should investigate whether it is under-capitalised (overtrading). It is unusual for a company of this size to have no long-term debt.

### Cash operating cycle calculations

20X1 = 72 + 61 – 93 = 40 days

20X2 = 118 + 89 – 119 = 88 days

### Explanation of significance

The cash operating cycle or working capital cycle gives the average time it takes for the company to receive payment from debtors after it has paid its trade creditors. This represents the period of time for which debtors require financing. The cash operating cycle has lengthened by 48 days in 20X2 compared with 20X1. This represents an increase in working capital requirement of approximately  $\$15,600\text{m} \times \frac{48}{365} = \$2,050\text{m}$ .

## 5.8 Overtrading



### Key term

**Overtrading** occurs when a company tries to expand too quickly or generally tries to do too much too quickly with insufficient long-term capital. This results in the business trying to support too high a level of activity (i.e. large volume of trade) with the current level of capital resources.

Despite being profitable, a company that is overtrading may run into cash flow difficulties. This liquidity problem is a result of having insufficient capital to pay its debts when they fall due.

These maybe some signs or symptoms of overtrading:

- (a) A rapid increase in sales revenues
- (b) A fast and dramatic increase in the volume of current assets (and possibly non-current assets)
- (c) The rate of increase in inventories and accounts receivable is greater than the rate of increase in sales revenues

- (d) Only a small increase in shareholders' equity with most of the increase in assets financed by short-term credit, mainly trade accounts payable (payment period likely to lengthen) and bank overdraft (often reaching or exceeding the agreed facility)
- (e) Some ratios alter dramatically, for example the proportion of total assets financed by shareholders' equity falls and the proportion financed by credit rises and the current and acid test ratios fall
- (f) The business might be illiquid (i.e. current liabilities are greater than current assets).



### Example: Overtrading

The following financial information relates to a company:

			20X2	20X1
			\$m	\$m
Credit sales			37,400	26,720
Cost of sales			34,408	23,781
Operating profit			<u>2,992</u>	<u>2,939</u>
Finance costs (interest payments)			355	274
Profit before taxation			<u><u>2,637</u></u>	<u><u>2,665</u></u>
	20X2	20X2	20X1	20X1
	\$m	\$m	\$m	\$m
Non-current assets		13,632		12,750
<i>Current assets</i>				
Inventory	4,600		2,400	
Trade receivables	<u>4,600</u>		<u>2,200</u>	
	9,200		4,600	
<i>Current liabilities</i>				
Trade payables	4,750		2,000	
Overdraft	<u>3,225</u>		<u>1,600</u>	
	7,975		3,600	
Net current assets		1,225		1,000
		<u>14,857</u>		<u>13,750</u>
8% bonds		2,425		2,425
		<u>12,432</u>		<u>11,325</u>
Shareholders' equity:				
Ordinary share capital		6,000		6,000
Reserves		<u>6,432</u>		<u>5,325</u>
		<u>12,432</u>		<u>11,325</u>

The average variable overdraft interest rate in each year was 5%. The 8% bonds are redeemable in ten years' time.

#### Required

Use the above financial information to determine, with supporting calculations, whether the company is overtrading.

#### Solution

	20X2	20X1
Inventory days	$4,600/34,408 \times 365 = 49$ days	$\frac{2,400}{23,781} \times 365 = 37$ days
Receivables days	$\frac{4,600}{37,400} \times 365 = 45$ days	$\frac{2,200}{26,720} \times 365 = 30$ days



Payables days	$\frac{4,750}{34,408} \times 365 = 50 \text{ days}$	$\frac{2,000}{23,781} \times 365 = 31 \text{ days}$
Current ratio	$\frac{9,200}{7,975} = 1.15 \text{ times}$	$\frac{4,600}{3,600} = 1.28 \text{ times}$
Quick ratio	$\frac{4,600}{7,975} = 0.58 \text{ times}$	$\frac{2,200}{3,600} = 0.61 \text{ times}$

	20X2	20X1
Sales/net working capital	$\frac{37,400}{1,225} = 30.5 \text{ times}$	$\frac{26,720}{1,000} = 26.7 \text{ times}$
Revenue increase	$\frac{37,400}{26,720} = 40\%$	
Non-current assets increase	$\frac{13,632}{12,750} = 7\%$	
Inventory increase	$\frac{4,600}{2,400} = 92\%$	
Receivables increase	$\frac{4,600}{2,200} = 109\%$	
Payables increase	$\frac{4,750}{2,000} = 138\%$	
Overdraft increase	$\frac{3,225}{1,600} = 102\%$	

Overtrading or under-capitalisation arises when a company has too small a capital base to support its level of business activity. Difficulties with liquidity may arise as an overtrading company may have insufficient capital to meet its liabilities as they fall due. Overtrading is often associated with a rapid increase in revenue and the company has experienced a 40% increase in turnover over the last year. Investment in working capital has not matched the increase in sales, however, since the sales/net working capital ratio has increased from 26.7 times to 30.5 times.

Overtrading could be indicated by deterioration in inventory days. Here, inventory days have increased from 37 days to 49 days, while inventory has increased by 92% compared to the 40% increase in turnover. It is possible that inventory has been increased in anticipation of a further increase in turnover, leading to higher operating costs.

Overtrading could also be indicated by deterioration in receivables days. In this case, receivables have increased by 109% compared to the 40% increase in revenue. The increase in revenue may have been fuelled in part by a relaxation of credit terms.

As the liquidity problem associated with overtrading deepens, the overtrading company increases its reliance on short-term sources of finance, including its overdraft, trade payables and leasing. The overdraft has more than doubled in size to \$3.225 million, while trade payables have increased by \$2.740 million or 137%. Both increases are much greater than the 40% increase in turnover. There is evidence here of an increased reliance on short-term finance sources.

Overtrading can also be indicated by decreases in the current ratio and the quick ratio. The current ratio has fallen from 1.28 times to 1.15 times, while its quick ratio has fallen from 0.61 times to 0.58 times.

There are clear indications that the company is experiencing the kinds of symptoms usually associated with overtrading. A more complete and meaningful analysis could be undertaken if appropriate benchmarks were available, such as key ratios from comparable companies in the same industry sector, or additional financial information from prior years so as to establish trends in key ratios.



### Self-test question 1

Calculate liquidity and working capital ratios from the accounts of a manufacturer of products for the construction industry, and comment on the ratios.

	20X2 \$'000	20X1 \$'000
Revenue	2,065.0	1,788.7
Cost of sales	1,478.6	1,304.0
Gross profit	<u>586.4</u>	<u>484.7</u>
Current assets		
Inventories	119.0	109.0
Trade receivables	329.8	285.4
Other receivables	71.1	62.0
Short-term investments	4.2	18.8
Cash	48.2	48.0
	<u>572.3</u>	<u>523.2</u>
Payables: amounts falling due within one year		
Short-term loans and overdrafts	49.1	35.3
Profit taxes payable	81.2	61.0
Payables and accruals (note (1))	370.7	324.0
Net current assets	<u>501.0</u>	<u>420.3</u>
Note (1): Payables and accruals		
Trade payables	276.2	265.0
Accrued interest	9.6	6.2
Accrued expenses	84.9	52.8
	<u>370.7</u>	<u>324.0</u>

(The answer is at the end of the chapter)

## 6 Inventory management

### 6.1 Introduction

Most businesses carry inventories of some sort, even if they are only inventories of consumables such as stationery. For a manufacturing business, inventories in the form of raw materials, work-in-progress and finished goods may amount to a substantial proportion of the total assets of the business.

Normally the objective of holding inventories is to increase sales and thereby increase profit. In addition to that, by holding inventories, it offers a wider variety of products that customers demand and they are therefore more satisfied when products are immediately available.

There are three motives for holding inventory:

- (a) **Transaction motive** (i.e. purchase in bulk to obtain trade discount)
- (b) **Precautionary motive** (i.e. inventory is held in case the business receives a sudden customer order or a risk regarding future deliveries of inventory arises)
- (c) **Speculative motive** (i.e. inventory has been bought to hedge against future price rises)

## 6.2 Costs related to inventory

There are a significant number of costs related to holding inventory. The key ones are as follows:

(a) **Purchase/production cost of the inventory**

Part of the relevant cost to be considered especially where there is a bulk purchase discount being offered by a supplier (note: this only applies to bought in items).

(b) **Holding/carrying/storage costs (HC)**

This comprises a number of costs including the cost of capital being tied up (opportunity cost), warehousing and handling, deterioration, insurance and pilferage.

(c) **Ordering/procuring costs (OC)**

This is a function of how the inventory is obtained but will consist of ordering costs for goods purchased externally, including costs such as clerical costs, telephone charges, transportation charges, and so on.

(d) **Shortage/stock-out costs (SC)**

This will include costs like lost sales and contribution that have been foregone due to the shortage, any extra costs of having to buy emergency supplies of inventories at a higher price, cost of lost production and sales, where the stock-out brings an entire process to a halt, loss of customer goodwill.

In practical terms, it is almost impossible to reduce/minimise all four cost items at the same time.

## 6.3 Economic order quantity



### Topic highlights

An **economic order quantity** can be calculated as a guide to minimising costs in managing **inventory** levels. **Bulk discounts** can however mean that a different order quantity minimises inventory costs.

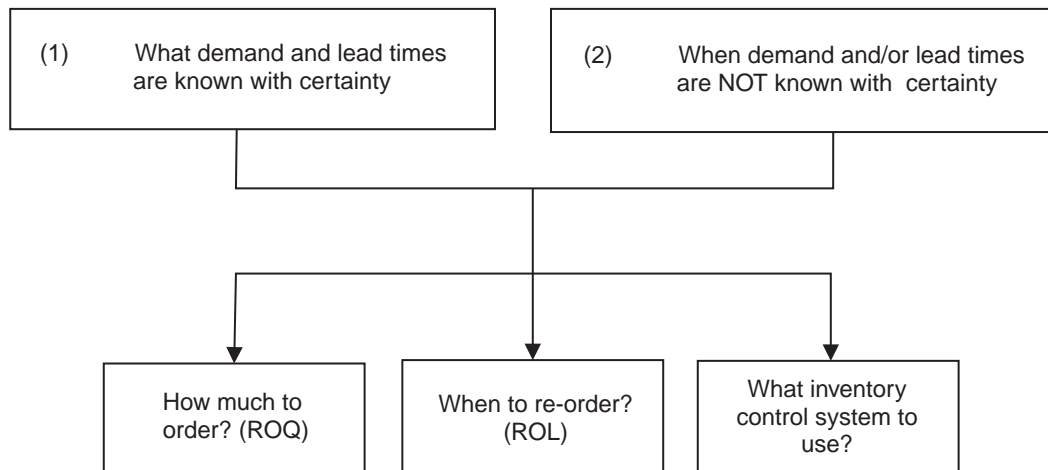
There are two quantitative problems that are essentially problems of striking the optimum balance between HC and OC.

These are: “Re-order level” (ROL)

and

“Re-order quantity” (ROQ)

Three inventory issues which require an answer fall under either of the two assumptions below:



### Key term

The **economic order quantity (EOQ)** is the optimal ordering quantity for an item of inventory that will minimise costs.



### Formula to learn

The **total annual cost** of having inventory = Holding costs + ordering costs

$$= \frac{HC \times Q}{2} + \frac{OC \times D}{Q}$$

D = usage in units for one period (the demand)

HC = holding cost per unit of inventory for one period (relevant costs only)

OC = cost of placing one order

Q = re-order quantity

Assume that demand is constant, the lead time is constant or zero and purchase costs per unit are constant (i.e. no bulk discounts are available).

The more orders that are made each year the higher the ordering costs will be, but the lower the holding costs (as less inventory is held).

The objective is to minimise  $\frac{HC \times Q}{2} + \frac{OC \times D}{Q}$



### Formula to learn

The economic **order quantity**, EOQ, which will minimise these total costs, is given by the formula:

$$Q = \sqrt{\frac{2 \times OC \times D}{HC}}$$

### EOQ with discounts

Where a bulk discount is available and the required order quantity is greater than the EOQ, the EOQ will be determined through the following steps:

- Step 1** Calculate EOQ, ignoring discount.
- Step 2** If this is below the level for discount, calculate the total annual inventory cost (i.e. OC + HC).
- Step 3** Recalculate total annual inventory costs using the order size required to just obtain the discount.
- Step 4** Compare the cost of 2 and 3 to the saving from the discount and select the minimum cost alternative.
- Step 5** Repeat for all discount levels until the maximum saving in cost is achieved and the ordering quantity will be the ultimate EOQ.



### Example: EOQ

X Ltd is a retailer of mobile phones. The company has an annual demand of 30,000 standard units. The units cost \$120 each. Fresh supplies can be obtained immediately, ordering and transport costs amounting to \$2,500 per order. The annual cost of holding one unit in inventory is estimated to be 20% pa of the purchase price.

The supplier of mobile phones has made an offer to X Ltd that a 2% discount is available on orders of at least 5,000 units and a 2.5% discount is available if the order quantity is 7,500 units or above.

#### Determination of EOQ without discount

$$\sqrt{\frac{2 \times 2,500 \times 30,000}{24}} = 2,500 \text{ units}$$

$$\text{The number of orders per annum (D/EOQ)} = \frac{30,000}{2,500} = 12 \text{ orders per annum}$$

$$\text{The inventory cycle is therefore} = 52 \text{ week} / 12 \text{ orders} = 4.33 \text{ weeks}$$

$$\begin{aligned} \text{Total costs} &= \text{holding costs} + \text{ordering costs} = \frac{HC \times Q}{2} + \frac{OC \times D}{Q} \\ &= \frac{\$24 \times 2,500}{2} + (\$2,500 \times 12) \\ &= \$30,000 + \$30,000 \\ &= \$60,000 \text{ per annum} \end{aligned}$$

#### Determination of ROQ with discount

- (1) Reorder quantity ROQ = 5,000 units, purchase discount 2%:

If the reorder quantity ROQ is 5,000 units, there is a purchase discount of 2%. The holding cost per unit per annum (HC) is:

$$\begin{aligned} \text{HC} &= \$24 \times 0.98 \\ &= \$23.52 \end{aligned}$$

$$\text{OC} = \$2,500, \text{ but only 6 orders required per annum } \frac{30,000}{5,000}$$

$$\begin{aligned} \text{Total costs} &= \text{holding costs} + \text{ordering costs} = \frac{HC \times Q}{2} + \frac{OC \times D}{Q} \\ &= \frac{\$23.52 \times 5,000}{2} + (\$2,500 \times 6) \\ &= \$58,800 + \$15,000 \\ &= \$73,800 \text{ per annum} \end{aligned}$$

- (2) Reorder quantity ROQ = 7,500 units, purchase discount 2.5%:

If the reorder quantity ROQ is 7,500 units, there is a purchase discount of 2.5%. The holding cost per unit per annum (HC) is:

$$\begin{aligned} \text{HC} &= \$24 \times 0.975 \\ &= \$23.40 \end{aligned}$$

$$\text{OC} = \$2,500, \text{ but only 4 orders required per annum } \frac{30,000}{7,500}$$

$$\begin{aligned} \text{Total costs} &= \text{holding costs} + \text{ordering costs} = \frac{\text{HC} \times Q}{2} + \frac{\text{OC} \times D}{Q} \\ &= \frac{\$23.40 \times 7,500}{2} + (\$2,500 \times 4) \\ &= \$87,750 + \$10,000 \\ &= \$97,750 \text{ per annum} \end{aligned}$$

Conclusion: **ROQ = 2,500 because this minimises total costs.**

In this example, HC is very high. The savings from the purchase discount are less than the additional amount of holding costs plus order costs.

## 6.4 Uncertainties in demand and lead times



### Topic highlights

**Uncertainties** in demand and lead times taken to fulfil orders mean that inventory will be ordered once it reaches a re-order level (ROL).



### Key term

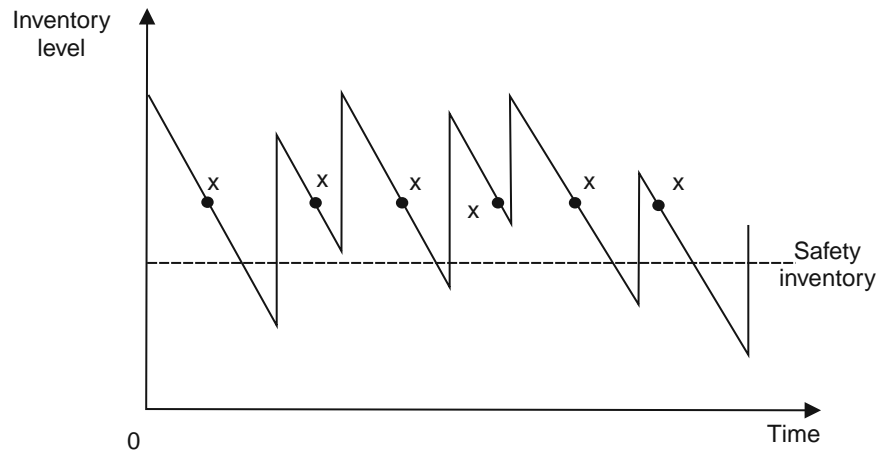
**Re-order level** = maximum usage × maximum lead time.

The re-order level is the measure of inventory at which a replenishment order should be made. If an order is placed too late, the organisation may run out of inventory (i.e. a stock-out) resulting in a loss of sales and/or a loss of production. If an order is placed too soon, the organisation will hold too much inventory, and inventory holding costs will therefore be excessive.

Use of a re-order level builds in a measure of safety inventory and minimises the risk of the organisation running out of inventory. This is particularly important when either the volume of demand or the supply lead time is uncertain.

The average annual cost of such a safety inventory is:

Quantity of safety inventory (in units) × Inventory holding cost per unit per annum



The above diagram displays how inventory levels might fluctuate with this system. The “x” points show the ROL at which a new order is placed, with the number of units ordered each time being the EOQ.

Due to variations in lead times, actual inventory levels might fall below the safety inventory level or the re-supply arrives before inventories have fallen to this safety level. On average, however, the extra inventory holding will approximate the safety inventory. The size of the safety inventory will be determined by the company policy on stock-outs (running out of inventory) and whether these are allowed.

## 6.5 Maximum and minimum inventory levels

The maximum inventory level acts as a warning signal to management that inventories are reaching a potentially inefficient wasteful level and can be calculated as follows:



### Formula to learn

**Maximum inventory level** = ROL + ROQ – (minimum usage × minimum lead time)

The minimum inventory level (also known as the “buffer inventory”) acts as a warning signal to management that inventories are approaching a dangerously low level and that stock-outs (and hence production stoppages and/or loss of customer goodwill) are possible and is calculated as follows:



### Formula to learn

**Minimum inventory level** = ROL – (average usage × average lead time)

The average inventory, assuming that inventory levels fluctuate evenly between the minimum (or safety) inventory level and the highest possible inventory level (the amount of inventory immediately after an order is received, safety inventory and re-order quantity), can be calculated as follows:



### Formula to learn

**Average inventory** = Minimum inventory level +  $\frac{ROL}{2}$

This approach assumes that a business wants to minimise the risk of stock-outs at all costs. In modern manufacturing environments shortages or stock-outs can have a disastrous effect on the production process.

Some companies, however, believe that the risk of stock-outs is worth taking. If the costs associated with stock-outs can be quantified, the ROL is calculated in a different way. For each possible ROL, and therefore each possible level of buffer inventory, calculate the costs of holding buffer inventory per annum and add the cost of stock-outs.



### Formula to learn

**Annual stock-out cost =**

Cost of one stock-out × Expected number of stock-outs per order × Number of orders per year

---

The expected number of stock-outs per order reflects the various levels by which demand during the lead time could exceed the re-order level.

For example, if the ROL for a company was eight units, and there was a 75% probability that demand during the lead time would be less than this, but there was a 15% probability that demand during the lead time would be 10 units, and 10% probability that demand during the lead time would be 12 units, then the expected number of stock-outs would be calculated as follows:

$$((10 - 8) \times 0.15) + ((12 - 8) \times 0.10) = 0.70$$

## 6.6 Just-in-time (JIT) procurement

Some manufacturing companies seek to reduce their inventories of raw materials to as low a level as possible. Just-in-time procurement is a term that describes a policy of obtaining goods from suppliers at the latest possible time (i.e. just at the time that they are needed) and so avoiding the need to carry any materials or components inventory.

In order to make this system work, there needs to be a very close liaison between a highly reliable supplier, who is prepared to provide long-term support, and the purchaser. To the extent that the supplier is made aware of the purchaser's production scheduling and manages to deliver as scheduled, introducing JIT might bring the following potential benefits:

- Reduction in inventory holding costs
- Reduced manufacturing lead times
- Improved labour productivity
- Reduced scrap/rework/warranty cost
- Reduced price on purchased materials
- Need for less accounting records
- Lower level of investment in working capital

A successful system of JIT procurement depends on a smooth and predictable production flow, and so a JIT policy must also be aimed at improving production systems, eliminating waste (rejects and reworked items) and avoiding production bottlenecks. Such improvements are necessary for the introduction of advanced manufacturing technology (AMT) and total quality management (TQM).

The basic principle of TQM is that the cost of preventing mistakes is less than the cost of correcting them once they occur plus the cost of lost potential future sales. The aim should therefore be to “get things right first time” consistently.

Two approaches to control quality and quality cost are:

- (1) Minimise total quality costs by budgeting for a level of quality that minimises prevention costs plus inspection costs on the one hand and internal and external failure costs on the other.
- (2) Aim for zero rejects and 100% quality (desired standard of production is contained within the product specification and every unit produced ought to achieve this standard).



Eventually, as modern manufacturing systems are introduced and JIT systems are employed, the first approach is likely to result in the conclusion that the costs of failure are so high that the only acceptable quality standard is zero defects.

## 7 Receivables management

### 7.1 Introduction



#### Key term

The **cost of offering credit** is the interest charged on an overdraft to fund the period of credit, or the interest lost on the cash not received and deposited in the bank.

An increase in profit from extra sales resulting from offering credit could offset this cost.

Deciding upon a total level of credit that can be offered is a matter of finding the least costly balance between enticing customers, whose use of credit entails considerable costs, and refusing the opportunities for profitable sales. In other words, a balance between profit improvement from sales obtained by allowing credit and the cost of the credit allowed to customers.

As a result, management will be anxious to do the following:

- Establish a credit policy in relation to normal periods of credit and individual credit limits.
- Develop a system which will control the implementation of credit policy.
- Prescribe reporting procedures which will monitor the efficiency of the system.

When designing and implementing a credit control policy on receivables, management must take into consideration:

- (a) Administrative costs of debt collection (HK\$ and time costs involved in controlling credit to individual customers and debt collection).
- (b) Additional capital required to finance any extension of total credit provided to customers (this cost might be bank overdraft interest, or the cost of long-term funds such as loans or equity).
- (c) Credit terms offered by competitors.
- (d) Any savings or additional expenses in operating the credit policy (for example, the extra work involved in pursuing slow payers).
- (e) How the credit policy will be implemented, for example credit could be eased by giving accounts receivable a longer period in which to settle their accounts (in which case the cost would be the resulting increase in accounts receivable) or a discount could be offered for early payment (in which case the cost would be the amount of the discounts taken).
- (f) Unintended costs, for example the effects of easing credit might encourage a higher proportion of bad debts and an increase in sales volume. Provided that the extra gross contribution from the increase in sales exceeds the increase in fixed cost expenses, bad debts, discounts and the finance cost of an increase in working capital, a policy to relax credit terms would be profitable.

### 7.2 Assessment of creditworthiness



#### Topic highlights

In managing **accounts receivable**, the **creditworthiness** of customers needs to be assessed. The risks and costs of a customer defaulting will need to be balanced against the profitability of the business provided by that customer.

Individual credit policy and limits are dependent on an assessment of the creditworthiness of a particular customer which will help in deciding first whether the customer would be allowed credit at all and second set the maximum amount of credit that should be allowed.

Types of information obtained from various sources for the assessment of a customer's creditworthiness are shown in the table below:

Type of information	Source of information
<b>Past experience of selling to the customer</b>	Trade reference Bank reference
<b>Financial standing of the customer</b>	Analysis of accounts Credit rating agency
<b>Credit rating of the customer</b>	Credit scoring Credit rating agency
<b>Reputation of customer within its business sector</b>	Credit rating agency Sales staff
<b>Profile of qualitative characteristics</b>	Trade association Other suppliers

The risks and costs of a customer defaulting will need to be balanced against the profitability of the business provided by that customer.

Credit control involves the initial investigation of potential credit customers and the continuing control of outstanding accounts. You should note the following key points:

- (a) New customers should give good references, including one from a bank, before being granted credit.
- (b) Credit ratings should, if possible, be checked through a credit rating agency.
- (c) A new customer's credit limit should be fixed at a low level and increased only if the payment record subsequently warrants it.
- (d) For high value/volume customers, a file should be maintained of any available financial information about them and the information reviewed regularly (from physically visiting the customer's premises, analysis of the company's annual report and accounts, other publicly available accounting information about public companies, press comments which may give information about what a company is currently doing and so on).
- (e) If the customer is an individual rather than a company, a credit-rating system should be devised for new customers based on their characteristics (such as whether the customer is a home owner, the customer's age and occupation etc.). Points would be awarded according to the characteristics of the customer and the amount of credit that is offered would depend on his or her credit score.

## 7.3 Managing accounts receivable



### Topic highlights

Regular monitoring of accounts receivable is critical. Individual accounts receivable can be assessed using a customer history analysis and a credit rating system. The overall level of accounts receivable can be monitored using an aged accounts receivable listing and credit utilisation report, as well as reports on the level of bad debts.

Accounts receivable payment records must be monitored continually, which depends on professional sales ledger administration. Credit monitoring can be simplified by a system of in-house credit ratings. For example, a company could have a number of credit-risk categories for its customers. These could be used to decide either individual credit limits for customers within that category or the frequency of the credit review. A customer's payment record and the accounts receivable aged analysis should be routinely examined. The credit controller should immediately deal with any actual or attempted breaches of the credit limit.

The total amount of credit offered, as well as individual accounts, should be carefully monitored to ensure that management policy on total credit limits is maintained. A credit utilisation report can indicate the extent to which total limits are being utilised.

#### Sample credit utilisation report

Customer	Limit	Utilisation	
	\$m	\$m	%
Uno	100	90	90.0
Dos	50	35	70.0
Tres	35	21	60.0
Quatro	250	125	50.0
	<u>435</u>	<u>271</u>	62.2

This report could have other information such as days' sales outstanding for each customer, highlighting trends such as the degree of exposure to different countries and different industries (some countries or industries may be worthy of more credit while others may be too risky).

Reviewed in aggregate, this can reveal the following:

- The number of customers who might want more credit
- The extent of accounts receivable exposure
- The "tightness" of the credit control policy. (It might be possible to increase profitable sales by offering credit, but on the other hand perhaps the firm offers credit too easily.)
- The relation of credit utilisation to total sales.

## 7.4 Extending additional credit

To determine whether it would be profitable to extend the level of total credit, it is necessary to assess the additional sales that a more generous credit policy would stimulate, the profitability of these extra sales, any additional debt collection period and the required rate of return on investment in higher accounts receivable.



### Example: Extending credit (1)

The management of a company are considering a change of credit policy that will increase the average collection period from one to two months. The relaxation in credit is expected to produce an increase in sales in each year amounting to 25% of the current sales volume. The company's products sell at a contribution ratio of 15% and current sales are \$240m. The required rate of return on investments is 20%. Assuming that the 25% increase in sales would result in additional inventories of \$10m and additional accounts payable of \$2m, advise the company on whether or not to extend the credit period offered to customers if:

- all customers take the longer credit of two months.
- existing customers do not change their payment habits and only the new customers take the extended credit.

## Solution

The additional investment required, if all accounts receivable take two months' credit is as follows:

	\$m
Average accounts receivable after the sales increase ( $\frac{2}{12} \times \$300m$ )	50
Less current average accounts receivable ( $\frac{1}{12} \times \$240m$ )	<u>(20)</u>
Increase in accounts receivable	30
Increase in inventories	10
Less increase in accounts payable	<u>(2)</u>
Net increase in working capital investment	<u><u>38</u></u>

Increase in sales revenue is \$60m and at a contribution ratio of 15%, this is an increase in contribution of \$9m. The change in credit policy is justifiable if the rate of return on the additional investment in working capital exceeds 20%. The return on extra investment if all accounts receivable take two months' credit is:

$$\frac{\$9m}{\$38m} \text{ (i.e. 23.7\%)}$$

The additional investment required, if only new customers take two months' credit is as follows:

	\$m
Average accounts receivable after the sales increase ( $\frac{2}{12} \times \$60m$ )	10
Increase in inventories	10
Less increase in accounts payable	<u>(2)</u>
Net increase in working capital investment	<u><u>18</u></u>

Increase in sales revenue is \$60m and at a contribution ratio of 15%, this is an increase in contribution of \$9 million. The change in credit policy is justifiable if the rate of return on the additional investment in working capital exceeds 20%. The return on extra investment if all accounts receivable take two months' credit is:

$$\frac{\$9m}{\$18m} \text{ (i.e. 50.0\%)}$$

In both case (a) and case (b) the new credit policy appears to be worthwhile.



### Example: Extending credit (2)

Another company currently enjoys sales of HK\$5m per month. Variable costs of sales are \$4m per month (all payable in the month of sale). It is estimated that if the credit period allowed to accounts receivable were to be increased from one month to two months, sales volume would rise by 20%. All customers would take the extended credit.

If the company's cost of capital is 12.5%, is the extension of the credit period justifiable in financial terms?

	\$m
Current accounts receivable (1 month)	5.00
Accounts receivable after implementing the proposal (2 months)	<u>12.00</u>
Increase in accounts receivable	<u><u>7.00</u></u>
	\$
Financing cost ( $\times 12.5\%$ )	875,000
Annual contribution from additional sales (12 months $\times 20\% \times \$1,000,000$ )	<u>2,400,000</u>
Annual net benefit from extending credit period	<u><u>1,525,000</u></u>

## 7.5 Collection of receivables



### Topic highlights

The **benefits** of action to collect debts must be greater than the **costs** incurred.

The debt collection policy of a company should be such that the administrative and other costs incurred in debt collection do not exceed the benefits from incurring those costs. Sometimes, companies have to accept that additional costs incurred on debt collection cannot be justified on a cost versus benefit analysis.

Having agreed credit terms with a customer, a company should issue an invoice and expect to receive payment when it is due. Sales ledger staff should ensure that:

- The customer is fully aware of the credit terms and conditions
- The invoice is correct and issued promptly
- They are aware of any potential “quirks” in the customer's system
- Queries are resolved quickly
- Monthly statements are issued promptly

If payments become overdue, they should be “chased”. Procedures for pursuing overdue debts might involve some or all of the following:

- Issuing reminders or final demands
- These should be sent to a named individual, asking for repayment by return of post
- Threatening not to sell any more goods on credit until the debt is cleared
- Chasing payment by telephone
- Making a personal approach
- Suspending further credit to the customer until the due amount is paid
- Instituting legal action to recover the debt
- Hiring external debt collection agency to recover debt

There will always be some customers who require to be pursued before they will part with any cash and settle their bills. To be effective, any credit control policy must include chasing/collection procedures together with a timetable for action. The following is merely an example of this:



### Example:

Document	Action	Comments
Invoice	As soon as possible following despatch of goods to customer	Should include reminder of the credit terms (e.g. 30 days)
Statement	Say the 20 <sup>th</sup> of each month or last working day prior to 20 <sup>th</sup>	Many businesses make payments on or around the last day of the month.....get in first
Aged debtors list	The start of each week	This is the trigger mechanism for debt chasing
Letter 1	Send no later than 7 days after the invoice is due for payment	Polite reminder
Telephone call 1	Make no later than 7 days after letter 1	Any reason for non-payment? What action does customer intend? Follow-up as necessary

Document	Action	Comments
Letter 2	Send no later than 7 days after telephone call 1	Firm reminder Inform sales staff of problem with account Cease new supplies threat
Telephone call 2	Within 3 days of letter 2	Did customer get letter? What action planned now?
Letter 3	Send no later than 7 days after letter 3	Last chance Suspend credit
Pass to solicitor	Do this no later than 7 days after letter 3	Last chance of avoiding legal action
Total time:	Maxima:	
Invoicing to statement	30 days	
Invoicing to letter 1	37 days	
Invoicing to telephone call 1	44 days	
Invoicing to letter 2	51 days	
Invoicing to telephone call 2	54 days	
Invoicing to letter 3	58 days	
Invoicing to placing with solicitor	65 days	

## 7.6 Early settlement discounts



### Topic highlights

**Early settlement discounts** may be employed to shorten average credit periods, and to reduce the investment in accounts receivable and therefore **interest costs**. The benefit in interest cost saved should exceed the cost of the discounts allowed.



### Key term

A **settlement discount** allows customers to pay less than their full debt if they pay sooner than the end of their credit period.

The company must ensure that offering the discount is financially sensible, with the benefit of receiving the cash early exceeding the cost of the discount (i.e. the earnings forgone by offering the discount).

Offering customers early settlement discounts can have a number of potential benefits:

- Reduction in the cost of credit
- Reduction of settlement default risk (i.e. potential bad debts)
- Shortening of the working capital cycle (reducing the account receivables period will reduce the working capital investment required)
- Earnings from the reduced working capital invested (interest earned from re-investment elsewhere in the business or interest saved from a reduction in the bank overdraft)
- Increase in sales volume and \$ contribution



### Example: Settlement discounts

A company has annual credit sales of \$30m with two months being the usual credit period given to customers. Not all customers, however, adhere to the policies as evidenced by the actual receivables ageing record as follows:

<i>Actual credit term</i>	<i>% of customers</i>
2 months	60
3 months	40

Average collection period is therefore =  $(2 \times 0.6) + (3 \times 0.4) = 2.4$  months

The company's management decide to offer a 15% discount for payments made within 14 working days (assuming one year = 350 working days) of the invoice being raised and to reduce the maximum time allowed for payment to one month. It is estimated that 80% of customers will take the discount and the remainder will use the existing credit terms.

If such a scheme is offered to customers, sales will increase by 20% (at a contribution margin of 30%) and bad debts will be reduced from 10% to 6% of credit sales. The company requires a 25% per annum return on investment.

Is implementation of the early settlement discount scheme worthwhile in financial terms?

<i>Without discount</i>	<i>\$m</i>	<i>With discount</i>	<i>\$m</i>
<i>Benefits</i>			
Contribution earned \$30m × 30%	9.00	\$30m × 1.2 × 30%	10.80
<i>Costs</i>			
Discount given N/A	0.00	\$30m × 1.2 × 0.8 × 15%	(4.32)
Bad debts \$30m × 10%	(3.00)	\$30m × 1.2 × 6%	(2.16)
Cost of working capital invested \$30m × $\frac{2.4}{12} \times 25\%$	(1.50)	\$30m × 1.2 × 0.8 × $\frac{14}{350} \times 25\%$	(0.29)
		\$30m × 1.2 × 0.2 × $\frac{3}{12} \times 25\%$	<u>(0.45)</u>
Net benefits	<u>4.50</u>		<u>3.58</u>

The company should not adopt the early settlement discount scheme, as it results in a net decrease in benefits of \$0.92 million.

## 7.7 Bad debts risk



### Topic highlights

Some companies use **factoring** and **invoice discounting** to help short-term liquidity or to reduce administration costs. **Insurance**, particularly of overseas debts, can also help reduce the risk of bad (irrecoverable) debts.

Different credit policies are likely to have differing levels of bad debt risk. The higher sales revenues resulting from easier credit terms should be sufficiently profitable to exceed the cost of potential bad debts and any additional investment necessary to achieve the higher sales.

Companies might be able to obtain credit insurance against certain approved debts going bad through a specialist credit insurance firm. A company cannot insure against all its bad debt losses, but may be able to insure against losses above the normal level.

When a company arranges credit insurance, it must submit specific proposals for credit to the insurance company, stating the name of each customer to which it wants to give credit and the amount of credit it wants to give. The insurance company will accept, amend or refuse these proposals, depending on its assessment of each of these customers.

## 7.8 Factoring



### Key term

This is an arrangement to have debts collected by a **factoring company**, which advances a proportion of the money it is due to collect. Factoring involves turning over responsibility for collecting the company's debts to a specialist institution.

Factoring companies offer the following services:

- (a) Taking over the running of clients' sales ledgers
- (b) Protection (at an agreed percentage) against bad debts, provided excessive credit was not allowed by the client
- (c) Providing financing by means of advances, the security for which is the receivable balances owing.

Factoring companies which offer the above services can be classified into service factors (where clients will receive payment from the factor on the industry average debtor settlement date) or finance factors (when factor receives a batch of invoices from the client, an equivalent of approximately 80 – 85% variable of their value is remitted to the client prior to the normal due dates).

The factoring arrangement can either be:

(a) **Disclosed**

The factoring arrangements are disclosed formally to the customer.

The customers (i.e. receivables) deal with the factoring company for any correspondence regarding invoicing, settlement and so on.

(b) **Undisclosed**

The company continues to collect the debt but the customer does not know that the debts have been factored (to overcome the fear that the intervention of an external third party, the factor, might affect the goodwill or reflect adversely on the company's financial stability in the eyes of ill-informed customers).

Even though there may be genuine reasons why payment is being withheld, if the debt is "chased" very hard by the factor a valuable customer could be lost for good. Market feedback, which is potentially useful, is also lost.

(c) **With recourse**

The factor buys over client's debts but if the debts become bad, the factor claims back the amount paid to the client (i.e. the client will bear the bad debts ultimately).

(d) **Without recourse**

The factors will take full responsibility for credit control and bad debts risk (i.e. the factors will bear the bad debts ultimately).

In practice, however, if a payment becomes overdue the factor will consult the client. The client may decide to take over the bad debts risk from the factor, rather than lose the goodwill of the



customer if the factor has to take legal action to recover the debts. Otherwise the factor is free to take non-payers to court to obtain payment

The benefit and costs of using factoring can be summarised as follows:

Benefits	Limitations/costs
Cash in sooner, so a company can pay its suppliers promptly and take advantage of any early payment discounts that are available	For disclosed factoring, customers make payments direct to the factor, which might present a negative picture of the firm
Optimum stock levels can be maintained, as the company has enough cash to pay for the inventories it needs	Costs of using factors include:
Growth can be financed through sales rather than by injecting fresh external capital	Commission or royalty based charges on sales for handling sales ledger and credit control
The company gets finance linked to its volume of sales rather than determined by historical balance sheet	Interest charge for advances provided by the finance factor service (the interest rate will usually be higher than that for a bank overdraft)
Savings in \$ and time in management of sales ledger and debt collection	



**Example: Factoring**

A company makes annual credit sales of \$200m. Credit terms are one month, but its debt administration has been poor and the average collection period has been two months with 2% of sales resulting in bad debts which are written off. A non-recourse factor would take on the task of debt administration and credit checking, at an annual fee of 6% of sales receipts. The company would save \$8m a year in administration costs. The factor would also provide an advance of 75% of invoiced debts at once at an interest rate of 3% above the current base rate which is at 10% and the remaining 25% is payable in normal credit term. The company normally obtains an overdraft facility to finance its debtors at a rate of 2% over base rate.

Assuming constant monthly turnover, should the factor's services be accepted?

**Solution**

	\$m		\$m
<i>Benefits</i>		<i>Costs</i>	
Savings in cost of finance		Factoring charges	
$\$200m \times \frac{2}{12} \times 0.12$	4.00	$\$200m \times 0.06$	12.00
Bad debts avoided		Cost of finance from the factor	
$\$200m \times 0.02$	4.00	$\$200m \times 0.75 \times \frac{1}{12} \times 0.13$	1.63
Savings		Cost of finance from the bank	
Administration costs	<u>8.00</u>	$\$200m \times 0.25 \times \frac{1}{12} \times 0.12$	<u>0.50</u>
	<u>16.00</u>		<u>14.13</u>

The factoring services should be accepted as there is a net benefit of \$1.87 million.

## 7.9 Invoice discounting



### Key term

**Invoice discounting** is the purchase of a selection of invoices at a discount. It is related to factoring and many factors will provide an invoice discounting service.

The invoice discounter does not take over the administration of the client's sales ledger nor protects against bad debts (i.e. finance provided is with recourse).

A company should only want to have some invoices discounted when there is a temporary cash shortage, so invoice discounting tends to consist of one-off deals. Confidential invoice discounting is an arrangement whereby a debt is confidentially assigned to the factor and the company's customers will only become aware of the arrangement if they do not pay their debts.

The arrangement is purely for the advance of cash. In a typical arrangement, the discounting organisation:

- offers to purchase selected invoices
- immediately advances up to 75% of their value
- controls receipts of cash which settle these invoices
- at the end of each month pays over the balance of the purchase price, less charges, on the invoices that have been settled in the month

This type of discounting arrangement can also be seen in transactions involving:

- bills of exchange
- acceptance credits
- hire purchase receivables

## 7.10 Foreign trade



### Topic highlights

**Exporters** have to address the problems of **larger inventories and accounts receivable**, and an increased **risk** of bad debts due to the transportation time and additional paperwork involved in sending goods abroad.

When **foreign trades** are involved, management should be aware of additional issues.

Export credit risk is the failure or delay in collecting payments due from foreign customers, possible causes of loss including the following:

- (a) Illiquidity or insolvency of the foreign customer
- (b) Bankruptcy or failure of a bank in the remittance chain
- (c) A poorly specified remittance channel
- (d) Inconvertibility of the customer's currency, and lack of access to the currency in which payment is due (caused by deliberate exchange control or by an unplanned lack of foreign exchange in the customer's central bank)
- (e) External and internal political risk

A company can protect against export credit risks in a number of ways. Means of protection against export credit risks include the following:

- (a) Using banks in both countries to act as the collecting channel for the remittance and to control the shipping documents so that they are only released against payment or acceptance of negotiable instruments (bills of exchange or promissory notes).
- (b) Committing the customer's bank through an irrevocable letter of credit (LC) and confirm the LC by a first class bank in the exporter's country to make it a confirmed LC (**Note**. The issuing bank, by issuing its LC, guarantees payment to the beneficiary).
- (c) Obtaining support from third parties, for example guarantee of payment from a local bank or a letter from local finance ministry or central bank confirming availability of foreign currency.
- (d) Taking out export credit cover/insurance or means of export finance, factoring or forfeiting house to reduce default risk.

Critical issues to ensure the protection means are effective include the need to:

- (a) avoid giving credit to customers who are not creditworthy.
- (b) negotiate secure payment terms, procedures and mechanisms which customers accept.
- (c) present exactly the required documents (exporters can only collect under an LC if they do so).
- (d) insist that payment is made in a convertible currency and in a form that the customer's authorities will permit to become effective as a remittance.

## 8 Payables management



### Topic highlights

Effective management of **trade accounts payable** involves seeking satisfactory credit terms from suppliers, getting credit extended during periods of cash shortage, and maintaining good relations with suppliers.

Taking credit from suppliers is a normal feature of business. Taking credit from a supplier is a source of short-term finance because it helps to keep working capital down and is one way in which a company can obtain some short-term finance other than via overdrafts. It is usually considered as a relatively cheap source of finance as suppliers rarely charge interest on the amount owed. It is particularly important to small and fast growing firms.

The costs of making maximum use of trade credit include the loss of suppliers' goodwill, and the loss of any available cash discounts for the early payment of debts. The cost of taking advantage cash discounts can be calculated by comparing the saving from the discount with the opportunity cost of investing the cash.

Typically the management of trade payable involves:

- obtaining satisfactory credit from suppliers
- extending credit during periods of cash shortage
- maintaining good relations with regular and important suppliers

Settlement of trade credit is normally in form of cash, cheques, bills of exchange, and acceptance credits.

As trade credit is a major source of finance, it is particularly important to small and fast growing firms to have such low cost financing.

If a supplier offers a discount for the early payment of debts, the evaluation of the decision whether or not to accept the discount is similar to the evaluation of the decision whether or not to offer a discount to a customer. One is the mirror image of the other.



### Example: Early payment discount

A company has annual credit purchases of HK\$20m from its major supplier. The credit terms are payment must be made in 60 days of the invoice without discount but a cash discount of 4% will be given if payment is made within 10 days of the invoice. The company's required return on investment is at 15% per annum.

Is the cash discount of 4% worth undertaking from a financial viewpoint?

		\$m
<i>Taking discount</i>		
Early payment	$\$20\text{m} \times 0.96$	<u>19.20</u>
<i>Refusing discount</i>		
Payment made		20.00
Return earned	$\$20\text{m} \times 0.15 \times \frac{50}{365}$	(0.41)
		<u>19.59</u>

It is cheaper to accept the discount.

## 9 Cash forecasting



### Topic highlights

**Cash flow forecasts** show the expected receipts and payments during a forecast period and are a vital management control tool, especially during times of recession.

### 9.1 Motives for companies to hold cash

(a) **Transaction motive**

To meet regular payment commitments such as accounts payable, employees' wages, taxes and so on.

(b) **Precautionary motive**

To maintain a "buffer" of cash for unforeseen contingencies (often satisfied by having an overdraft facility that costs nothing until actually used).

(c) **Speculative motive**

To hold surplus cash as a speculative asset (for example, in the hope that interest rates will rise).

Many companies, however, regard holding large amounts of cash as not prudent. How much cash should a company keep on hand or "on short call" at a bank? The more cash which is on hand, the easier it will be for the company to meet its payments as they fall due and to take advantage of any discounts available. The cost of this is the loss of earnings that might otherwise have been obtained by using the funds in another way. The financial manager should try to balance liquidity with profitability.

## 9.2 Cash flow problems

These can occur in businesses for a variety of reasons:

- Continual losses being incurred will eventually lead to cash flow shortages, unless the losses are due to a large depreciation charge in which case the cash flow problem might only begin when non-current assets need to be replaced.
- In a period of inflation, an ever-increasing amount of cash is required simply to replace used-up and worn-out assets.
- In a period of growth, more cash is required for non-current assets and higher amounts of inventories and accounts receivable.
- When a business has seasonal or cyclical sales, it may have cash flow difficulties at certain times of the year, when cash inflows do not match cash outflows (for example, cash inflows are low but cash outflows are high because the business is building up its inventory for the next period of anticipated high sales).
- A single non-recurring item of expenditure may create a cash flow problem if it is not planned for or forecast.

## 9.3 Cash forecasting

Cash flow forecasts show the expected receipts and payments during a forecast period and are a vital management control tool, especially during times of recession.



### Key term

A **cash flow forecast** is a detailed forecast of cash inflows and outflows incorporating both revenue and capital items.

A cash flow forecast is thus a statement in which estimated future cash receipts and payments are tabulated in such a way as to show the forecast cash balance of a business at defined intervals.



### Illustration: Cash flow forecast

For example, in December 20X1 an accounts department might wish to estimate the cash position of the business during the next three months, January to March 20X2. An illustration of how a cash flow forecast might be drawn up is as follows.

	<i>January</i> \$m	<i>February</i> \$m	<i>March</i> \$m
<i>Estimated cash receipts</i>			
From credit customers	14,000	16,500	17,000
From cash sales	3,000	4,000	4,500
Proceeds on disposal of non-current assets		2,200	
Total cash receipts	<u>17,000</u>	<u>22,700</u>	<u>21,500</u>
<i>Estimated cash payments</i>			
To suppliers of goods	8,000	7,800	10,500
To employees (wages)	3,000	3,500	3,500
Purchase of non-current assets		16,000	
Rent and rates			1,000
Other overheads	1,200	1,200	1,200
Repayment of loan	2,500		
	<u>14,700</u>	<u>28,500</u>	<u>16,200</u>
Net surplus/(deficit) for month	2,300	(5,800)	5,300
Opening cash balance	<u>1,200</u>	<u>3,500</u>	<u>(2,300)</u>
Closing cash balance	<u>3,500</u>	<u>(2,300)</u>	<u>3,000</u>

In the illustration above the cash balance at the beginning of the flow forecast period (1 January 20X2) will be \$1,200 million. Estimates have been made of the cash that is likely to be received by the company (from cash sales, credit sales and a planned disposal of non-current assets in February). Similar estimates have been made of cash due to be paid out by the company (payments to suppliers and employees, payments for rent, rates and other overheads, payment for a planned purchase of non-current assets in February and a loan repayment due in January).

From these estimates it is a simple step to calculate the excess of cash receipts over cash payments in each month. In some months cash payments may exceed cash receipts and there will be a deficit for the month. In the above illustration, this occurs during February due to the large investment in non-current assets in that month.

The last part of the cash flow forecast above shows how the company's estimated cash balance can then be rolled along from month to month. Starting with the opening balance of \$1,200m at 1 January 20X2, a cash surplus of \$2,300m is generated in January. This leads to a closing January balance of \$3,500m which becomes the opening balance for February. The deficit of \$5,800m in February throws the cash position into overdraft and the overdrawn balance of \$2,300m becomes the opening balance for March. Finally, the healthy cash surplus of \$5,300m in March leaves the business with a favourable cash position of \$3,000m at the end of the flow forecast period.

The cash flow forecast is one of the most important planning tools that an organisation can use. It shows the cash effect of all plans made within the forecast process and hence its preparation can lead to a modification of cash flow forecasts if it shows that there are insufficient cash resources to finance the planned operations.

It can also give management an indication of potential problems that could arise and allows them the opportunity to take action to avoid such problems. A cash flow forecast can show four positions.

Management will need to take appropriate action depending on the potential position.

Cash position	Appropriate management action
<b>Short-term surplus</b>	Pay accounts payable early to obtain discount Attempt to increase sales by increasing accounts receivable and inventories Make short-term investments
<b>Short-term deficit</b>	Increase accounts payable Reduce accounts receivable Arrange an overdraft
<b>Long-term surplus</b>	Make long-term investments Expand Diversify Replace/update non-current assets
<b>Long-term deficit</b>	Raise long-term finance (such as via issue of share capital) Consider shutdown/disinvestment opportunities

A cash flow forecast is prepared to show the expected receipts of cash and payments of cash during a budget period. It should be obvious that the profit or loss made by an organisation during an accounting period does not reflect its cash flow position for the following reasons:

- Not all cash receipts affect income statement income.
- Not all cash payments affect income statement expenditure.
- Some costs in the income statement such as profit or loss on sale of non-current assets or depreciation are not cash items but are costs derived from accounting conventions.

- (d) The timing of cash receipts and payments may not coincide with the recording of income statement transactions. For example, a credit sale may be made in 20X1 and shown in the income statement for that year, but the cash not be received until 20X2.

To ensure that there is sufficient cash in hand to cope adequately with planned activities, it is essential that management prepares and pays close attention to the company's cash flow forecast.



### Example: Cash forecasting

The following data for a company is for the period November 20X1 to June 20X2. It has been extracted from functional flow forecasts that have already been prepared.

	20X1				20X2			
	November	December	January	February	March	April	May	June
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Sales	80,000	100,000	110,000	130,000	140,000	150,000	160,000	180,000
Purchases	40,000	60,000	80,000	90,000	110,000	130,000	140,000	150,000
Wages	10,000	12,000	16,000	20,000	24,000	28,000	32,000	36,000
Overheads	10,000	10,000	15,000	15,000	15,000	20,000	20,000	20,000
Dividends		20,000						40,000
Capital expenditure			30,000			40,000		

- (a) Sales are 40% cash 60% credit. Credit sales are paid two months after the month of sale.  
 (b) Purchases are paid the month following purchase.  
 (c) 75% of wages are paid in the current month and 25% the following month.  
 (d) Overheads are paid the month after they are incurred.  
 (e) Dividends are paid three months after they are declared.  
 (f) Capital expenditure is paid two months after it is incurred.  
 (g) The opening cash balance is \$15,000,000.

The Managing Director is pleased with the above figures as they show sales will have increased by more than 100% in the period under review. In order to achieve this he has arranged a bank overdraft with a ceiling of \$50,000,000 to accommodate the increased inventory levels and wage bill for overtime worked.

#### Required

Prepare a cash flow forecast for the six-month period January to June 20X2 and comment/offer advice on the results in the light of the Managing Director's comments.

	January	February	March	April	May	June
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
<b>Cash receipts</b>						
Cash sales	44,000	52,000	56,000	60,000	64,000	72,000
Credit sales	48,000	60,000	66,000	78,000	84,000	90,000
	<u>92,000</u>	<u>112,000</u>	<u>122,000</u>	<u>138,000</u>	<u>148,000</u>	<u>162,000</u>
<b>Cash payments</b>						
Purchases	60,000	80,000	90,000	110,000	130,000	140,000
Wages: 75%	12,000	15,000	18,000	21,000	24,000	27,000
Wages: 25%	3,000	4,000	5,000	6,000	7,000	8,000
Overheads	10,000	15,000	15,000	15,000	20,000	20,000
Dividends			20,000			
Capital expenditure			30,000			40,000
	<u>85,000</u>	<u>114,000</u>	<u>178,000</u>	<u>152,000</u>	<u>181,000</u>	<u>235,000</u>
b/f	15,000	22,000	20,000	(36,000)	(50,000)	(83,000)
Net cash flow	<u>7,000</u>	<u>(2,000)</u>	<u>(56,000)</u>	<u>(14,000)</u>	<u>(33,000)</u>	<u>(73,000)</u>
c/f	<u>22,000</u>	<u>20,000</u>	<u>(36,000)</u>	<u>(50,000)</u>	<u>(83,000)</u>	<u>(156,000)</u>

The overdraft arrangements are quite inadequate to service the cash needs of the business over the six-month period. If the figures are realistic then action should be taken now to avoid difficulties in the near future.

The following are possible courses of action:

- Activities could be curtailed.
- Other sources of cash could be explored, for example a long-term loan to finance the capital expenditure and a factoring arrangement to provide cash due from accounts receivable more quickly.
- Efforts to increase the speed of debt collection could be made.
- Payments to accounts payable could be delayed.
- The dividend payments could be postponed.
- Staff might be persuaded to work at a lower rate in return for, say, an annual bonus or a profit-sharing agreement.
- Extra staff might be taken on to reduce the amount of overtime paid.

The inventory holding policy should be reviewed. It may be possible to meet demand from current production and minimise cash tied up in inventories.

## 9.4 Cash flow deviations

Cash flow forecasts, whether prepared on an annual, monthly, weekly or even a daily basis, are only estimates of future cash flows. Even the best estimates cannot be exact so deviations from the expected cash flow forecast are inevitable.

A cash flow forecast model (for example, a spreadsheet) could be constructed to test the sensitivity of cash flow forecasts to changes in estimates of sales, costs and so on. By planning for different eventualities, management should be able to prepare contingency measures in advance and also better appreciate the key factors in the cash flow forecast.

In addition, probability distribution of possible outcomes for the cash position could be produced to better forecast minimum cash balances or the borrowing power required to provide a satisfactory margin of safety. Unforeseen deficits are difficult to finance at short notice so advance planning is essential.

## 9.5 Financing short-term cash requirements

There are various sources available to obtain cash resources. These are discussed further in Chapter 9. Key ones are shown in the table below:

Sources	Merits/benefits	Demerits/costs
<b>Bank overdraft</b>		
It is mainly provided by the clearing banks and represents permission by the bank to write cheques even though the company has insufficient funds in its account to meet the payment	<p>Flexible in a way that it can be used as required</p> <p>It is relatively cheap as compared to other forms of financing</p> <p>Interest due is tax deductible</p>	<p>It is legally repayable on demand</p> <p>Security is usually required by way of fixed or floating charge on assets or even personal guarantees from owners</p> <p>Interest costs vary with bank base rates</p>



Sources	Merits/benefits	Demerits/costs
<p><b>Bank loan</b></p> <p>It represents a formal agreement between the bank and the borrower, that the bank will lend a specific sum for a specific period</p>	<p>No risk that the source will be withdrawn before the expiry of the loan period</p>	<p>Interest must be paid on the whole of this sum for the duration of the loan</p> <p>It is more costly than overdraft</p> <p>Less flexible</p> <p>Security is required as in the overdraft arrangement</p>
<p><b>Cash surpluses</b></p> <p>These are the excess of revenue received over the costs paid in business operations</p>	<p>It is not a debt, hence no repayment and no default risk</p>	<p>Lost investment opportunity as a result of using cash resources (i.e. cost if high return investment opportunities are available)</p>

## 9.6 Alleviating cash shortages



### Topic highlights

**Cash shortages** can be eased by postponing capital expenditure, selling assets, taking longer to pay accounts payable and pressing accounts receivable for earlier payment.

When a company cannot obtain cash resources from any other source such as a loan or an increased overdraft, cash shortages can be eased via a number of steps:

- Postponing non-essential capital expenditure (i.e. purchasing certain new non-current assets will be essential for the development and growth of the business but purchasing others may not be).
- Accelerating cash inflows which would otherwise be expected in a later period (for example, more aggressively chasing accounts receivable or offering customers discounts for earlier payment).
- Reversing past investment decisions by selling previously acquired less crucial assets.
- Negotiating to postpone or reduce payments (i.e. cash outflows) by extending credit taken from suppliers, rescheduling loan repayments by agreement with a bank, deferring payment of corporate tax.
- Reducing dividend payments (discretionary cash outflows) although a company's directors might be constrained by shareholders' expectations.

## 10 Cash and treasury management



### Topic highlights

A large organisation will have a **treasury department** to manage liquidity, short-term investment, borrowings, foreign exchange risk and other, specialised, areas such as forward contracts and futures.

Optimal **cash holding** levels can be calculated from formal models, such as the **Baumol model** and the **Miller-Orr model**.

## 10.1 Introduction

Most companies have a treasury function of one sort or another. A large organisation will have a treasury department to manage liquidity, short-term investment, borrowings, foreign exchange risk and other specialised areas such as forward contracts and futures and so on.

One of the key tasks of treasury management is the generation of external and internal funds for business. To manage cash (funds) effectively and efficiently many large companies establish a separate treasury department.

There are a number of different cash management models operated by companies that indicate the optimum amount of cash that a company should hold. For example, optimal cash holding levels can be calculated from formal models, such as the Baumol model and the Miller-Orr model.

## 10.2 The Baumol model

The Baumol model is based on the idea that deciding on optimum cash balances is like deciding on optimum inventory levels. It assumes that cash is steadily consumed over time and a business holds a stock of marketable securities that can be sold when cash is needed. The cost of holding cash is the opportunity cost (i.e. the interest foregone from not investing the cash). The cost of placing an order is the administration cost incurred when selling the securities.



### Formula to learn

The Baumol model uses an equation of the same form as the EOQ formula for inventory management and, similarly to the EOQ, costs are minimised when:

$$Q = \sqrt{\frac{2 \times C \times S}{i}}$$

Where:

S	=	demand for cash
C	=	cost of raising cash (for example, selling securities to turn into cash)
i	=	interest cost of holding cash (i.e. opportunity cost)
Q	=	the total amount to be raised to provide for S

The Baumol model has some drawbacks:

- It is difficult to predict amounts required over future periods with much certainty in reality.
- There is no buffer inventory of cash allowed for and there may be costs associated with running out of cash.
- There may be other normal costs of holding cash which increase with the average amount held.



### Illustration: Baumol model (1)

A company has a fixed cost of \$40,000 to obtain new funds. There is a requirement for \$240,000 cash over each period of one year for the foreseeable future. The interest cost of new funds is 12% per annum and the interest rate earned on short-term securities is 9% per annum. How much finance should the company raise each time that it raises new finance?

The cost of holding cash (i) is 12% – 9% = 3%

The optimum level of Q (the “reorder quantity”) =  $\sqrt{\frac{2 \times \$40,000 \times \$240,000}{0.03}} = \$0.8\text{m}$

The optimum amount of new funds to raise is \$800,000. This amount is raised every:

$$\frac{\$0.8\text{m}}{\$240,000} = 3.33 \text{ years}$$



### Illustration: Baumol model (2)

A company requires \$480,000 of cash over each period of one year for the foreseeable future and is considering two alternatives:

- Option (1) Taking up a bank loan of \$480,000 at once for a one-year period at an interest rate of 12% per annum on the initial balance
- Option (2) Sale of existing securities which will incur a transaction fee of \$1,000 based on the Baumol model (the return from the securities investment is currently at 15% per annum)

Any fund/cash not in use will be placed in a call deposit at 9% per annum.

Which of the two options is financially better to undertake?

	<i>Option (1)</i>	<i>Option (2)</i>
Annual cash required	\$0.48m	\$0.48m
Cash to be raised/cycle	\$0.48m	$\sqrt{\frac{2 \times 1,000 \times 0.48\text{m}}{(0.15 - 0.09)}} = \$126,491$
Number of cycles/year	1	$\frac{\$0.48\text{m}}{\$126,491} = \text{approx } 4$
Total costs per annum under each option (\$):		
	\$	\$
<i>Option 1</i>		<i>Option 2</i>
		Ordering cost
		\$1,000 × 4
		4,000
Interest payable		Holding cost
\$0.48m × 0.12	57,600	(\$0.48m/2) × 0.15
Lost return on investment		36,000
(\$0.48m/2) × 0.09	(21,600)	Return on investment
Total cost	<u>36,000</u>	(\$126,491/2) × 0.09
		<u>(5,700)</u>
		<u>34,300</u>

Option (2) should be chosen, as its total cost is marginally lower than option (1).

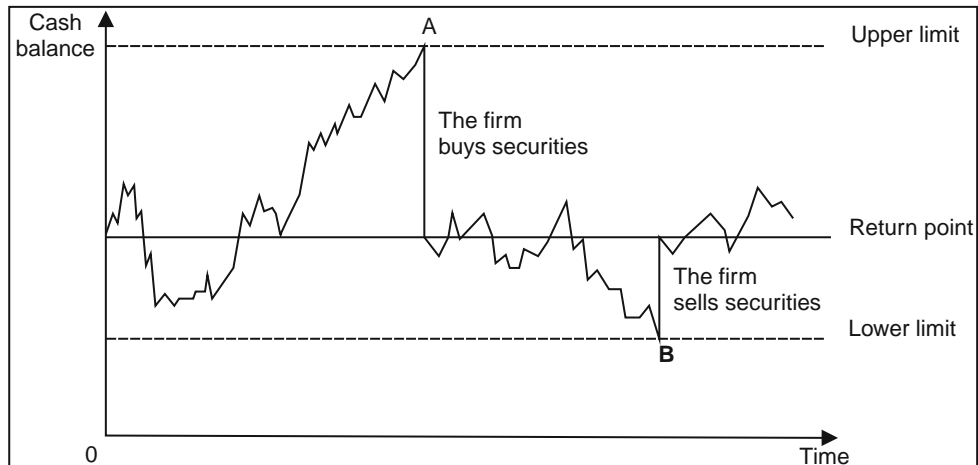
## 10.3 The Miller-Orr model

In an attempt to produce a more realistic approach to cash management, various models more complicated than the Baumol approach have been developed. One of these, the Miller-Orr model, manages to achieve a fair degree of realism while not being over-elaborate.

If there is no attempt to manage cash balances, this balance is likely to “meander” upwards or downwards. The Miller-Orr model imposes limits to this meandering.

The model suggests the following:

- The cash balance held should always be close to a “normal level”/“return point” (RP).
- If the cash balance increases and reaches an “upper limit” (UL), firms should buy/invest sufficient securities to utilise the excess cash and bring cash balance back to the RP.
- If the cash balances decreases and reaches a “lower limit” (LL), firms should sell/dispose of sufficient securities to bring the balance back to the RP.



Miller and Orr showed that the upper and lower limits and the return point depend on the variance of cash flows, transaction costs and interest rates. If the day-to-day variability of cash flows is high or the transaction cost in buying or selling securities is high, then wider limits should be set. If interest rates are high, the limits should be closer together. To keep the interest costs of holding cash down, the return point is set at one-third of the distance (or “spread”) between the lower and the upper limit.



### Key term

**Return Point (RP)** = Lower limit +  $(\frac{1}{3} \times \text{spread})$

$$\text{Spread} = 3 \times \left( \frac{3}{4} \times \frac{\text{Transaction costs} \times \text{variance of cash flows}}{\text{Interest rate}} \right)^{\frac{1}{3}}$$

(Note. “To the power of 1/3” means the cube root.)

To use the Miller-Orr model:

- Set the lower limit for the cash balance (could be zero or some minimum safety margin above zero).
- Estimate the variance of cash flows from sample observations over a lengthy period.
- Calculate the interest rate and transaction cost (assumed to be fixed) for each sale or purchase of securities.
- Compute the upper limit and the return point from the model and implement the limits strategy.



### Illustration: Miller-Orr

The minimum cash balance for a company is \$8,000, the variance of its daily cash flows is 4,000,000, equivalent to a standard deviation of \$2,000 per day and the transaction cost for buying or selling securities is \$50. The interest rate is 0.025% per day.

$$\begin{aligned}\text{Spread} &= 3 \times \left( \frac{3}{4} \times \frac{50 \times 4,000,000}{0.00025} \right)^{\frac{1}{3}} = \\ &= 3 \times \$8,434.33 \\ &= \$25,303\end{aligned}$$

Upper limit = Lower limit + \$25,303 = \$8,000 + \$25,303 = \$33,303

Return Point (RP) = \$8,000 + ( $\frac{1}{3} \times \$25,303$ ) = \$16,433

The decision rule formulated using the Miller-Orr model is as follows:

If the cash balance reaches \$33,303, buy \$16,870 (= 33,303 – 16,433) in marketable securities.

If the cash balance falls to \$8,000, sell \$8,433 of marketable securities for cash.

The usefulness of the Miller-Orr model is limited by the assumptions on which it is based but may save management time that might otherwise be spent in responding to those cash inflows and outflows that cannot be predicted.

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## 10.4 Investing surplus cash



### Topic highlights

**Temporary surpluses** of cash can be invested in a variety of financial instruments. Longer-term surpluses should be returned to shareholders if there is a lack of investment opportunities.

When a long-term surplus exists, it should normally be returned to shareholders if there is a lack of investment opportunities. This can be achieved by:

- increasing the usual level of the annual dividends which are paid
- making a one-off special dividend payment
- using the money to repurchase shares in the company

A temporary surplus of cash can be invested in a variety of financial instruments. The company should make this investment taking account of liquidity, profitability and safety considerations.

Other factors that companies need to consider include:

- fixed or floating rate investment (refer to expected interest rate movements)
- term to maturity (liquidity consideration and future interest rate expectation)
- penalties for early liquidation
- whether it is easy to realise quickly
- whether a minimum investment will be required
- domestic or international markets

Treasury policies should cover specified types of investment allowed, speed at which investments must be convertible into cash, ranking of investment risk (high or low) and procedures for obtaining credit ratings.

Potential short-term investments include:

- deposits with a bank or similar financial institution
- short-term debt instruments (debt securities that can be traded)
- longer-term debt instruments that can be sold when the cash is required
- stocks of listed companies that can be sold when the cash is required

The most common short-term deposit investment is to put the cash into a bank deposit to earn interest. The rate of interest obtainable depends on the size of the deposit, and varies from bank to

bank. Other types of deposit include money market lending and time deposits with finance houses (usually subsidiaries of banks).

There are a number of other short-term debt instruments which an investor can re-sell before the debt matures and is repaid. These debt instruments include certificates of deposit (CDs) and Treasury bills.

A CD is a security issued by a bank, acknowledging that a certain amount of money has been deposited with it for a certain period of time. The CD is issued to the depositor, attracting a stated amount of interest. CDs are negotiable and traded on the CD market (a money market), so if a CD holder wishes to raise immediate cash, the CD can be sold on the market at any time. This second-hand market in CDs makes them attractive, flexible investments for companies with excess cash.

To finance short-term cash deficiencies in its expenditure programme the government issues treasury bills. They are a promise to pay a certain amount to the holder of the bill at maturity. Treasury bills are issued at a discount to their nominal value and have a set term to maturity, after which the bill holder is paid the full value of the bill.

## 11 Working capital funding strategy



### Topic highlights

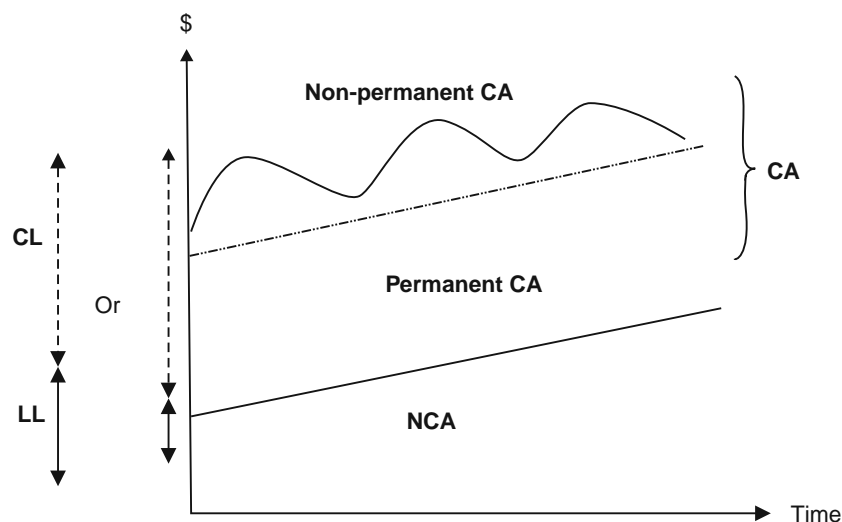
Working capital can be funded by a mixture of short and long-term funding. Businesses should be aware of the distinction between **fluctuating** and **permanent** assets.

A mixture of short and long-term funding can fund working capital. Companies require to be aware of the distinction between fluctuating and permanent assets. Computing the working capital requirement is a matter of calculating the value of current assets less current liabilities, perhaps by taking averages over a one-year period.

Companies have to decide what are the most important risks relating to working capital, and therefore whether to adopt a conservative, moderate or aggressive approach.

### 11.1 Aggressive

An aggressive approach involves a high level of non-current assets financed by short-term finance. This is profitable but risky.

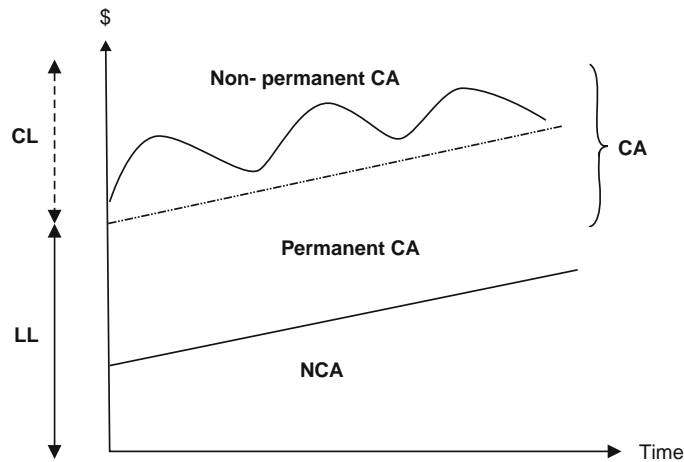


Investments funded by:

- CA current investment/assets
- NCA non-current (fixed) investment/assets
- CL short-term fund/liabilities
- LL long-term fund

### 11.2 Conservative

A conservative approach involves a high level of current assets financed by long-term finance. This is not profitable but it is safe.

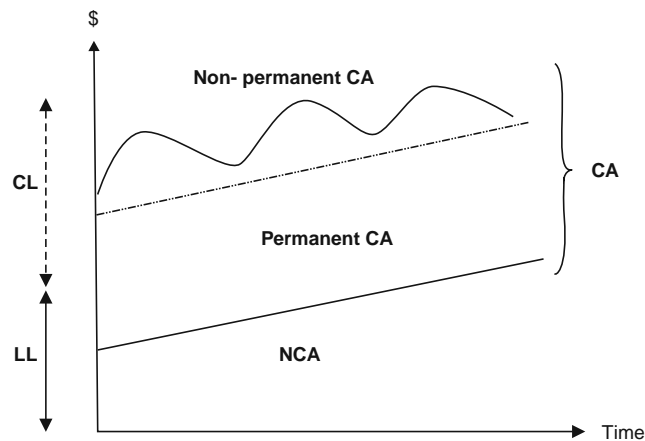


Investments funded by:

- CA current investment/assets
- NCA non-current (fixed) investment/assets
- CL short-term fund/liabilities
- LL long-term fund

### 11.3 Matching or moderate approach

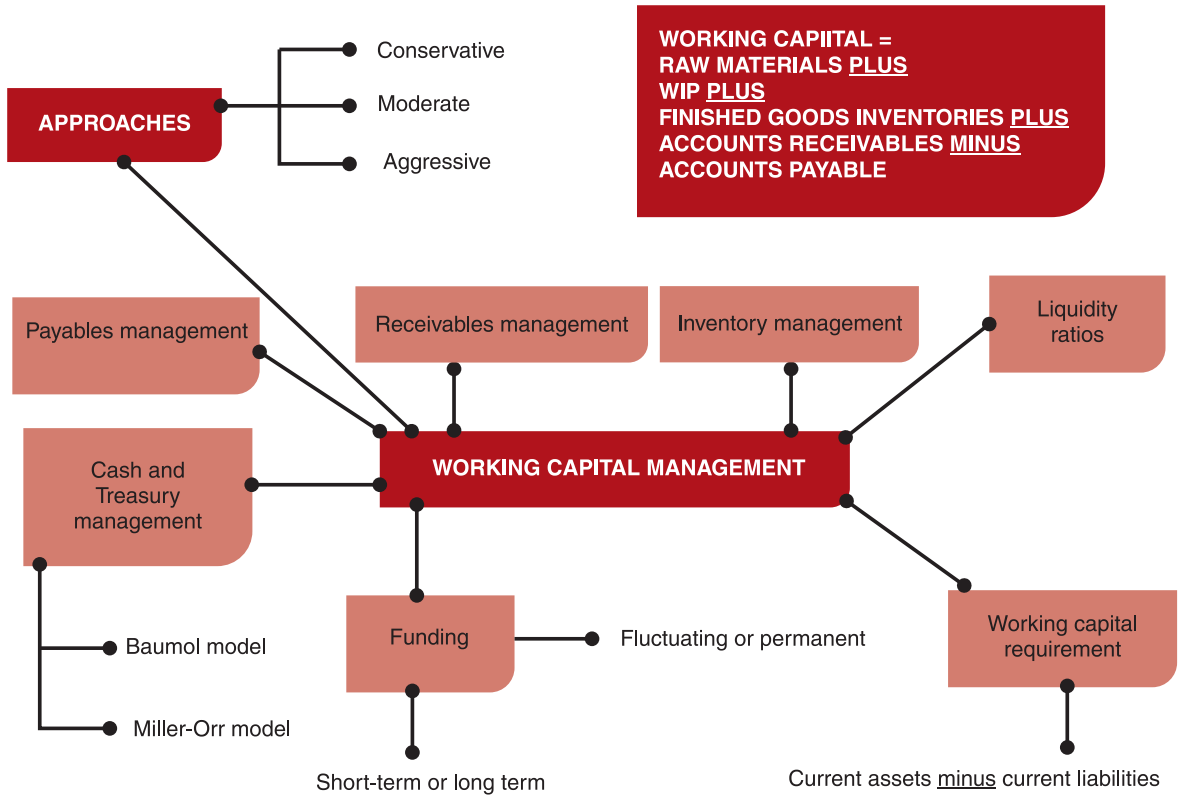
This leads to a “middle ground” hedging strategy. Non-current assets are financed by long-term finance and current assets are financed by short-term finance.



Investments funded by:

- CA current investment/assets
- NCA non-current (fixed) investment/assets
- CL short-term fund/liabilities
- LL long-term fund

# Topic recap



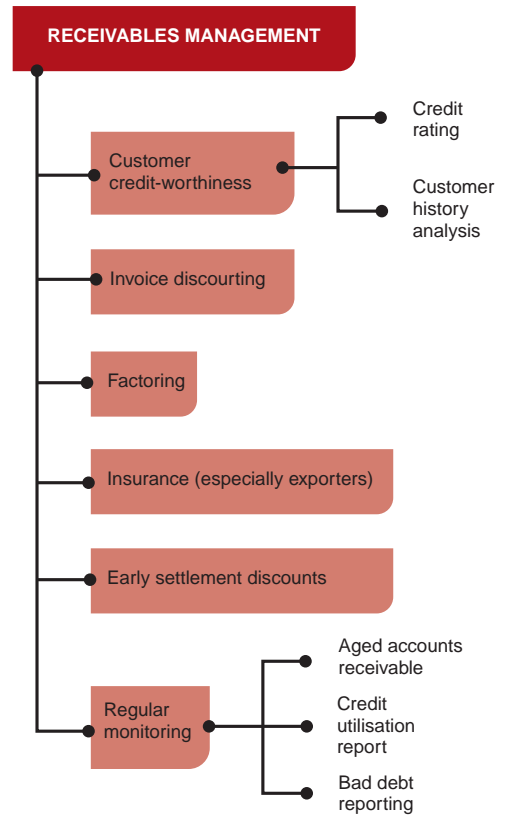
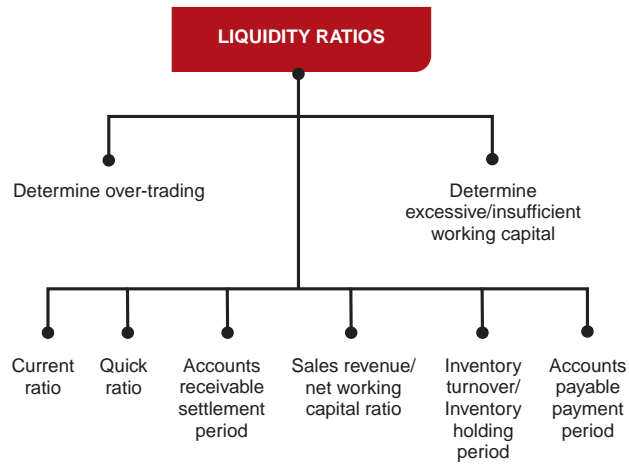
## PAYABLES MANAGEMENT

- Good supplier relations
- Cash flow forecasting
- Addressing cash shortages

## INVENTORY MANAGEMENT

- Economic order quantity (EOQ)
- Uncertainties in demand and lead times





## Answer to self-test question

### Answer 1

	20X8	20X7
Current ratio	$\frac{572.30}{501.00} = 1.14$	$\frac{523.20}{420.30} = 1.24$
Quick ratio	$\frac{453.30}{501} = 0.90$	$\frac{414.20}{420.30} = 0.99$
Receivables' collection period	$\frac{329.80}{2,065} \times 365 = 58 \text{ days}$	$\frac{285.40}{1,788.70} \times 365 = 58 \text{ days}$
Inventory holding period	$\frac{119}{1,478.60} \times 365 = 29 \text{ days}$	$\frac{109}{1,304} \times 365 = 31 \text{ days}$
Payables' turnover period	$\frac{276.20}{1,478.60} \times 365 = 68 \text{ days}$	$\frac{265.00}{1,304} \times 365 = 74 \text{ days}$

As a manufacturing group serving the construction industry, the company would be expected to have a comparatively lengthy receivables' turnover period, because of the relatively poor cash flow in the construction industry. It is clear that the company compensates for this by ensuring that they do not pay for raw materials and other costs before they have sold their inventories of finished goods. This is shown by the longer turnover period for payables than for inventory.

The company's current ratio and quick ratio are lower in 20X2 than 20X1, indicating some deterioration in liquidity. However, it would be useful to compare these ratios with the liquidity ratios for other companies in the same industry.

## Exam practice



## XYZ Limited

29 minutes

XYZ Limited's cash flow is affected by an increasing working capital level while sales are not going up. After a review, the management noted that the company does not have a sound credit policy and inventory management method and a clear strategy to finance the company's working capital. In particular, the management intends to review its working capital financing policies. Assume a tax rate of 16%.

The following information applies (in \$ thousands):

Average inventory = \$5,500  
 Average trade receivables = \$3,600  
 Average trade payables = \$1,800  
 Cash Purchases = \$5,000  
 Credit Purchases = \$16,400  
 Cash sales = \$3,500  
 Credit sales = \$23,000  
 Cost of goods sold = \$8,000

*Required:*

- (a) Calculate the company's operating cycle and cash cycles. Assume 365 days in a year. **(2 marks)**

- (b) Assume the average investment in working capital is \$35M and an additional \$20M is required at high season. Company's WACC is 20% and it has no debt.

The management is considering financing options of the following:

- a new 6% short term loan,
- a new \$30M 10% standby credit facility which charges 2% on the unused balance, or
- new 10% long term debt.

All interest rates are pre-tax.

Calculate the after tax annual savings in financing costs if the company funds the working capital under each of the following scenarios instead of by the current WACC:

- (i) 100% of average working capital with a 6% short term loan fully drawn. **(1 mark)**
- (ii) the high season portion, i.e. \$20M with a 10% standby credit facility assuming draw down of that portion for 6 months. **(4 marks)**
- (iii) 100% of average working capital with 10% long term debt. **(1 mark)**
- (c) Elaborate:
- (i) the risks; and **(4 marks)**  
 (ii) suitability **(4 marks)**
- of each of the financing choices mentioned in (b).

**(Total = 16 marks)**

**HKICPA December 2012**

## Cash conversion cycle

36 minutes

VMC is a medium-sized exporter of pitaya (commonly known as dragon fruit) in Vietnam. The company purchases the pitaya from more than 100 pitaya farms in southern Vietnam. The pitaya is collected and processed centrally for export.

Over the years, VMC has been selling all the produce to the US market through Fruit-Xpress, a US importer of fresh and processed fruit. Fruit-Xpress resells the imported fruit to several chain stores and its own distribution networks in the US. Shown below is the information extracted from the financial statements of VMC and Fruit-Xpress:

	US\$'000	
	VMC	Fruit-Xpress
Revenue	45,435	689,827
Cost of goods sold	41,753	492,807
Average account receivables	12,735	81,708
Average inventory	4,567	50,108
Average account payables	1,546	149,878

The average cash conversion cycles for an exporter in Vietnam and importer in the US are 90 days and 20 days respectively.

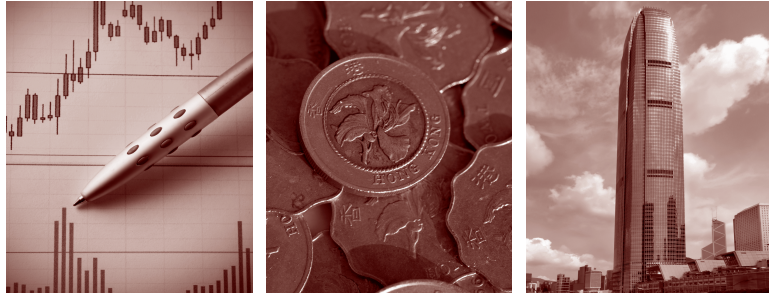
### Required

- Calculate the length of time in VMC's and Fruit-Xpress's cash conversion cycle. Assume 365 days in a year and round up to the nearest day in your calculation. **(7 marks)**
- Comment on the performance of these two companies in managing their cash conversion cycles. Which company is weaker in this aspect? State your reasons. **(6 marks)**
- Recommend the possible actions to the weaker company you identify in (b) to enhance cash flow performance. **(5 marks)**
- Apart from liquidity risk, what other financial risks is VMC facing? **(2 marks)**

**(Total = 20 marks)**

**HKICPA May 2010**





## chapter 9

# Types and sources of finance

### Topic list

- 1 Introduction**
  - 1.1 Short-term finance
  - 1.2 Long-term finance
- 2 Asset and liability management**
- 3 Internal sources of finance**
  - 3.1 Retained earnings
  - 3.2 Increasing working capital management efficiency
- 4 Short-term sources of finance**
  - 4.1 Overdrafts
  - 4.2 Overdrafts and bank loans compared
  - 4.3 Trade credit
- 5 Long-term finance: debt**
  - 5.1 Reasons for seeking debt finance
  - 5.2 Fixed and floating rate long-term debt
  - 5.3 Bonds
  - 5.4 Borrowing from commercial banks
  - 5.5 Reasons influencing choice of debt finance
  - 5.6 Off-balance-sheet financing
  - 5.7 Leasing
  - 5.8 Sale and leaseback
- 6 Long-term finance: equity**
  - 6.1 Ordinary shares
  - 6.2 Advantages of a stock market listing
  - 6.3 Disadvantages of a stock market listing
  - 6.4 Methods of obtaining a listing
  - 6.5 Methods of issuing new shares for a listed company
- 7 The credit rating process**
  - 7.1 Role of credit rating agencies
  - 7.2 Importance of credit ratings
  - 7.3 Credit rating agencies
- 8 Economic and market conditions: impact on ability to borrow**

### Learning focus

A key decision for any business is how it is going to finance its current operations and its future plans. The need for finance will range from immediate to the long term.

In this chapter, we consider sources of finance – a major issue for any business. We will look at the distinction between short-term and long-term sources of finance and the circumstances in which each is appropriate. When sources of long-term finance are used, large sums are usually involved, and so the financial manager needs to consider all the options available with care, looking to the possible effects on the company in the long term.

Businesses are financed by a mix of equity and debt. In structuring its finance, a business must have regard to the risk-return trade-off desired by its potential investors and the impact this will have on the cost of the various finance packages available.

If a company decides to raise new equity finance, it needs to consider which method would be best for its circumstances. If a company chooses debt finance it will need to take account of the impact this will have on its gearing risk.

You need to be able to recommend appropriate sources of finance for a particular company, and also discuss in general terms when different sources of finance should be utilised and when they are likely to be available.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Short and medium term financial management</b>		
Identify and evaluate the short and medium term financial requirements of an organisation		
<b>4.01</b>	<b>Cash management and forecasting</b>	3
4.01.04	Identify and discuss the range of short and medium term sources of finance available to an organisation	
<b>4.02</b>	<b>Financial markets</b>	2
4.02.03	Outline the role of rating agencies and the ratings process	
<b>Long term financial management</b>		
Identify and evaluate the long term financial management position of a business and advise on relevant source of finance and funding methods		
<b>6.04</b>	<b>Raising finance</b>	2
6.04.01	Identify and discuss the range of long-term sources of finance available to businesses, including equity finance, debt finance, lease finance and venture capital	
6.04.02	Comment on the relative importance of key longer-term finance instruments in the Hong Kong market	
6.04.04	Assess the suitability of different financing options and their implications for capital structure, gearing and reserves	
6.04.06	Advise on the appropriate finance structure for a given business scenario	

		Competency level
<b>6.05</b>	<b>Corporate debt securities</b>	2
6.05.01	Describe the main features of straight long-term loan capital, mortgages, convertible loans, subordinated loans, warrants, deep discount bonds and junk (high yield) bonds	
6.05.02	Calculate the value of debt securities	
6.05.03	Discuss the reasons for issuing each particular form of loan capital (e.g. how to improve an organisation's financing flexibility)	
6.05.04	Distinguish between fixed and floating rates of interest	

## 1 Introduction



### Topic highlights

The treasurer has a vital role in both the determination and management of a company's cost of capital. The treasurer (or Chief Financial Officer) and the board of directors are responsible for determining the type and amount of the various forms of debt and equity capital that will be raised.

Companies utilise debt and equity capital markets to raise finance either as straight debt, straight equity or some form of hybrid (for example, a convertible loan stock paying fixed interest but with conversion to equity rights). A company may also deal in derivatives markets to manage the cash flow or risk profile of a debt or equity issue, either at inception or during the period the issue is being traded in the market.

A company's mix of different types of securities, timing of issues and analysts' and investors' perceptions of the organisation will ultimately determine its overall acceptability and cost of capital. The ability to raise capital at a reasonable price at all times is often one of the primary determinants of the long-term success of a company. The weighted average cost of capital for a company may fluctuate significantly due to factors beyond the company's control (for example, general economic environment, new technologies, government regulation, investors' perceptions and so on).

### 1.1 Short-term finance



### Topic highlights

A range of short-term sources of finance are available to businesses including **overdrafts, short-term loans, trade credit** and **lease finance**.

Short-term financial management involves the management of key short-term assets and liabilities. The cash component of short-term assets provides a cushion against fluctuations in cash flows, and can provide a temporary anchoring of funds for future capital investments, repayment of long-term loans, dividend payments, working capital build-up and/or acquisitions. The liabilities include bank loans, lines of credit, letters of credit, commercial paper, and receivables and inventory-based borrowing. For many companies, short-term borrowing is an important source for financing working capital requirements and provides interim financing before funds available from long-term debt or equity issues. In addition, unused short-term borrowing capacity serves as a source of backup liquidity.



## 1.2 Long-term finance



### Topic highlights

A range of long-term sources of finance are available to businesses including **debt finance**, **leasing**, **venture capital** and **equity finance**.

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The treasurer is also concerned with ensuring that the company has adequate access to longer-term financing to support projects or investments with long payback periods. Target debt to equity ratios are of importance and the treasurer must be aware of industry and competitor patterns. The weighted average cost of capital is relevant to consideration of the longer-term financing mix. The choice of retained earnings or a bond issue impacts the gearing of the company and hence its cost of finance. In addition, as part of the decision-making process, there will be practical issues of timing, the need to keep good contact with key lenders, the need to offer a range of attractive securities into the market and so on.

The treasurer needs to:

- maintain financial flexibility
- ensure long-term sustainable growth
- maximise the company's share price
- achieve the key company objectives
- maintain predictable sources of funds
- maintain financial independence
- maintain a debt rating consistent with the nature of the company's industry
- maintain comparability with other institutions in the sector
- minimise the cost of funds on an after tax basis.

The company's management must determine and plan for the level of debt, as well as the proper mix of debt among short, medium and long-term sources. It must define the strategic objectives of the company because these will determine future courses of action and will have an impact on borrowing requirements.

In the raising and management of capital, the treasurer must deal with a wide range of parties including investment bankers, corporate bankers, regulatory agencies, analysts, rating agencies, auditors, shareholders and bondholders. Each of these parties requires different types and amounts of information and has a different perception of the company. To successfully raise the needed capital for the company, the treasurer must be able to provide the required information to each of these parties on an accurate and timely basis. This is part of successful asset and liability management.

## 2 Asset and liability management



### Topic highlights

Financial assets and liabilities should be managed in order to deal with risks arising from movements in interest rates, foreign exchange rates, commodity prices and share prices.

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Financial assets and liabilities should be managed within defined objectives and risk tolerances (as defined in written policy documents by the board of directors) so that financial managers understand the level of acceptable and unacceptable risk to the company.

The objectives of asset and liability management should be consistent with the company's broader strategic direction and desired risk profile. Financial management strategy must focus on the total company and is an art that deals with handling uncertainty and changing conditions.



### Key term

**Asset and liability management** is strategic management of the statement of financial position (balance sheet) and is concerned with market risks that are affected by movements in:

- interest rates
- foreign exchange
- commodity prices
- share prices

These risks are secondary to the primary risk of the underlying business. They occur as a result of the cash flows consumed or generated by the underlying business and how it is financed.

Good asset and liability management requires people to take concerted action to accomplish predetermined objectives, including protection of company performance against economic cycles and interest rate and foreign exchange cycles. These risks are managed by the treasury operation.

With the development of products such as derivatives and the increasing volatility of financial and commodity markets, market risk is becoming relatively more important because a small change in the market variables (for example, interest rates) causes a substantial change in profitability.

The asset and liability management function involves planning, directing, and controlling the flow, level, mix, cost and yield of a company's finances. It deals with:

- interest rate exposure management
- liquidity management
- trading (interest rates and foreign exchange)
- funding (interest rates and foreign exchange)
- capital planning
- profitability and growth.

These elements are inter-related so any asset and liability management strategy generally involves trade-offs. Most of the decisions stem from the trade off between profit maximisation and maintenance of liquidity.

Asset and liability management will generally involve:

- changing the pricing or other terms of the existing business
- changing the balance of different types of businesses
- using financial markets to facilitate business with customers
- carrying out autonomous transactions in financial markets with the objective of making direct profits.

It is the task of asset and liability management to manage risk (not to avoid it) and keep the different types of risk within acceptable levels, while at the same time sustaining profitability. This requires an expertise and a capacity to anticipate change and restructure a company to profit from it or minimise any losses. It attempts to protect the company from disaster during periods of volatility caused by changes in economic and financial market variables.

Asset and liability management and the budget process are fundamental components of a company's financial management process.

## 3 Internal sources of finance



### Topic highlights

Internal sources of finance include **retained earnings** and increasing **working capital efficiency**.

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### 3.1 Retained earnings



### Topic highlights

**Retained earnings** are the most important single source of finance for companies, and financial managers should take account of the proportion of earnings that are retained as opposed to being paid as dividends.

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For many businesses, the finance for making investments will be available because profits have been retained within the business rather than paid out as dividends. This interaction of investment, financing and dividend policy is the most important issue facing many businesses.

Retained earnings belong to shareholders and are classed as equity financing.

There are a number of **advantages** of using retained earnings:

- (a) Retained earnings are a flexible source of finance as a company is not tied to specific amounts or specific repayment patterns.
- (b) Using retained earnings does not involve a change in the pattern of shareholdings and no dilution of control.
- (c) Retained earnings have no issue costs.

There are also **disadvantages** of using retained earnings:

- (a) Shareholders may be sensitive to the loss of dividends that will result from retention for re-investment, rather than paying dividends.
- (b) There is a misconception, that retaining profits is a cost-free method of obtaining funds. There is an opportunity cost in that if dividends were paid, the cash received could be invested by shareholders to earn a return.

### 3.2 Increasing working capital management efficiency

It is important not to forget that an internal source of finance is the **savings** that can be generated from more efficient management of trade receivables, inventory, cash and trade payables.

Efficient working capital management can reduce bank overdraft and interest charges as well as increasing cash reserves. Actions might include:

- accelerating collection of accounts receivable
- expanding accounts payable
- reducing inventory levels
- reducing expenses
- selling any surplus assets.

## 4 Short-term sources of finance



### Topic highlights

Short-term finance is usually needed for businesses to run their day-to-day operations including payment of wages to employees, inventory ordering and supplies. Companies with seasonal peaks and troughs and those engaged in international trade are likely to be heavy users of short-term finance.

### 4.1 Overdrafts

Where payments from a current account exceed inflow to the account for a temporary period, the bank finances the deficit by means of an overdraft. They offer a level of flexibility with regard to the amount borrowed at any time, while interest is only paid when the account is overdrawn.

Overdraft	
<b>Amount</b>	Should not exceed limit, usually based on known income
<b>Rate</b>	Interest charged at a rate above the bank's base lending rate, on the daily amount overdrawn and charged quarterly. Fee may be charged for large facility
<b>Purpose</b>	Generally to cover short-term deficits
<b>Repayment</b>	Technically repayable on demand
<b>Security</b>	Depends on size of facility
<b>Benefits</b>	Company has flexible means of short-term borrowing; bank has to accept fluctuation

By providing an overdraft facility to a company, the bank is committing itself to provide an overdraft to the company whenever the company wants it, up to the agreed limit. The bank will earn interest on the lending, but only to the extent that the company uses the facility and goes into overdraft. If the company does not go into overdraft, the bank cannot charge interest.

The bank will generally charge a commitment fee when a company is granted an overdraft facility or an increase in its overdraft facility. This is a fee for granting an overdraft facility and agreeing to provide the company with funds if and whenever it needs them.

#### 4.1.1 Overdrafts and the cash operating cycle

Many businesses require their bank to provide financial assistance for normal trading over the cash operating cycle.



### Example

For example, suppose that a business has the following working capital:

	\$m	\$m
Inventories and trade receivables		100
Bank overdraft	10	
Trade payables	<u>30</u>	
Working capital		<u>(40)</u> <u>60</u>

It now buys inventory costing \$25 million for cash, using its overdraft. Net working capital remains the same, \$60 million, although the bank's financial stake has risen from \$10 million to \$35 million.

	\$m	\$m
Inventories and trade receivables		125
Bank overdraft	35	
Trade payables	<u>30</u>	
		<u>(65)</u>
Working capital		<u>60</u>

A bank overdraft provides support for normal trading finance. In this example, finance for normal trading rises from  $\$(100\text{m} - 30\text{m}) = \$70$  million to  $\$(125\text{m} - 30\text{m}) = \$95$  million and the bank's contribution rises from \$10 million out of \$70 million to \$35 million out of \$95 million.

A feature of bank lending to support normal trading finance is that the amount of the overdraft required at any time will depend on the **cash flows of the business** – the timing of receipts and payments, seasonal variations in trade patterns and so on. The purpose of the overdraft is to bridge the gap between cash payments and cash receipts.

#### 4.1.2 Hard core overdrafts

When a company has an overdraft facility, and the account is always in overdraft, then it has a hard core overdraft. For example, suppose that the account of a company has the following record for the previous year:

Quarter to	Average balance		Range	Debit turnover	
	\$m	\$m		\$m	\$m
31 March	40 DR	70 DR	–	20 DR	600
30 June	50 DR	80 DR	–	25 DR	500
30 September	75 DR	105 DR	–	50 DR	700
31 December	80 DR	110 DR	–	60 DR	550

These figures show that the account has been permanently in overdraft, and the hard core of the overdraft has been rising steeply over the course of the year.

If the hard-core element of the overdraft appears to be becoming a long-term feature of the business, the bank might wish, after discussions with the company, to convert the hard core of the overdraft into a loan, thus giving formal recognition to its more permanent nature. Otherwise annual reductions in the hard core of an overdraft would typically be a requirement of the bank.

#### 4.2 Overdrafts and bank loans compared

A company might ask the bank for an overdraft facility when the bank would wish to suggest a loan instead. Alternatively, a company might ask for a loan when an overdraft would be more appropriate.

- In most cases, when a company wants finance to help with “day-to-day” trading and cash flow needs, an overdraft would be the appropriate method of financing. The company should not be short of cash all the time, and should expect to be in credit on some days, but in need of an overdraft on others. Overdrafts are therefore a common method of financing working capital for a business.
- Interest on an overdraft is likely to be higher than for a short-term bank loan. An overdraft may be cheaper when the borrower is in credit for much of the time and is not paying interest. If the borrower does not expect to be in credit for the borrowing period, or expects to be in credit for only short periods of time, a bank loan is likely to be cheaper.
- Overdrafts are normally repayable on demand. If a company is in financial difficulty and the size of its overdraft does not come down, the bank may decide to ‘pull the plug’ on the borrower and initiate insolvency proceedings.

### 4.2.1 Advantages of an overdraft over a loan

- The company only pays interest when it is overdrawn.
- The bank has the flexibility to review the company's overdraft facility periodically, and perhaps agree to additional facilities, or insist on a reduction in the facility.
- An overdraft can do the same job as a loan, as a facility can simply be renewed every time it comes up for review.

### 4.2.2 Fixed or floating rate interest?

Short-term bank loans with a borrowing term of less than a year are obtainable at a fixed rate of interest for the full term of the loan, with the loan capital plus interest re-payable in a single amount at maturity. However, it should also be possible to negotiate a loan if required at a variable or floating rate, where the amount of interest payable for each period of the loan (say, each month or three-month period) is adjusted in line with changes in a benchmark rate of short-term interest, such as the Hong Kong Interbank Offer Rate.

Overdraft interest is payable at a variable rate, with interest calculated on a daily basis. The interest rate on an overdraft balance is usually higher than for a short-term bank loan.

### 4.2.3 Advantages of a loan for longer-term lending

- Both the company and the bank know exactly what the repayments of the loan will be and how much interest is payable, and when. This makes planning (budgeting) simpler.
- The company does not have to worry about the bank deciding to reduce or withdraw an overdraft facility before it is in a position to repay what is owed. There is an element of “security” or “peace of mind” in being able to arrange a loan for an agreed term.
- Loans normally carry a facility letter setting out the precise terms of the agreement.

However, a mix of overdrafts and loans might be suggested in some cases. Consider a case where a business asks for a loan, perhaps to purchase a shop with inventory. The banker might wish to suggest a loan to help with the purchase of the shop, but that inventory ought to be financed by an overdraft facility. The offer of part-loan part-overdraft is an option that might be well worth considering.

## 4.3 Trade credit

Trade credit is one of the main sources of short-term finance for a business. Current assets such as raw materials may be purchased on credit with payment terms normally varying from between 30 to 90 days. Trade credit therefore represents an interest free short-term loan. In a period of high inflation, purchasing via trade credit will be very helpful in keeping costs down. However, it is important to take into account the loss of discounts suppliers offer for early payment.

Unacceptable delays in payment will worsen a company's credit rating and additional credit may become difficult to obtain.

## 5 Long-term finance: debt



### Topic highlights

A range of long-term sources of finance are available to businesses including **debt finance**, **leasing**, **venture capital** and **equity finance**.

The choice of **debt finance** that a company can make depends upon:

- the size of the business (a public issue of bonds is only available to a large company)
- the duration of the loan

- whether a fixed or floating interest rate is preferred (fixed rates are more expensive, but floating rates are riskier)
- the security that can be offered.

Long-term finance is used for major investments and is often more expensive and less flexible than short-term finance due to such factors as the quality of the security on the asset offered as collateral and the long-term structure of interest rates being normally upward in nature.

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## 5.1 Reasons for seeking debt finance

Sometimes businesses may need long-term funds, but may not wish to issue equity capital. Perhaps the current shareholders will be unwilling to contribute additional capital. Possibly the company does not wish to involve outside shareholders who will have more onerous requirements than current members. Other reasons for choosing debt finance may include lesser cost and easier availability, particularly if the company has little or no existing debt finance. Debt finance provides tax relief on interest payments.

If a company does wish to raise debt finance, it will need to consider what type of finance will be available. If it is seeking medium-term bank finance, it ought to be in the form of a loan, although an overdraft is a virtually permanent feature of many companies' statements of financial position. Bank finance is an important source of debt for small companies.

If a company is seeking to issue bonds, it must decide whether the bonds will be repaid (redeemed), whether there will be conversion rights into shares, and whether warrants will be attached.

## 5.2 Fixed and floating rate long-term debt

Longer-term debt finance consists mainly of bank loans or bonds (debentures or loan stock).

- Bank loans may carry fixed or floating rate interest. A fixed interest loan means that the interest charged for the period of the loan does not change, irrespective of what is happening to market interest rates and thus the borrower knows exactly how much is due. However fixed interest bank loans are difficult to obtain except for relatively short periods (one or two years) and when interest rates are expected to remain stable. This is because a lending bank needs to ensure that the interest it charges on loans will be higher than the cost of its own funds.
- Alternatively, interest on bank loans may be payable at a floating rate, linked to the bank's base rate or to a money market rate. For example, interest may be charged at 1.5% above the bank's base rate. The amount payable in each interest period (every month or three months, for example) would then be adjusted ('determined' for the next interest period) in line with any changes that have occurred in the base rate since the previous interest fixing. This results in fluctuating levels of repayments.
- Interest on bonds is usually payable at a fixed rate, typically every six months but possibly every year. For example, interest on a 6% \$1,000 bond might be payable every six months, and each payment would be \$30 ( $6/12 \times 6\% \times \$1,000$ ).
- It may be possible to issue floating rate bonds, where interest is payable at a rate that is adjusted at each 'fixing' period, in line with any changes that occur in a benchmark money market rate. However floating rate bonds are not common, except perhaps for some issues of government bonds. (The government is often a substantial borrower in the bond markets.)

### 5.2.1 Factors influencing the choice of debt finance

Several factors affect the choice of debt finance.

- **Term of borrowing.** If a company needs to borrow for only a short period of time, say up to two or three years, bank finance may be more convenient to arrange than a n issue of notes (short-dated bonds).
- **Availability.** For many companies, it is not possible to gain access to the bond markets for funding. Only large companies can issue bonds, and even for large companies the ability to issue bonds may depend on their credit rating (and current market conditions in the bond market). Bonds are usually sold direct to big investors, who are not usually interested in buying small quantities of bonds issued by relatively small companies. (Many bonds are listed on a stock exchange, but this is a requirement to satisfy major investors: unlike shares, listed bonds are not regularly traded in small amounts or by retail investors.)
- **Fixed or floating rate.** The choice of fixed rate or floating rate debt may depend on how the company's finance director or treasurer expects interest rates to move over the term of the funding. If interest rates are expected to rise, the company may prefer fixed rate borrowing. If interest rates are expected to fall, floating rate borrowing is preferable in order to benefit from lower interest costs when (and if) rates fall. However large borrowers can also use interest rate swaps to change between fixed and floating rate interest costs , as required.
- **Security and covenants.** The choice of finance may be determined by the amount and nature of assets that the borrower is willing or able to provide as collateral/security, and on any restrictive covenants that the lender may wish to impose as conditions for the loan. Bonds are often unsecured. Banks, on the other hand, will often insist on taking security for a loan.

## 5.3 Bonds



### Topic highlights

The term **bonds** describes various forms of long-term debt a company may issue, such as **loan notes** or **debentures**, which may be either:

- redeemable, or
- irredeemable

Bonds or loans come in various forms, including:

- floating rate debentures
- zero coupon bonds
- convertible bonds

However, most bond issues are “straight” redeemable bonds at a fixed rate of interest.

Bonds are long-term debt capital raised by a company for which interest is paid, usually half yearly and at a fixed rate. Holders of bonds are therefore long-term payables for the company.

Bonds have a nominal value, which is the debt owed by the company, and interest is paid at a stated “coupon” on this amount. For example, if a company issues 10% bonds, the coupon will be 10% of the nominal value of the bonds, so that \$1,000 of bonds will receive \$100 interest each year. The rate quoted is the gross rate, before tax.

Unlike shares, debt is often issued at par (i.e. with \$1,000 payable per \$1,000 nominal value). Where the coupon rate is fixed at the time of issue, it will be set according to prevailing market conditions given the credit rating of the company issuing the debt. Subsequent changes in market



(and company) conditions will cause the market value of the bond to fluctuate, although the coupon will stay at the fixed percentage of the nominal value.

Debentures are a form of loan note, the written acknowledgement of a debt incurred by a company, normally containing provisions about the payment of interest and the eventual repayment of capital.

### 5.3.1 Security

Bonds may be secured. Security may take the form of either a fixed charge or a floating charge.

Fixed charge	Floating charge
Security relates to specific asset/group of assets (land and buildings)	Security in event of default is whatever assets of the class secured (inventory/trade receivables) company then owns
Company can't dispose of assets without providing substitute/consent of lender	Company can dispose of assets until default takes place
	In event of default lenders appoint receiver rather than lay claim to asset

Most bonds are unsecured. Investors are likely to expect a higher yield with unsecured bonds to compensate them for the extra risk.

### 5.3.2 Redemption of bonds

Bonds are usually redeemable. They are issued for a term of ten years or more, and perhaps 25 to 30 years. At the end of this period, they will “mature” and become redeemable (at par or possibly at a value above par).

Most redeemable bonds have an earliest and a latest redemption date. For example, 12% debenture stock 2017–19 is redeemable, at any time between the earliest specified date (in 2017) and the latest date (in 2019). The issuing company can choose the date.

Some bonds do not have a redemption date, and are “irredeemable” or “undated”. A company that wishes to pay off the debt might redeem undated bonds, but there is no obligation on the company to do so. Irredeemable bonds are not common.

A common practice is for companies to issue new bonds and use the money raised to redeem existing bonds as they reach their redemption/maturity date. There is no guarantee that a company will be able to raise a new loan to pay off a maturing debt. One item that should be looked for in a company's statement of financial position is the redemption date of current loans, to establish how much new finance is likely to be needed by the company, and when.

Occasionally, perhaps because the secured assets have fallen in value and would not realise much in a forced sale, or perhaps out of a belief that the company can improve its position soon, unpaid debenture holders might be persuaded to surrender their debentures. In exchange they may get an equity interest in the company or convertible debentures, paying a lower rate of interest, but carrying the option to convert the debentures into shares at a specified time in the future.

### 5.3.3 Tax relief on loan interest

As far as companies are concerned, debt capital is a potentially attractive source of finance because interest charges reduce the profits chargeable to tax.

A new issue of bonds is likely to be preferable to a new issue of preference shares (preference shares are shares carrying a fixed rate of dividends).

Companies might wish to avoid dilution of shareholdings and increase gearing (the ratio of fixed interest capital to equity capital) in order to improve their earnings per share by benefitting from tax relief on interest payments.

### 5.3.4 Deep discount bonds



#### Key term

**Deep discount bonds** are loan notes issued at a price which is at a large discount to the nominal value of the notes, and which will be redeemable at par (or above par) when they eventually mature.

For example, a company might issue \$10 million of bonds in 2012, at a price of \$500 per \$1,000 of bond, and redeemable at par in the year 2017. For a company with specific cash flow requirements, the low servicing costs during the period of the bond may be an attraction, coupled with a high cost of redemption at maturity.

Investors might be attracted by the large capital gain offered by the bonds, which is the difference between the issue price and the redemption value. However, deep discount bonds will carry a much lower rate of interest than other types of bond. The tax implication for the investor is that the gain gets taxed (as income) in one lump on maturity or sale, not as amounts of interest each year. The borrower can, however, deduct notional interest each year in computing profits.

### 5.3.5 Zero coupon bonds



#### Key term

**Zero coupon bonds** are bonds that are issued at a discount to their redemption value, but no interest is paid on them.

The investor gains from the difference between the issue price and the redemption value. There is an implied interest rate in the amount of discount at which the bonds are issued (or subsequently re-sold on the market).

The advantage for borrowers is that zero coupon bonds can be used to raise cash immediately, and there is no cash repayment until redemption date. The cost of redemption is known at the time of issue. The borrower can plan to have funds available to redeem the bonds at maturity.

The advantage for lenders is restricted, unless the rate of discount on the bonds offers a high yield. The only way of obtaining cash from the bonds before maturity is to sell them. Their market value will depend on the remaining term to maturity and current market interest rates.

The tax implications of zero coupon bonds are the same as that for deep discount bonds.

### 5.3.6 Convertible bonds



#### Key term

**Convertible bonds** are bonds that give the holder the right to convert to other securities, normally ordinary shares, at a pre-determined price/rate and time.

Conversion terms often vary over time. For example, the conversion terms of convertible bonds might be that on 1 April 2015, \$20 of bonds can be converted into one ordinary share, whereas on 1 April 2016, the conversion price will be \$22 of bonds for one ordinary share. Once converted, convertible securities cannot be converted back into the original fixed return security.

The current market value of ordinary shares into which a bond may be converted is known as the conversion value. The conversion value will be below the value of the bond at the date of issue, but will be expected to increase as the date for conversion approaches on the assumption that a company's shares ought to increase in market value over time.

Conversion value = Conversion ratio × Market price per share (ordinary shares)

Conversion premium = Current market value – Current conversion value

For example, a company has 10% convertible bonds quoted at \$1,420 per \$1,000 nominal. The earliest date for conversion is in four years' time, at the rate of 30 ordinary shares per \$1,000 nominal bond. The share price is currently \$41.50. Annual interest on the bonds has just been paid.

Conversion ratio is \$1,000 bond = 30 ordinary shares

Conversion value =  $30 \times \$41.50 = \$1,245$

Conversion premium =  $\$(1,420 - 1,245) = \$175$  or  $\frac{\$175}{\$1,245} = 14\%$

The share price would have to rise by 14% before the conversion rights became attractive.

A company will aim to issue bonds with the greatest possible conversion premium as this will mean that, for the amount of capital raised, it will, on conversion, have to issue the lowest number of new ordinary shares. The premium that will be accepted by potential investors will depend on the company's growth potential and so on prospects for a sizeable increase in the share price.

Convertible bonds issued at par normally have a lower coupon rate of interest than straight debt. This lower interest rate is the price the investor has to pay for the conversion rights. It is, of course, also one of the reasons why the issue of convertible bonds is attractive to a company, particularly one with tight cash flows around the time of issue, but an easier situation when the notes are due to be converted.

When convertible bonds are traded on a stock market, their minimum market price or floor value will be the price of straight bonds with the same coupon rate of interest. If the market value falls to this minimum, it follows that the market attaches no value to the conversion rights.

The actual market price of convertible bonds will depend on the:

- price of straight debt
- current conversion value
- length of time before conversion may take place
- market's expectation as to future equity returns and the risk associated with these returns

Most companies issuing convertible bonds expect them to be converted. They view the bonds as delayed equity. They are often used either because the company's ordinary share price is considered to be particularly depressed at the time of issue or because the issue of equity shares would result in an immediate and significant drop in earnings per share. There is no certainty, however, that the security holders will exercise their option to convert; therefore the bonds may run their full term and need to be redeemed.



### Illustration: Convertible bonds

A company has issued 50,000 units of convertible bonds, each with a nominal value of \$1,000 and a coupon rate of interest of 10% payable yearly. Each \$1,000 of convertible bonds may be converted into 40 new ordinary shares of the company in three years' time. Any bonds not converted will be redeemed at 110 (i.e. at \$1,100 per \$1,000 nominal value of bond).

If investors in the bonds now require a pre-tax return of only 8%, and the expected value of the company's ordinary shares on the conversion day is either \$25 or \$30 per share, what is the likely current market price for \$1,000 of the bonds?

If shares are valued at \$25 each on conversion day, the value of 40 shares will be \$1,000, and investors in the debt will presumably therefore redeem their debt at 110 instead of converting them into shares. The market value of \$1,000 of the convertible debt will be the discounted present value of the expected future income stream.

Year		Cash flow	Discount factor @ 8%	Present value
		\$		\$
1	Interest	100	0.926	92.60
2	Interest	100	0.857	85.70
3	Interest	100	0.794	79.40
3	Redemption value	1,100	0.794	873.40
				<u>1,131.10</u>

The estimated market value is \$1,131.1 per \$1,000 of debt. This is also the floor value.

If shares are expected to be worth \$30 each, the debt holders will convert their debt into shares (value per \$1,000 of bonds = 40 shares × \$30 = \$1,200) rather than redeem their debt at 110.

Year		Cash flow	Discount factor @ 8%	Present value
		\$		\$
1	Interest	100	0.926	92.60
2	Interest	100	0.857	85.70
3	Interest	100	0.794	79.40
3	Value of 40 shares	1,200	0.794	952.80
				<u>1,210.50</u>

The estimated market value is \$1,210.5 per \$1,000 of debt.

### 5.3.7 Subordinated loans



#### Key term

A **subordinated loan** is debt which ranks after other debts.

It has a lower priority in case of **liquidation** during **bankruptcy**, behind the **liquidator**, government tax authorities and **senior debt holders** in the hierarchy of creditors. Because subordinated debt is repayable after other debts have been paid, it is more risky for the lender of the money. It is unsecured and has lesser priority than that of an additional debt claim on the same asset.

A typical example for this would be when a promoter of a company invests money in the form of debt, rather than in the form of stock. In the case of liquidation (e.g. the company winds up its affairs and dissolves) the promoter would be paid just before stockholders assuming there are assets to distribute after all other liabilities and debts have been paid.

Subordinated loans typically have a higher **rate of return** than senior debt due to the increased inherent risk. Accordingly, major **shareholders** and **parent companies** are most likely to provide subordinated loans, as an outside party providing such a loan would normally want compensation for the extra risk.

### 5.4 Borrowing from commercial banks

Although the credit role of commercial banks has declined over the last two decades, they still represent the largest single source of financing for short-term corporate needs. For small- to medium-size companies, banks are often the primary source of short-term credit. Banks may be the alternative lender selected by larger corporations unable to borrow in the commercial paper market.

In view of the current financial problems with banks worldwide, corporate treasurers must be concerned with problems relating to the capital adequacy of banks. Capital adequacy is a regulatory issue that deals with the level of equity that a bank must have relative to its loan and deposit base. Banks with capital adequacy problems may be restricted by regulatory agencies in the type and amounts of loans they can grant. In addition, most of the bank regulatory agencies have mandated broad increases in the quality of loans in financial institutions' portfolios, further restricting bank lending.

### 5.4.1 Bank credit arrangements

Commercial banks make a wide variety of loans, from working capital loans for small businesses (with inventory and/or equipment as collateral) to unsecured bridging loans to support tender offers for acquisitions.

Regardless of the purpose of the loan, commercial banks generally make loans based on an analysis of the borrower's overall financial condition. Because banks offer a wide variety of loan products, a lending arrangement tailored to the borrower's needs can usually be negotiated.

There are a number of forms that bank credit arrangements can take:

- (a) **Line of credit:** Agreement to borrow up to a specified maximum during a year. Most bank lines of credit require the borrower to “re-represent and re-warrant” the condition of the company on a regular basis as required in the loan agreement. This action is required at each rollover of the loan and requires the management of the company to certify to the bank that nothing has changed in either the financial or operational condition of the company that may have an impact on the loan and/or repayment. Most lines of credit provide for borrowing at variable interest rates tied to some base rate, such as HIBOR. The rate paid on the loan is generally the rate base (sometimes the lender's cost of funds) plus some premium (the profit margin) required by the lender (for example, HIBOR + 1%).
- (b) **Revolving credit agreement:** A line of credit extended for a stated period of time (for example, three to five years) with no fixed repayment schedule. The borrower may draw down the line at any time or repay it in full without penalty. The borrower pays a commitment fee that secures the line of credit and commits the bank to lend as long as specified conditions are met.
- (c) **Term loan:** A loan with a fixed maturity, usually greater than one year, which is typically repaid in instalments of both interest and principal (amortised). The loan may be structured in a “bullet” form where interest payments are made regularly, but the principal is not repaid until maturity. If the loan is unsecured, it is made on the general credit standing and financial strength of the borrower. The bank is in the same position as any other general creditor in case of default. A company must be in a strong negotiating/financial position to access an unsecured loan.

If the loan is secured, it will have specific assets pledged as collateral (fixed charge) or will include blanket liens on all assets (floating charge). In case of default, the lender has first claim on the assets as a potential source of repayment.

- (d) **Bridging loan:** Granted for a short period of time for a specific purpose, with both interest and principal paid at maturity and used either for a stop-gap funding purpose, or for leading to a more permanent lending structure such as a term loan.
- (e) **Letter of credit:** A commitment from a bank, or other financial institution, stating that the bank, under specified conditions, will make payment for a company's liability. It allows a substitution of the bank's credit rating for the purchaser's and is also known as “credit enhancement”. There is an important distinction between a trade letter of credit and a stand-by letter of credit, which may be used to back up commercial paper issues. Trade letters of credit are essentially linked to a specific transaction (or transactions) and serve as a means of financing and a guarantee of payment. Stand-by letter of credits are essentially a backup form of credit for a company issuing general credit terms. This type of letter of credit indicates that a bank is willing to provide funding to the company in the event the commercial paper issue cannot be rolled over when it matures. It may be used for companies that are perceived as a potential credit risk by creditors. If the customer fails to pay, the supplier can draw on the letter of credit for payment.

### 5.4.2 Calculation of repayments on a loan

An annuity table can be used to calculate the repayments on a loan. The amount of each payment is calculated as the initial amount borrowed, divided by the annuity factor for the number of repayment periods at the cost of borrowing for each payment period.

For example, when repayments on a loan are made once each year, the annual payment on a \$300 million loan taken out by a business at a rate of 12% over five years would be calculated as follows:

The annuity factor for 12% over five years is 3.605

Therefore \$300m = 3.605 × annual payment

$$\text{Annual payment} = \frac{\$300\text{m}}{3.605} = \$83.2178 \text{ million}$$

### 5.4.3 The split between interest and capital repayment

A loan of \$100 million is to be repaid to the bank in equal annual year-end instalments made up of capital repayments and interest at 9% per annum.

$$\text{The annual payment} = \frac{\$100\text{m}}{2.890} = \$25.707\text{m}$$

Each payment can then be split between the repayment of capital and interest.

Year	Balance b/f \$m	Interest @ 9% \$m	Annual payment \$m	Balance c/f \$m
1	100.000	9.000	(25.707)	83.293
2	83.293	7.496	(25.707)	65.082
3	65.082	5.857	(25.707)	45.232
4	45.232	4.071	(25.707)	23.596
5	23.596	2.111*	(25.707)	0

\*Rounding difference

### 5.4.4 Terms in a typical loan agreement

Loan agreements can be quite lengthy. A loan agreement is the contract between the borrower and the lender specifying all of the conditions and terms of the loan. Many of the provisions in a loan agreement are fully negotiable. Successful negotiation may significantly reduce the company's cost of borrowing and increase its borrowing capacity. In addition to general terms (amount, interest rate, timing of repayments, etc.), there are usually many covenants, representations and warranties included in a loan agreement.

The following list of terms in a sample loan agreement is provided as a basic guideline. Actual terms will vary from bank to bank.

- Parties:** Names the parties to the loan. The borrower, guarantor, agent, and lender(s) are identified.
- The credit facility:** Outlines the facility to be provided and the terms for providing the finance (overdraft, revolving credit, fixed term loan).
- Closing date:** The final possible ('no later than') closing date for the loan agreement to become effective.
- Commitment amount:** This is the maximum amount of the loan to be provided to the borrower. It usually includes all the loan facilities under the agreement, including letters of credit.
- Facilities:** Outlines the specific facilities (loans and/or letters of credit) or lending that will be provided to the borrower. The total of each of these facilities will equal the total commitment amount listed previously.
- Availability:** Outlines any availability restrictions on the facilities, such as borrowing base as a percentage of accounts receivables and/or inventory.
- Commitment termination date:** The normal termination date of the loan agreement, often expressed as an anniversary of the closing date (for example, one, three or five years).

- (h) **Use of proceeds:** Outlines the primary use of the funds borrowed.
- (i) **Common terms:** Covers the following:
  - (i) **Interest rate:** Specifies the interest rate, including the base rate to be used, and the spread or premium above the base rate. The interest rate may also fluctuate based on usage of the line, type of security or on the company's performance on key financial ratios.
  - (ii) **Interest payment date:** States the timing or due dates of payments on the loan, which may vary depending on the base rate used.
  - (iii) **Prepayments:** Lists the optional (at the borrower's discretion) prepayment terms and any penalties involved. It also specifies certain mandatory prepayment terms, such as change of control of the company or in the event of default.
  - (iv) **Letter of credit fee:** States any charges for documentary and/or stand-by letters of credit issued under the credit facility.
  - (v) **Commitment fee:** Outlines the cost of any commitment fees on the loan and the basis for the fees (ie on the unused portion or on the total line of credit).
  - (vi) **Security:** Details the security required for the loan agreement. The security may include accounts receivable, inventory, marketable securities, or plant and equipment.
  - (vii) **Guarantees:** Lists any guarantees required on the loan. These guarantees may be required from a parent corporation, its subsidiaries, or in the case of smaller companies, personal guarantees of owners and/or managers.
  - (viii) **Conditions precedent:** Lists the conditions that must be satisfied prior to the drawdown of the loan agreement, and may include the following items:
    - (1) Delivery of satisfactory credit, security, guarantee and other documentation
    - (2) Termination or modification of existing debt covenants
    - (3) Listing of commitments to other lenders
    - (4) All liens on secured assets shall be perfected legally
    - (5) No material adverse changes
    - (6) Disclosure of any pending and threatened litigation
    - (7) Payment of all costs, fees and expenses associated with the facilities
    - (8) Ownership maintenance clause
  - (ix) **Representations and warranties:** Outlines the required representations and warranties for the loan agreement.
  - (x) **Negative covenants:** Lists the restrictions on the actions of the borrower necessary for the borrower to remain in good standing on the credit agreement and may include restrictions on:
    - (1) additional debt or contingent liabilities
    - (2) payment of dividends unless certain coverage ratios are met
    - (3) prepayment of other debt prior to prepayment of the loans under the agreement
    - (4) liens on assets, including additional charges on pledged assets
    - (5) mergers where a change of control would result
    - (6) investments, acquisitions or capital expenditures
    - (7) off balance sheet financing such as leases
  - (xi) **Financial covenants:** Lists the financial covenants or ratio restrictions the company must meet during the agreement period. The financial requirements and ratios are generally defined in a specific manner and may include maintenance of:
    - (1) a minimum net worth figure
    - (2) interest coverage ratios
    - (3) leverage ratios
    - (4) cash flow coverage ratios
    - (5) working capital to sales ratios

- (xii) **Events of default:** Covers the general events of default, such as violation of covenants, misrepresentation of current conditions, material adverse changes, cross-default to other indebtedness, or change of control of the borrower.
- (xiii) **Miscellaneous:** Any other terms that may be applied to the borrowing agreement. These may include certain terms the lender agrees to meet such as capital adequacy requirements, indemnity agreements and ability to assign and participate in loans or commitments. This section also includes any general terms relevant to the agreement, such as:
  - (1) required indemnifications
  - (2) payment of agent fees or expenses
  - (3) legal jurisdiction of the agreement



### Self-test question 1

Lending restrictions, such as “Rating triggers”, exist in some companies' loan facilities or financing documentations. A rating trigger is a provision in the financing agreement that in case of a change in the borrower's credit rating (usually a downgrade), it will trigger certain specific actions by the lenders, such as increasing the borrowing cost or accelerating the loan payment.

*Required*

- (a) Why do the lenders want to include lending restrictions in financing agreements?
- (b) What are the risks to the borrowers of accepting lending restrictions?

**(The answer is at the end of the chapter)**

## 5.5 Reasons influencing choice of debt finance

The choice of debt finance that a company makes depends on the following factors:

- (a) **Availability.** Only listed companies are able to make a public issue of bonds, which are commonly issued by selling them directly to bond investors, although the bonds are also listed on a stock exchange. Smaller companies may only be able to obtain significant amounts of debt finance from their bank.
- (b) **Market conditions.** Conditions in financial markets can change. At times it may be difficult to issue some forms of debt security, such as long-term bonds, convertible bonds or commercial paper, due to lack of investor demand. At other times, investors may want to buy a particular type of debt security, and an opportunity therefore arises to issue debt securities at a favourable rate of interest. Large companies are advised by their investment bank about suitable opportunities for borrowing in the debt markets.
- (c) **Duration.** If loan finance is sought to buy a particular asset to generate revenues for the business, the length of the loan should match the length of time that the asset will be generating revenues.
- (d) **Spread of maturities.** A company should try to spread the maturities of its borrowings, so that it is not required to pay back large amounts of debt at the same time (because this might create cash flow problems).
- (e) **Fixed or floating rate.** Expectations of interest rate movements will determine whether a company chooses to borrow at a fixed or floating rate. Fixed rate finance may be more expensive, but the business runs the risk of adverse upward rate movements if it chooses floating rate finance. Bonds are usually issued at a fixed rate, and medium-term bank loans are usually issued at a floating rate.



- (f) **Purpose.** The method of borrowing is often linked to the purpose. When a company wants to borrow varying amounts over time, an overdraft or revolving bank facility would probably be preferred to a fixed term bank loan.
- (g) **Flexibility.** Large companies often prefer to use a wide variety of different borrowing methods, and a number of different lenders, in order to have flexibility with their borrowing options. If one source of borrowing 'dries up' for some reason, the company will still have other sources that it can use.
- (h) **Security and covenants.** The choice of finance may be determined by the assets that the business is willing or able to offer as security, also on the restrictions in covenants that the lenders wish to impose. Bonds are often unsecured, although they are issued with covenants. Banks may insist on taking security for loans.

## 5.6 Off-balance-sheet financing



### Key term

**Off-balance-sheet financing** is the use of financing arrangements that do not appear on the statement of financial position (the balance sheet).

It removes debt from the statement of financial position, improves leverage ratios and protects borrowing capacity.

Securitised financing, with a specific source of repayment, such as accounts receivable, may command a better borrowing rate than financing based on the organisation's statement of financial position.

Some of the more common types of off-balance-sheet financing are as follows:

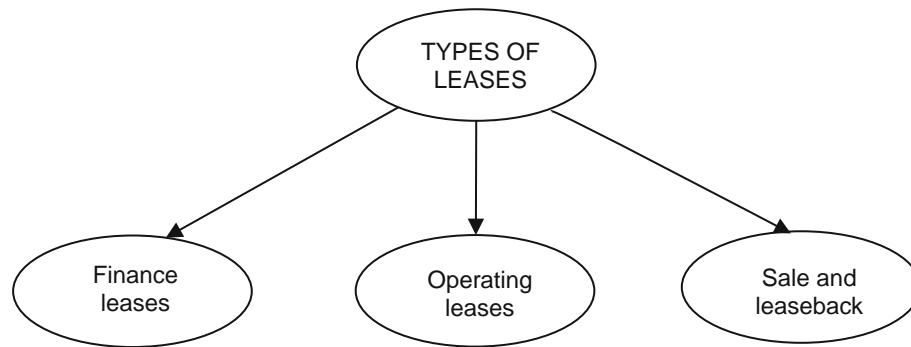
- (a) On a short-term basis, inventory may be purchased, financed and stored by a third party. This is usually done on a consignment basis or may be set up as a supplier-manager replenishment system.
- (b) The securitisation of assets such as receivables may be considered a source of off-balance-sheet financing. Securitisation is a financing technique in which a company issues securities backed by selected financial assets, in this case accounts receivable. Debt service for the securities is supported by the cash flow from these assets. Banks have been the most common users of securitisation, issuing "asset-backed securities" where the assets are mortgages or commercial loans. Securitisation became much less common as a consequence of the global financial crisis in 2008–2009.

## 5.7 Leasing

Rather than buying an asset outright, using either available cash resources or borrowed funds, a business may lease an asset. **Leasing** is a contract between a lessor and a lessee for hire of a specific asset selected from a manufacturer or vendor of such assets by the lessee.

The **lessor** has ownership of the asset and the **lessee** has possession and use of the asset on payment of specified rentals over a period.

Lessors include banks and insurance companies and the types of asset leased include office equipment, computers, commercial vehicles, aircraft, ships and buildings.



An **operating lease** is a lease where the lessor retains most of the risks and rewards of ownership. Operating leases are rental agreements between a lessor and a lessee.

- (a) The lessor supplies the equipment to the lessee.
- (b) The lessor is responsible for servicing and maintaining the leased equipment.
- (c) The period of the lease is fairly short, less than the expected economic life of the asset. At the end of one lease agreement, the lessor can either lease the same equipment to someone else and obtain a good rent for it, or sell the equipment second-hand.

A **finance lease** is a lease that transfers substantially all of the risks and rewards of ownership of an asset to the lessee. It is an agreement between the lessee and the lessor for most or all of the asset's expected useful life. There are other important characteristics of a finance lease:

- (a) The lessee is responsible for the upkeep, servicing and maintenance of the asset.
- (b) The lease has a primary period covering all or most of the useful economic life of the asset. At the end of this period, the lessor would not be able to lease the asset to someone else, because the asset would be worn out. The lessor must therefore ensure that the lease payments during the primary period pay for the full cost of the asset as well as providing the lessor with a suitable return on his investment.
- (c) At the end of the primary period the lessee can normally continue to lease the asset for an indefinite secondary period, in return for a very low nominal rent, sometimes called a "peppercorn rent". Alternatively, the lessee might be allowed to sell the asset on a lessor's behalf (since the lessor is the owner) and keep most of the sale proceeds.

For example, for a commercial vehicle lease the primary period of the lease might be three years, with an agreement by the lessee to make three annual payments of \$60,000 each. The lessee will be responsible for repairs and servicing, road tax, insurance and garaging. At the end of the primary period of the lease, the lessee may have the option either to continue leasing the car at a nominal rent (perhaps \$2,500 a year) or to sell the vehicle and pay the lessor 10% of the proceeds.

A **sale and leaseback** is when a business that owns an asset agrees to sell the asset to a financial institution and lease it back on terms specified in the sale and leaseback agreement. The business retains use of the asset but has the funds from the sale, while having to pay rent.

### 5.7.1 Attractions of leasing

The supplier of the equipment is **paid in full** at the beginning. The equipment is sold to the lessor, and other than guarantees, the supplier has no further financial concern about the asset.

The lessor **invests finance** by purchasing assets from suppliers and makes a **return** out of the lease payments from the lessee. The lessor will also get capital allowances on his purchase of the equipment.

Leasing may have **advantages** for the **lessee**:

- (a) The lessee may not have enough cash to pay for the asset, and would have difficulty obtaining a bank loan to buy it. If so the lessee has to rent the asset to obtain use of it at all.
- (b) Finance leasing may be cheaper than a bank loan.

- (c) The lessee may find the tax relief available advantageous.

**Operating leases** have further **advantages**:

- (a) The leased equipment does not have to be shown in the **lessee's** published **statement of financial position**, and so the lessee's statement shows no increase in its gearing ratio. (However, the IASB is proposing to alter the rules on accounting for operating leases, and a new accounting standard on accounting for leases is expected soon.)
- (b) The equipment is leased for a **shorter period** than its expected useful life. In the case of high-technology equipment, if the equipment becomes out of date before the end of its expected life, the lessee does not have to keep on using it. The lessor will bear the risk of having to sell obsolete equipment second-hand.

A major growth area in operating leasing has been in computers and office equipment (such as photocopiers and fax machines) where technology is continually improving.

## 5.8 Sale and leaseback

A company which owns its own premises can obtain finance by selling the property to a financial or investment institution for immediate cash and renting it back, usually for at least 50 years with rent reviews every few years.

A company would raise more cash from a sale and leaseback arrangements than from a mortgage, but there are significant disadvantages:

- (a) The company loses ownership of a valuable asset that is almost certain to appreciate over time.
- (b) The future borrowing capacity of the firm will be reduced, as there will be fewer assets to provide security for a loan.
- (c) The company is contractually committed to occupying the property for many years ahead, which can be restricting.
- (d) The real cost is likely to be high, particularly as there will be frequent rent reviews.

## 6 Long-term finance: equity



### Topic highlights

Equity finance is raised through the sale of **ordinary shares** to investors via a **new issue** or a **rights issue**.

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### 6.1 Ordinary shares

Ordinary shares are issued to the owners of a company. Until the new Companies Ordinance (CO) ordinary shares had a nominal or “face” value, perhaps \$10 or \$5. The nominal value of a share for a listed company had no relationship at all with the share’s market value, except that when ordinary shares were issued for cash, the issue price had to be equal to or (more usually) more than the nominal value of the shares.

The CO (2012) abolished the par value or nominal value of shares, and this mandatory ‘no par’ requirement must be implemented by all Hong Kong companies by 2014, including for shares already in issue. (Any amount which would previously have been recorded as share premium should now be included in share capital.)

Ordinary shareholders have rights as a result of their ownership of the shares.

- (a) Shareholders can attend company general meetings.
- (b) They can vote on important company matters such as the appointment of directors, using shares in a takeover bid, changes to authorised share capital or the appointment of auditors.
- (c) They are entitled to receive a share of any agreed dividend.
- (d) They will receive the annual report and accounts.
- (e) They will receive a share of any assets remaining after liquidation.
- (f) They can participate in any new issue of shares.

Ordinary shareholders are the ultimate bearers of risk as they are at the bottom of the creditor hierarchy in a liquidation. This means there is a significant risk they will receive nothing after all the other trade payables have been paid. This greatest risk means that shareholders expect the highest return of long-term providers of finance. The cost of equity finance is therefore always higher than the cost of debt (see cost of capital in Chapter 13).

## 6.2 Advantages of a stock market listing



### Topic highlights

A company can obtain a **stock market listing** for its shares through a **public offer** or a **placing**.



## 6.3 Disadvantages of a stock market listing

There will be significantly greater public regulation, accountability and scrutiny. The legal requirements the company faces will be greater, and the company will also be subject to the rules of the stock exchange on which its shares are listed.

A wider circle of investors with more exacting requirements will hold shares.

There will be additional costs involved in making share issues, including brokerage commissions and underwriting fees.

## 6.4 Methods of obtaining a listing



### Topic highlights

An unlisted company can obtain a listing on the stock market by means of an initial public offer (IPO), a placing or an introduction.

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#### 6.4.1 Initial public offer (IPO)

An IPO is an invitation to apply for shares in a company based on information contained in a prospectus. It is a means of selling the shares of a company to the public at large. When companies “go public” for the first time, a large issue will probably take the form of an IPO. This is known as flotation. Subsequent issues are likely to be a placing or a rights issue (described later).

An IPO entails the acquisition by an issuing house of a large block of shares of a company, with a view to offering them for sale to the public and investing institutions.

An issuing house is usually an investment bank (or sometimes a firm of stockbrokers). It may acquire the shares either as a direct allotment from the company or by purchase from existing members. In either case, the issuing house publishes an invitation to the public to apply for shares, usually at a fixed price but occasionally on a tender basis. The issuing house accepts responsibility to the public, and gives to the issue the support of its own standing. The issue price for the shares is decided a very short time before the offer document (prospectus) is published.

#### 6.4.2 Placing

A placing is an arrangement whereby the shares are not all offered to the public, but instead, the sponsoring market maker arranges for most of the issue to be bought by a small number of investors, usually institutional investors such as pension funds and insurance companies.

#### 6.4.3 The choice between an IPO and a placing

Placings are much cheaper than an IPO. Approaching institutional investors privately is a much cheaper way of obtaining finance, and for this reason placings are often used for smaller issues of new shares.

Placings are arranged and completed more quickly than an IPO.

Placings are likely to involve less disclosure of information.

However, most of the shares will be placed with a relatively small number of (institutional) shareholders, which means that most of the shares are unlikely to be available for trading after the flotation, and that institutional shareholders will have control of the company.

When a company first comes to the market, there is a maximum proportion of shares that can be placed, to ensure some shares are available to a wider public.

#### 6.4.4 Stock Exchange introduction

By this method of obtaining a quotation no shares are made available to the market, neither existing nor newly created shares; nevertheless, the stock market grants a listing. This will only happen where shares in a large unlisted company are already widely held, so that a market can be seen to exist when the company obtains a listing. A company might want an introduction to obtain greater marketability for the shares or easier access in the future to additional capital. Stock market introductions are not common.

### 6.4.5 Costs of share issues on the stock market

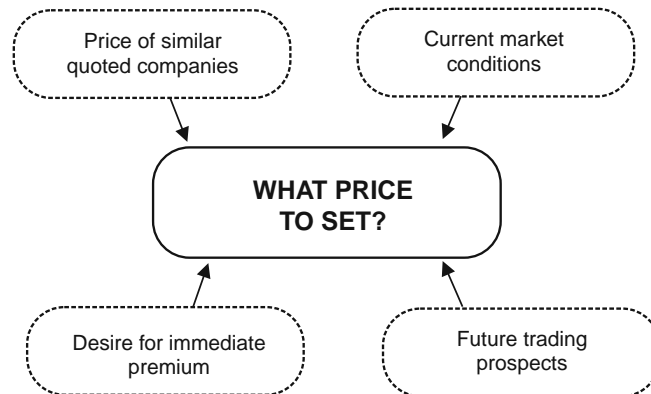
Companies may incur the following costs when issuing shares:

- Underwriting costs (see below)
- Stock market listing fee (the initial charge) for the new securities
- Fees of the issuing house, solicitors, auditors and public relations consultant
- Charges for printing and distributing the prospectus
- Advertising in national newspapers

A company about to issue new securities in order to raise finance might decide to have the issue underwritten. Underwriters are financial institutions that agree (in exchange for a fixed fee, perhaps 2.25% of the finance to be raised) to buy at the issue price any securities that are not subscribed for by the investing public.

Underwriters remove the risk of a share issue's being under-subscribed, but at a cost to the company issuing the shares. It is not compulsory to have an issue underwritten. Ordinary offers for sale are most likely to be underwritten although rights issues may be as well.

### 6.4.6 Pricing shares for a stock market launch (IPO)



Companies will be keen to avoid over-pricing an issue, which could result in the issue being under-subscribed, leaving underwriters with the unwelcome task of having to buy up the unsold shares. On the other hand, if the issue price is too low then the issue will be oversubscribed and the company would have been able to raise the required capital by issuing fewer shares.

The share price of an issue is usually advertised as being based on a certain P/E ratio, the ratio of the price to the company's most recent earnings per share figure in its audited accounts. The issuer's P/E ratio can then be compared by investors with the P/E ratios of similar listed companies.

## 6.5 Methods of issuing new shares for a listed company

When a listed company issues new shares, the method of making the issue may be:

- a rights issue
- a placing
- an open offer
- a consideration issue

### 6.5.1 Rights issues



#### Topic highlights

A rights issue provides a way of raising new share capital by means of an offer to existing shareholders, inviting them to subscribe cash for new shares in proportion to their existing holdings.



### Key term

A **rights issue** is an offer to existing shareholders to buy more shares, usually at a price lower than the current market price. It provides a way of raising new share capital by means of an offer to existing shareholders, inviting them to subscribe cash for new shares in proportion to their existing holdings.

For example, a rights issue on a one for four basis at \$28 per share would mean that a company is inviting its existing shareholders to subscribe for one new share for every four shares they hold, at a price of \$28 per new share. Any company may make a rights issue. The analysis below, however, applies primarily to listed companies.

The major advantages of a rights issue are as follows:

- (a) Rights issues to existing shareholders are cheaper than IPOs to the general public. This is partly because a prospectus is not normally required, partly because the administration is simpler and partly because the cost of underwriting will be less.
- (b) Rights issues are more beneficial to existing shareholders than issues to the general public. New shares are issued at a discount to the current market price, to make them attractive to investors. A rights issue secures the discount on the market price for existing shareholders, who may either keep the shares or sell them if they wish.
- (c) Relative voting rights are unaffected if shareholders all take up their rights.
- (d) The finance raised may be used to reduce gearing in book value terms by increasing share capital and/or to pay off long-term debt, which will reduce gearing in market value terms.

The rules of the stock market, or company law, may require new share issues by listed to be made in the form of a rights issue, unless shareholders have given their permission for a different method of share issue (such as a placing).

The offer price in a rights issue will be lower than the current market price of existing shares. The size of the discount will vary, and will be larger for difficult issues. The offer price must however be at or above the nominal value of the shares, so as not to contravene company law.

A company making a rights issue must set a price which is low enough to secure the acceptance of shareholders, who are being asked to provide extra funds, but not too low, so as to avoid excessive dilution of the earnings per share.



### Example: Rights issue (1)

A company currently achieves a profit after tax of 20% on its capital employed. Its capital structure is:

	\$m
Share capital (22.5 million shares)	250
Retained earnings	140
	<u>390</u>

The directors propose to raise an additional \$126 million from a rights issue. The current market price per share is \$18.

*Required*

How many shares must be issued if the price for the rights price is \$14?

### Solution

If we ignore the costs of the rights issue, the company would need to issue \$126 million/\$14 i.e. 9 million new shares to raise \$126 million.

A 2 for 5 rights issue would therefore be required ( $= 9.0\text{m}/22.5\text{m}$ ).

- (a) By issuing new shares at a price below the current market price, it is almost certain that the share price will fall when the rights issue is made.
- (b) The rights issue will also affect the expected earnings per share. More shares will be in issue, but the money raised from the issue will be invested to increase earnings. The effect of a rights issue on EPS will therefore depend both on the number of new shares issued and the additional earnings that result from investing the capital raised by the share issue.

### 6.5.2 Theoretical ex-rights price

The market price of shares after a rights issue is called the theoretical ex rights price. When a rights issue is announced, all existing shareholders have the right to subscribe for new shares, and so there are rights attached to the existing shares. The shares are therefore described as being “cum rights” (with rights attached) and are traded cum rights. On the first day of dealings in the newly issued shares, the rights no longer exist and the old shares are now “ex rights” (without rights attached).

After the announcement of a rights issue, share prices normally fall. The extent and duration of the fall may depend on the number of shareholders and the size of their holdings. This temporary fall is due to uncertainty in the market about the consequences of the issue, with respect to future profits, earnings and dividends.

After the issue has actually been made, the market price per share will normally fall, because there are more shares in issue and the new shares were issued at a discount price.

In theory, the new market price will be the consequence of an adjustment to allow for the discount price of the new issue, and a theoretical ex rights price can be calculated.



#### Example: Rights issue (2)

A company has 10 million ordinary shares in issue, which have a market price on 1 September of \$21 per share. The company decides to make a rights issue, and offers its shareholders the right to subscribe for one new share at \$15 each for every four shares already held. After the announcement of the issue, the share price fell to \$19.50, but by the time just prior to the issue being made, it had recovered to \$20 per share. This market value just before the issue is known as the cum rights price.

*Required*

What is the theoretical ex-rights price?

#### Solution

Value of the portfolio for a shareholder with four shares before the rights issue:

	\$
4 shares at \$20	80
<u>1 share at \$15</u>	<u>15</u>
<u>5</u>	<u>95</u>

The value per share after the rights issue (theoretical ex-rights price) is  $\$95/5 = \$19$ . The value of rights is the theoretical gain a shareholder would make by exercising his rights.

If the price offered in the rights issue is \$15 per share, and the market price after the issue is expected to be \$19, the value attaching to a right is  $\$19 - \$15 = \$4$ . A shareholder would therefore be expected to gain \$4 for each new share bought.

If the shareholder does not have enough money to buy the share, the right to subscribe for a new share could be sold to another investor for \$4. This other investor would then buy the new share for



\$15, so that the total outlay to acquire the share would be  $\$4 + \$15 = \$19$ , the theoretical ex rights price.

The value of rights attaching to existing shares is calculated in the same way. If the value of rights on a new share is \$4, and there is a one for four rights issue, the value of the rights attaching to each existing share is  $\$4 \div 4 = \$1$ .

There are a number of possible courses of action open to shareholders:

- “Take up” or “exercise” the rights, that is, to buy the new shares at the rights price. Shareholders who do this will maintain their percentage holdings in the company by subscribing for the new shares.
- “Renounce” the rights and sell them on the market. Shareholders who do this will have lower percentage holdings of the company's equity after the issue than before the issue, and the total value of their shares will be less.
- Renounce part of the rights and take up the remainder. For example, a shareholder may sell enough of his rights to enable him to buy the remaining rights shares he is entitled to with the sale proceeds, and so keep the total market value of his shareholding in the company unchanged.
- Do nothing. Shareholders may be protected from the consequences of their inaction because rights not taken up are sold on a shareholder's behalf by the company. The Stock Exchange rules state that if new securities are not taken up, they should be sold by the company to new subscribers for the benefit of the shareholders who were entitled to the rights.



### Example: Rights issue (3)

A company currently has 40 million ordinary shares in issue, valued at \$20 each, and the company has annual earnings equal to 20% of the market value of the shares. A 1-for-4 rights issue is proposed, at an issue price of \$15.

#### Required

If the market continues to value the shares on a P/E ratio of 5, what would be the value per share if the new funds are expected to earn, as a percentage of the money raised, 15%, 20% or 25%?

#### Solution

The theoretical ex-rights price:

	\$
4 shares at \$20	80
<u>1 share at \$15</u>	<u>15</u>
<u>5</u>	<u>95</u>

The value per share after the rights issue (theoretical ex-rights price) is  $\frac{\$95}{5} = \$19$

The new funds raised will be 10 million shares  $\times$  \$15 = \$150 million.

<i>Earnings as a % of money raised</i>	<i>Additional earnings</i>	<i>Current earnings</i>	<i>Total earnings after the issue</i>
%	\$m	\$m	\$m
15	22.50	160	182.50
20	30.00	160	190.00
25	37.50	160	197.50

If the market values shares on a P/E ratio of 5, the total market value of equity and the market price per share would be as follows:

<i>Total earnings</i>	<i>Market value</i>	<i>Price per share</i> <i>(50m shares)</i>
\$m	\$m	\$
182.5	912.5	18.25
190.0	950.0	19.00
197.5	987.5	19.75

- If the additional funds raised are expected to generate earnings at the same rate as existing funds, the actual market value will probably be the same as the theoretical ex-rights price.
- If the new funds are expected to generate earnings at a lower rate, the market value will fall below the theoretical ex-rights price. If this happens, shareholders will lose.
- If the new funds are expected to earn at a higher rate than current funds, the market value should rise above the theoretical ex-rights price. If this happens, shareholders will profit by taking up their rights.

The decision by individual shareholders as to whether they take up the offer will therefore depend on the expected rate of return on the investment (and the risk associated with it) and the return obtainable from other investments (allowing for the associated risk).

### 6.5.3 Placing

When a listed company wishes to raise cash by issuing shares, but the size of the share issue is fairly small, it may arrange a placing of the new shares. Placings must be for relatively small amounts of shares; otherwise existing shareholders may suffer a significant reduction in the relative size of their stake in the company.

However, placings are much simpler, cheaper and faster to arrange than rights issues.

### 6.5.4 Open offer

An open offer of shares is similar to a rights issue. The company makes an offer of new shares in the company to shareholders in proportion to their existing shareholding and at a price below the current market price of the shares.

The difference between an open offer and a rights issue is that an open offer does not allow shareholders to sell their rights to subscribe for the shares. They must either accept the offer and buy their entitlement to new shares, or reject the offer.

Rights issues are more common than open offers because they involve a similar process for the issue of shares, but shareholders have the benefit of the option to sell their rights.

### 6.5.5 Consideration issue

A consideration issue is an issue of shares in exchange for assets other than cash. Examples of assets obtained in a consideration issue are property or (in a takeover) shares in another company.

## 7 The credit rating process



### Topic highlights

The growth of international capital markets in recent decades and the trend towards disintermediation (that is, the decline in the bank's role as a direct lender and the growing importance of issues of debt securities directly to investors), have increased the need for objective

credit opinions, which transcend national boundaries. Global rating agencies provide such credit options.

A credit rating agency employs financial analysts who are specialists in assessing credit risk. They are paid by companies to give credit ratings to debt securities issued by the company. The analysts meet with a company's management, study the countries and industries in which they operate and assess their future plans before forming an opinion of the creditworthiness of the issuing company and each of its debt issues.

The rating agencies are given information that is not available to the general investment community. The detail of this confidential information is not made public. However, insofar as it affects creditworthiness it is, in effect, distilled and revealed through the published credit rating. The rating agencies act as an interface between the investing community and the “inner circle” of company management and advisers.

## 7.1 Role of credit rating agencies

The rating agencies continually assess the credit quality of borrowers through such quantitative approaches as financial and ratio analysis, adjusting accounting reports using their rating methodology for peer comparison. Rating agencies also assess credit quality through such non-quantitative means as assessments of the quality of management and directors, various guarantees, and the type and quality of security offered. General and specific economic conditions, industry conditions, and the size and importance of the company within the industry are also taken into account. The ratings are based on the following factors:

- (a) The likelihood of default – the capacity and willingness of the borrower as to the timely payment of interest and repayment of principal in accordance with the terms of the obligation
- (b) The nature and provisions of the obligation
- (c) Protection afforded by, and relative position of, the obligation in the event of bankruptcy, reorganisation, or other arrangement under the laws of bankruptcy and other laws affecting creditors' rights

## 7.2 Importance of credit ratings

Disintermediation in capital markets has increased the relevance of credit ratings. Investors generally do not have the resources or sufficiently detailed information to analyse the vast number of investment securities on issue and must rely on the independent assessments of rating agencies to assess the comparative risk of each investment. Ratings must therefore be consistent, to provide comparative assessments of debt across industries, countries and different instruments.

## 7.3 Credit rating agencies

The principal international rating agencies, Standard & Poor's and Moody's Investors Service, are the most active agencies in both the US and the international debt markets.

A summary of the rating schedules for debt obligations are as follows. They assess the capacity of a potential (and existing) borrower to pay interest and repay principal. The following is an example of typical bond ratings.

General quality level	Standard and Poor's	Moody's Investors Service
<b>High grade</b>	AAA and AA	Aaa and Aa
<b>Investment grade</b>	BBB and above	A and Baa
<b>Below investment grade</b>	BB and B	Ba and B
<b>Speculative</b>	CCC	Caa to C

With the exception of their 'triple A' ratings both agencies refine their ratings so that there are three rating 'notches' within each rating. Standard & Poor's uses + and – signs, so that within BBB for example, there are three levels of rating: BBB+, BBB and BBB-. BBB- is one notch above sub-investment grade BB+. Similarly Moody's uses 1, 2 and 3 as notches within each rating, so that within Aa, for example, there is Aa1, Aa2 and Aa3 (Aa3 being the lowest).

Issuers wishing to obtain a rating approach the credit agencies. This involves preparation of an initial ratings submission, detailing the company's business position, financial position, future strategy, and financial forecasts.

This is followed by a formal presentation by the company's senior management, supplemented by visits to the company's operating sites. The rating agency's representatives generally include a specialist in the issuer's industry.

Once the presentations and submissions have been completed, a rating will be assigned for future short or long-term debt issues on request. The credit rating agency's rating committee assigns the ratings according to the above-mentioned criteria, and the level of protection afforded investors included in the documentation of the particular debt issue being rated.

The ratings process is a mechanism to provide a degree of confidence to the purchaser of a debt security that principal and interest payments will be made on time. Some institutional investors can invest only in rated issues. For the issuing company, the higher the rating, the lower the cost of funds and the greater the diversification of potential funding sources.

A company must understand the effect that its financial plan and balance sheet structure will have on its credit rating. Any downgrade in rating has the potential to increase the cost of debt funding and hence the weighted average cost of capital.

For a company with surplus funds, the ratings process provides a measure of risk that can be approved at board level, for potential investments. For example, the board may decide, as a matter of policy, that only AAA securities can be purchased with its surplus funds. This defines the risk/return profile of the investment portfolio because these highly graded securities will produce lesser returns than a CCC graded security.

The credit ratings system is also applied to government borrowing. In the aftermath of the global economic crisis and the problems experienced in the eurozone, a number of highly-indebted European governments have seen their credit rating downgraded.

Any change in the ratings of a government may lead to other borrowers in the same country (banks and companies) being similarly downgraded.

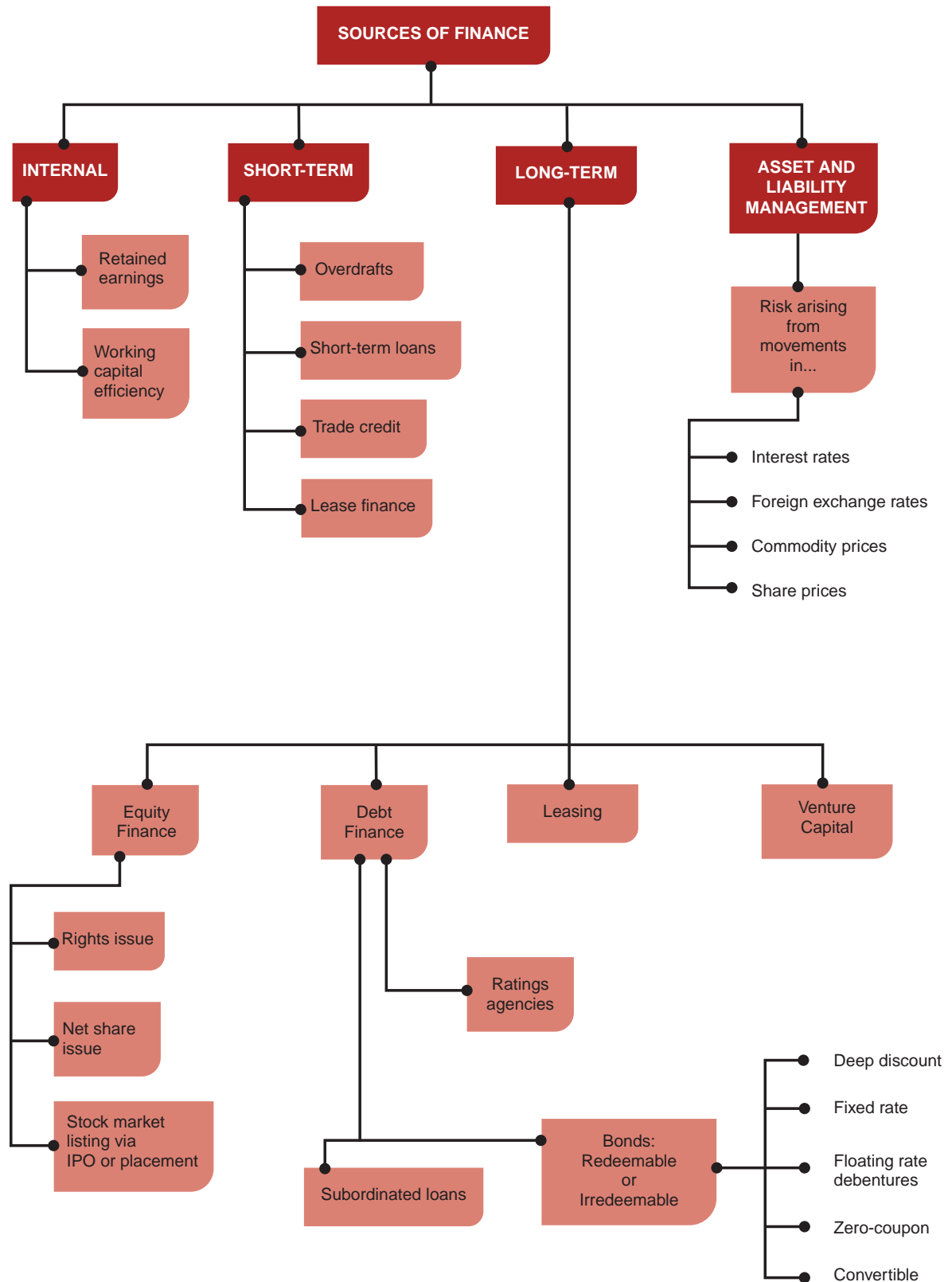
## 8 Economic and market conditions: impact on ability to borrow

A borrowing decision cannot be made in isolation. The following key issues must be considered:

- (a) **The overall economic cycle:** Generally, during an economic boom, banks are anxious to lend in order to maintain asset growth with the result being increased competitive pressure between financial institutions. During these periods, favourable borrowing negotiation may be undertaken resulting in finer margins and/or less restrictive financial covenants being placed on the company. If the economic cycle has bottomed, perhaps the treasurer should consider whether the borrowing requirement could be held temporarily in abeyance pending an upward swing and the possibility of favourable pricing and conditions.
- (b) **The likely interest rate levels over the time horizon the company wishes to borrow:** Sensitivity analysis should be applied using "best", "worst" or "most likely" interest rates projected based on interest rate views. Since the interest rates applicable in Hong Kong are largely dependent on US interest rate movements, an understanding and awareness of the US economy is essential.

- (c) **The development of derivative instruments:** A company must not only consider what is happening in the cash market for funds, but also conditions in derivative markets. The company must be able to effectively hedge the borrowing in terms of approved company policy. Accordingly, events in the derivative markets have a bearing on the borrowing decision.
- (d) **The supply and demand for corporate funds:** If there is strong demand for fixed funding and investors are only willing to supply floating funds the company needs to consider the impact of this upon the proposed borrowing and the possibility of using derivative markets to manage the financial market risk. This could be achieved by entering into an interest rate swap where the company will receive floating interest payments while paying a fixed rate.

# Topic recap



## Answer to self-test question

### Answer 1

- (a)
  - It offers a convenient method for lenders to monitor the credit quality of the borrower.
  - If the credit quality of the borrower deteriorates, the provision provides some protection to the lender.
  - The flexibility to adjust the lending rate matches the credit risk to the interest rate return for the lender.
  - It exerts greater pressure on the borrower to maintain discipline in its financial management.
- (b)
  - If the lending restrictions are linked to higher borrowing costs, they put a bigger burden on the borrower when the borrower's financial position is already deteriorating.
  - The risk is much higher if the provision requires acceleration of the loan repayment. It poses an immediate threat to the borrower's liquidity.
  - In a serious case, this could cause insolvency of the borrower.

## Exam practice



## Funding an investment

**43 minutes**

A company with a listing on the Hong Kong Stock Exchange is planning an investment of HK\$200 million in mainland China. It currently has a short-term bank loan of HK\$100 million and an overdraft facility of HK\$50 million, but it also has HK\$500 million in cash and HK\$1,500 million in accounts receivable.

The company has a very successful subsidiary company that is growing very quickly.

The CFO of the company has made two proposals to the board of directors:

- (1) The company should make efforts to collect receivables as early as possible to fund the investment, instead of obtaining long-term finance.
- (2) The company should explore the possibility of spinning off the successful subsidiary on the Hong Kong Stock Exchange.

Assume that you are Mr. T. T. Chan and you are asked by the CFO to write a memorandum to the board that addresses the following concerns of the board members.

*Required*

- (a) How does the early settlement discount work for turning normal accounts receivable into cash as early as possible in terms of working capital management? What are the associated costs and benefits?  
**(8 marks)**
- (b) Explain whether in general the company should obtain long-term financing to fund the investment project even if it could obtain short-term funding at a lower cost.  
**(8 marks)**
- (c) Advise on the reasons for spinning off the successful subsidiary on the Hong Kong Stock Exchange.  
**(8 marks)**

**(Total = 24 marks)**

**HKICPA June 2011 (amended)**



## Debt or equity?

18 minutes

A listed company evaluates an investment project and considers investing in a project by using one of the following finance options:

- (i) issuing 25 million shares on top of the currently issued 100 million shares at HK\$10 each; or
- (ii) issuing 250 million debentures at a rate of 3% per annum at par.

Assume the income tax level is 16%.

*Required*

- (a) Calculate the operating profit at a point of indifference between issuing equity shares and issuing the debentures.  

**(4 marks)**
- (b) Calculate the earnings after tax per share for both methods at this point of indifference.  

**(3 marks)**
- (c) By interpreting the figures in (a) and (b), when would it be appropriate to decide to issue the shares or debentures?  

**(3 marks)**

**(Total = 10 marks)**

**HKICPA June 2011 (amended)**



## chapter 10

# Dividend policy

### Topic list

- 1 Dividends
- 2 Relationship between financial strategy and dividend policy
- 3 Theories of dividend policy
  - 3.1 Residual theory
  - 3.2 Traditional view
  - 3.3 Irrelevancy theory
  - 3.4 Summary
- 4 Practical factors influencing dividend policy
  - 4.1 The signalling effect of dividends
- 5 Other forms of dividends
  - 5.1 Scrip dividends
  - 5.2 Stock split
  - 5.3 Share repurchases
- 6 A framework for analysing dividend policy

### Learning focus

There is a clear link between financing decisions and the wealth of a company's shareholders. In this chapter, we consider **dividend policy**, which determines the proportion of profits (if any) paid to the shareholders and the amount retained for internal financing of new long-term projects. Corporate dividend policy is a key part of the financial strategy pursued by management and plays a big part in a company's relations with its equity shareholders.

This chapter considers various theories concerning the relevance of dividend policy to shareholder wealth, together with the practical factors that tend to influence dividends. The pattern of dividends paid by private companies may be quite variable and often dependent on the demands of its owner managers. A listed company on the other hand must consider its wider investors and how the stock market will view its results. As a result public companies often follow a policy of relatively small but consistent increases in dividends paid over time.

**Learning outcomes**

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Long term financial management</b> Identify and evaluate the long term financial management position of a business and advise on relevant sources of finance and funding methods		
<b>6.03</b>	<b>Dividend decisions</b>	3
6.03.01	Explain the relationship between dividend policy and the financing decision	
6.03.02	Explain the relationship between dividend policy and shareholder wealth	
6.03.03	Discuss the theoretical approaches to, and the practical influences on, the dividend decision, including legal constraints, liquidity and shareholder expectations	
6.03.04	Demonstrate how dividend policy is selected and advise on an appropriate dividend policy for a given scenario	

# 1 Dividends



## Topic highlights

Dividends are an allocation of company profits to the shareholders. Dividend policy determines the proportion of profits (if any) paid to the shareholders and the amount retained for internal financing of new long-term projects.

A shareholder's return comprises dividends received plus any capital gain/minus any capital loss during the period that the shares are held. Corporate dividend policy is therefore a key part of the financial strategy pursued by management.

## 2 Relationship between financial strategy and dividend policy

There are a number of different views on dividend policy:

- (a) Many investors believe a company's dividend policy is of great importance because of the information it conveys, seeing dividend policy as a positive indicator of a company's profit expectations. They reason that if companies are able to increase their dividend payout they are expressing confidence about a company's future earnings.
- (b) Higher profits for the current year do not automatically translate into higher dividends for shareholders, as some companies reinvest their profits via capital expenditure while others may wish to build cash reserves in times of economic hardship.
- (c) As many investors rely on income from dividends, many companies try to ensure consistent dividends as part of managing investor relations.

Dividend policy is also directly impacted by corporate policy. For example, companies may:

- (a) target a dividend payout ratio (ratio of dividend payments to earnings) for both the short term and the long term.
- (b) attempt to maintain consistent annual dividends in HK\$ terms.
- (c) be reluctant to make changes to current dividend policy if it is working, despite changes to their business environment or economic circumstances.

The company's board of directors proposes the HK\$ amount and payment date of cash dividends to corporate shareholders (and the shareholders then either ratify or reject this proposal at the Annual General Meeting). A share becomes "ex dividend" in the period beginning five business days prior to this date, during which a share will be sold without the right to receive the current dividend.

Shareholders normally have the power to vote to reduce the size of the dividend at the AGM, but not the power to increase the dividend. The directors of the company are therefore in a strong position, when it comes to determining dividend policy. Shareholders will usually either accept the dividend policy that has been proposed by the directors or sell their shares.

Rather than paying a cash dividend, the board of directors might approve the establishment of a dividend reinvestment plan. This is a plan that enables shareholders to use their dividends to acquire additional shares at little transaction cost.

## 3 Theories of dividend policy

### 3.1 Residual theory



#### Topic highlights

The residual theory of dividends suggests that if a company can identify projects with **positive NPVs**, it should invest in them, and only when these investment opportunities are exhausted should dividends be paid.

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In this approach, as long as the firm's equity need is in excess of the amount of retained earnings, no cash dividend would be paid. Only excesses would be distributed as a cash dividend.

### 3.2 Traditional view



#### Topic highlights

The “**traditional**” **view** of dividend policy focuses on the effects on the share price. The dividends a company pays may be treated as a signal to investors. A company needs to take account of different clienteles of shareholders and their preference for dividends or capital growth in deciding what dividends to pay.

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### 3.3 Irrelevancy theory



#### Topic highlights

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. The value of a company is unaffected by the distribution of dividends and is determined solely by the earning power and risk of its assets and investments.

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MM argued that where an increase in dividend has apparently caused an increase in share price, this effect is not due to the dividend but rather the informational content given by the payment of dividends (i.e. it is information provided by the dividends with respect to future earnings which causes shareholders to bid up (or down) the share price).

MM also argued that if a company with investment opportunities decides to pay a dividend, resulting in retained earnings that are insufficient to finance all its investments, the shortfall in funds will be made up by obtaining additional funds from outside sources, for example borrowing. As a result of obtaining outside finance instead of using retained earnings, there will be less profits left over to distribute to shareholders in the future, hence the shareholders have sacrificed future dividends in order to receive a dividend now:

Loss of value in existing shares = Amount of dividend paid

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 (clientele effect), but one clientele would be entirely as good as another in terms of the valuation it would imply for the firm”.

There are many (and strong) arguments against MM's view that dividend policy is irrelevant as a means of affecting shareholder's 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) Dividend retention ought to 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 imperfect. As there are transaction costs on the sale of shares, investors who want some cash from their investments will 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.
- (f) Shareholders may prefer a current dividend to future capital gains (or deferred dividends) because the future is more uncertain. Fundamental to this is Gordon and Lintner's "bird in the hand" theory; the belief that current dividend payments ("a bird in the hand") reduce investor uncertainty and ultimately result in a higher value for the company's shares. Current dividend payments reduce investor uncertainty, causing investors to discount the company's earnings at a lower rate, placing a higher value on the shares. If dividends are reduced, or not paid, a higher discount rate would be used due to the uncertainty of returns.

### 3.4 Summary

In practice, the actions of investment managers, boards of directors and shareholders all tend to support the belief that dividend policy is relevant and that therefore dividend policy does affect share value.

## 4 Practical factors influencing dividend policy



### Topic highlights

In practice, dividend policy is affected by a variety of factors (financing needs, investment opportunities, legislation, investors' expectations). Companies generally smooth out dividend payments by adjusting only gradually to changes in earnings: large fluctuations might undermine investors' confidence.

When deciding upon the level of dividend payout to shareholders, the key management consideration will be the amount of earnings they wish to retain to meet the company's financing needs. As well as future financing requirements, the decision on how much of the company's profits should be retained, and how much paid out to shareholders, will be influenced by a number of factors:

- (a) The ease with which the company could raise extra finance from sources other than retained earnings. Smaller companies tend to have more difficulty in raising finance and might rely more heavily on retained earnings.
- (b) The company's liquidity position.
- (c) The need to repay debt in the near future.
- (d) There may be dividend restraints imposed by loan agreements.
- (e) The company's required gearing level (payment of dividends reduces equity funds).

- (f) The signalling effect of dividends to shareholders and the financial markets in general (discussed below).
- (g) The need to retain some profit within the business just to counteract the effect of inflation and maintain its operating capability unchanged.
- (h) The law on distributable profits, as companies can generally only pay dividends solely out of accumulated net realised profits less net accumulated losses.
- (i) The need to remain profitable, as an unprofitable company cannot continue for ever paying dividends out of historic retained profits.
- (j) Adopting a conservative dividend policy in times of economic instability can improve balance sheet flexibility and provide a source of internal finance when capital markets are volatile and external fundraising is expensive. For a good discussion of this see: Dobbs, Karakolev and Raj; "Preparing for the next downturn"; *Perspectives on Corporate Finance and Strategy*; McKinsey; Spring 2007.

## 4.1 The signalling effect of dividends

The ultimate objective in financial management decisions is to maximise shareholders' wealth. This wealth is derived from the current market value of the company, which is in turn largely determined by cash flows arising from management investment decisions. Ideally the market would like to value shares on the basis of the cash flows arising from the company's projects but this information is not readily available to investors. Management, however, has this information. The dividend declared can be interpreted as a signal from management to shareholders about the strength of underlying project cash flows.

Investors expect a consistent dividend policy from the company with either stable dividends each year or steady dividend growth. A large rise or fall in dividends in any year can unduly influence the company's share price. A stable dividend or steady dividend growth are usually needed for share price stability. A dividend cut may signal to investors that future prospects of the company are poor. Therefore the dividend acts (possibly unjustifiably) as a signal of the future prospects of the company.

Management of a company facing a possible takeover may also use this signalling effect. The dividend level might be increased as a defence against the takeover. Investors may take the increased dividend as a signal of improved future prospects which drives the share price higher and makes the company's shares more expensive for a potential bidder.



### Illustration: Dividend policy example

Summarised financial data for Gator Corporation is shown below:

Year	Post-tax earnings \$m	Dividends \$m	Issued shares Million	Share price \$
20X5	86.20	34.50	180	36.00
20X6	92.40	36.20	180	41.00
20X7	99.30	37.60	180	34.50
20X8	134.10	51.60	240	45.90
20X9	148.60	53.30	240	44.80

Year	All-share index	Inflation rate %
20X5	20265	6
20X6	23100	5
20X7	19915	4
20X8	18270	3
20X9	16135	3

Gator's cost of equity is estimated to be 11%.

Explain, with supporting numerical evidence, the current dividend policy of Gator Corporation. Does it appear to be successful? What additional information might assist the managers of Gator to assess whether the dividend policy has been successful?

### Solution

Estimates of earnings per share (EPS), dividends per share (DPS) and their growth rates:

	Post-tax EPS	Growth %	DPS	Growth %	Inflation %
20X5	47.90	–	19.2	–	
20X6	51.30	7.1	20.1	4.7	5
20X7	55.20	7.6	20.9	4.0	4
20X8	55.90	1.3	21.5	2.9	3
20X9	61.90	10.7	22.2	3.3	3
Overall compound growth		6.60		3.7	

From the above data, Gator appears to be following a policy of paying a constant dividend per share, adjusted for the current year's level of inflation. The only possible indication from the data of whether or not the dividend policy has been successful is the relative performance of Gator's share price in comparison to the market index. This, however, would rely upon the assumption that the choice of dividend policy influences the share price.

	All-share index	Growth %	Share price	Growth %
20X5	20265	–	36.00	–
20X6	23100	14.0	41.00	13.9
20X7	19915	(13.8)	34.50	(15.9)
20X8	18270	(8.3)	45.90	33.0
20X9	16135	(11.7)	44.80	(2.4)
Overall compound growth		(5.5)		5.6

Gator's share price has increased over the four-year period by an annual compound rate of 5.6%, much better than the annual fall of 5.5% suffered by the all-share index. This does not prove that the dividend policy has been successful. The share price might be influenced by many other factors, especially the potential long-term cash flow expectations of the shareholders.

Additionally comparison with the all-share index does not measure the performance of Gator relative to companies in its own industry/sector.

Additional information might include the following:

- Direct feedback from shareholders, especially institutional shareholders, stating whether or not they are happy with the current dividend policy.
- Full details of the registered shareholders, and size of holdings. Gator might have a desired spread of shareholders, which could be influenced by the dividend policy adopted.



- Knowledge of the impact of taxation of dividends on shareholders' attitudes, and specifically on their preferences between dividends and capital gains.
  - The amount of capital investment the company wishes to undertake. The use of retained earnings and other internally generated funds avoids issue costs and the information symmetry problems of external financing. The level of dividends paid affects the amount of internal funds that are available for investment.
  - The impact of dividend payments on corporate liquidity.
  - The signals provided by dividend payments about the future financial health of the company. For example, would the fact the dividend growth is lagging behind earnings growth be considered a positive or negative signal?
- 

## 5 Other forms of dividends

### 5.1 Scrip dividends



#### Key term

A **scrip dividend** is a dividend paid by the issue of additional company shares, rather than in cash.

When the directors of a company would prefer to retain funds within the business but consider that they must pay at least a certain amount of dividend, they might offer equity shareholders the choice of a cash dividend or a scrip dividend. Each shareholder would decide separately which to take. Many companies offer enhanced scrip dividends. With enhanced scrip dividends, the value of the shares offered is much greater than the cash alternative, giving investors an incentive to choose the shares.

Some advantages of scrip dividends are these:

- (a) A company's cash position is preserved if a substantial number of shareholders take up the share option.
- (b) Investors may obtain tax advantages if dividends are in the form of shares.
- (c) Investors can increase their shareholding without incurring transaction costs.
- (d) A small scrip dividend issue will not dilute the share price significantly (but if cash is not offered as an alternative, evidence suggests that the share price tends to fall).
- (e) A share issue decreases the company's gearing and may enhance its borrowing capacity.

### 5.2 Stock split



#### Key term

A **stock split** occurs where, for example, each ordinary share is split into two shares, therefore creating a larger number of shares with a smaller market value. The larger number of shares with lower market value might improve the marketability of the shares.

As a consequence, the market price of shares may benefit. For example, if one existing share has a market value of \$60 and is then split into two shares, the market value of the new shares might settle at, say, \$31 instead of the expected \$30, in anticipation of strong future growth in earnings and dividends.

The difference between a stock split and a scrip issue is that a scrip issue converts distributable equity reserves into share capital, whereas a stock split leaves distributable reserves unaffected.

## 5.3 Share repurchases



### Topic highlights

The purchase by a company of its own shares can take place for various reasons and must be in accordance with any **requirements of legislation**.

In many countries companies have the right to buy back shares from shareholders who are willing to sell them, subject to certain legal conditions.

**Benefits** of a share repurchase scheme:

- (a) Returns cash to shareholders when there are no positive ROE opportunities available, or the cash level is in excess of liquidity risk requirements.
- (b) Increases earnings per share via reducing the number of shares in issue. This should lead to a higher share price and the company might be more able to increase dividends on the remaining shares in issue.
- (c) Increases gearing as repurchase of shares allows debt to be substituted for equity. This may be of interest to a company wanting to increase its gearing without increasing its total long-term funding.
- (d) Readjusts a company's equity base to more appropriate levels if its business is in decline.
- (e) Possibly prevents a takeover or enables a listed company to withdraw from the stock market.

**Drawbacks** of a share repurchase scheme:

- (a) Difficult to set a price that is fair both to the vendors and to any shareholders who are not selling shares to the company.
- (b) Perhaps seen as an admission that the company cannot make better use of its funds than the shareholders.
- (c) Some shareholders may suffer from being taxed on a capital gain following the purchase of their shares rather than receiving dividend income.



### Illustration: Example of dividend alternatives

The board of directors of Alligo Company is discussing the level and nature of the company's next dividend payment. Alligo's current share price is \$40 cum div. Three options are under consideration:

- (1) A cash dividend of \$1.50 per share
- (2) A 5% scrip dividend
- (3) The company repurchases 10% of the ordinary share capital at the current market price and pays a cash dividend as in (1) above

Calculate the expected effect of each suggestion on a shareholder in Alligo owning 1,000 shares (and whose current wealth cum div is therefore 1,000 shares at \$40 = \$40,000) explaining how accurate estimates are likely to be. Ignore taxation.

Summary excerpts from the accounts of Alligo are as follows:

## INCOME STATEMENT

	\$m
Revenue	<u>1,500</u>
Operating profit	50
Net interest earned	<u>40</u>
	190
Taxation	<u>31</u>
Available to shareholders	<u><u>159</u></u>

## STATEMENT OF FINANCIAL POSITION

	\$m	\$m
Non-current assets (net)		600
<i>Current assets</i>		
Inventories	200	
Receivables	200	
Cash and cash equivalents	<u>400</u>	800
Less: current liabilities		<u>(300)</u>
		<u><u>1,100</u></u>
<i>Shareholders' equity</i>		
Share capital (40 million shares)		200
Retained earnings		<u>900</u>
		<u><u>1,100</u></u>

**Solution**

The outcomes of the three alternatives being considered are as follows:

- (1) A cash dividend of \$1.50 per share

After a cash dividend is paid the expected wealth is:

	\$
1,000 shares at \$38.50	38,500
Cash dividend 1,000 at \$1.50	<u>1,500</u>
	<u><u>40,000</u></u>

- (2) A 5% scrip dividend

A 5% scrip dividend would mean the issue of two million new shares. The total market value of the company of 40 million shares at \$40 or \$1,600 million would be unchanged, but would now be split between 42 million shares leading to a new expected share price of:

$$\frac{\$1,600\text{m}}{42\text{m shares}} = \$38.10$$

The shareholder would receive 50 new shares, giving 1,050 in total. The expected wealth of the shareholder would be unchanged at  $1,050 \times \$38.10 = \$40,000$ .

- (3) The company repurchases 10% of the ordinary share capital at the current market price and pays a cash dividend as in (1) above

Repurchase of 10% of the ordinary share capital would cost  $\$1,600\text{m} \times 10\% = \$160$  million, presumably from the cash at bank. This would reduce the company's value by \$160 million, but the share price would be expected to remain unchanged.

$$\frac{\$1,440\text{m}}{36\text{m shares}} = \$40$$

The shareholder's wealth would remain at \$40,000 whether or not (s)he sold the shares. If no shares were sold the situation is as (1) above. If shares were sold, 1,000 shares sold gives \$40,000.

These estimates are unlikely to be accurate. If the market perceives that these policies are conveying significant new information about the company's future prospects, either positive or negative, the share prices will differ from the above figures.

## 6 A framework for analysing dividend policy



### Topic highlights

The Aswath Damadaran framework asks two questions to analyse dividend policy:

- (1) How much cash is available to be paid out as dividends and how much of that cash is actually paid out to shareholders?
- (2) How good are the investment projects available to the company?

Aswath Damadaran developed a framework to analyse dividend policy, illustrating the inter-dependencies between dividend, investment and capital structure decisions, which asks two questions:

- (1) How much cash is available to be paid out as dividends and how much of that cash is actually paid out to shareholders?
- (2) How good are the investment projects available to the company?

To work out the answer to the first question, management needs to calculate the company's **FCFE (Free Cash Flow to Equity)**, defined as:

Net profit after tax (NPAT) + depreciation + amortisation – capital expenditure +/- change in working capital – loan principal repayments + new debt issued

This represents the available cash for payment to shareholders after meeting both capital expenditure and working capital requirements required to sustain growth and settling non-discretionary payments.

If a company pays out its FCFE in full, this is a residual dividend policy. Levels of each component of FCFE will fluctuate each year, so it is unlikely to be the same dividend payment each year. A company that wishes to moderate this swing in actual dividend amounts paid might follow a long-term residual policy trying to equate its FCFE and dividend payout over a rolling period of, say, three to five years. Most companies pay out less than their FCFE for many reasons, including building cash reserves to meet unexpected cash demands or opportunities and/or legal restrictions imposed by lenders.

The second question highlights that the alternative to paying out dividends is reinvestment in the company in the form of new projects. Reinvestment only makes sense if the return on new projects is greater than the shareholders' required return.

To answer the second question management needs to calculate the company's cost of capital (i.e. the shareholders' required rate of return) and the accounting return on equity (ROE) that the company can earn on new projects. Ideally this should be the IRR but this figure is not publicly available, so the ROE is used as a proxy.

First, a company either pays out more or less dividends than it can afford as measured by the FCFE and second, a company either has or has not got good future projects.

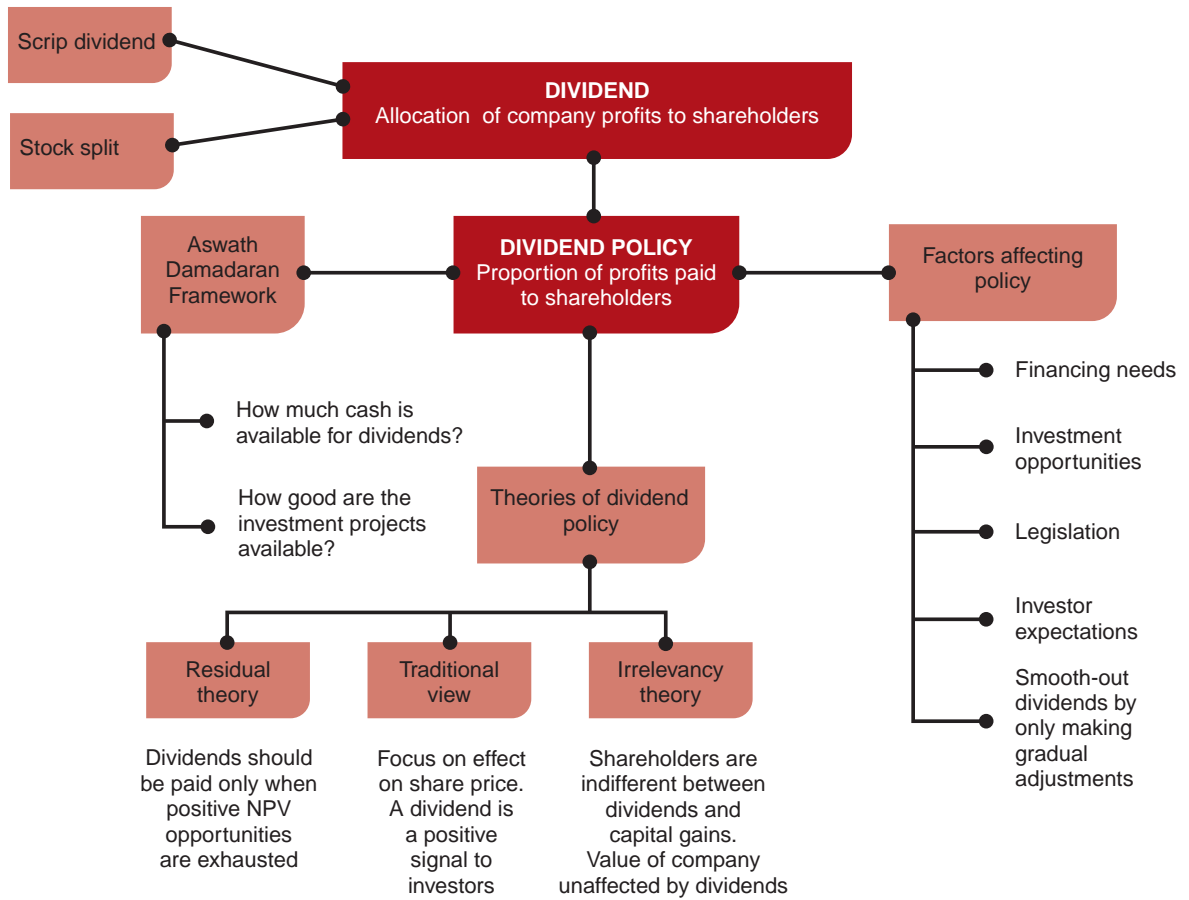
These can be shown in a matrix as follows:

		<b>FCFE versus Dividends</b>	
		<i>FCFE &lt; Dividends</i>	<i>FCFE &gt; Dividends</i>
<b>ROE versus Required return</b>	<i>ROE &gt; Required return</i>	<b>(1)</b> Invest in projects and cut dividends	<b>(2)</b> Maximum flexibility in dividend policy
	<i>ROE &lt; Required return</i>	<b>(3)</b> Reduce investment and cut dividends	<b>(4)</b> Reduce investment and increase dividends

This gives a framework for a single company with four combinations:

- (1) This company should cut its dividend in order to reduce the need for future external fund raising and avoid the need to decline a “good” project in the future due to lack of cash.
- (2) This company might be accumulating cash reserves in anticipation of investment in future “good” projects.
- (3) This company has an investment problem and first priority is to cut investment expenditure. If FCFE does not increase it will also have to cut its dividend payments.
- (4) This company will accumulate cash over time and also has an investment problem. It should cut investment expenditure to concentrate on building cash reserves. The company might come under shareholder pressure for a higher dividend payment.

# Topic recap



## Exam practice



## Dividend policy

**36 minutes**

XYZ has just obtained a big contract which has a very high chance of resulting in a sustainable profit increase for at least 10 years. The company just also sold a major asset and realised \$100M in cash which the Directors are planning to return to shareholders. The relevant information is not made known to the market.

The recent global financial crisis has caused a significant drop in the share price and also led to uncertainty as to future profitability. The Directors consider the current share price is undervalued.

Today the Directors meet and consider one of the following policy options:

- (i) Declare an increase in dividends over the last dividend payment.
- (ii) Declare a one-time special dividend.
- (iii) Repurchase shares from the market.

*Required*

- (a) What are the advantages and disadvantages of share repurchase? **(5 marks)**
- (b) Which of the two dividend policies should the company adopt for each of the following two independent scenarios? Support your answers based on the benefits and risks of each policy.
  - (1) As a result of winning a big contract and despite the financial crisis, the company expects a permanent increase in profits starting next year.
  - (2) Despite the positive impact of winning a big contract, future profit remains unstable due to the financial crisis. **(6 marks)**
- (c) After careful deliberation, the Directors decide that there is a higher chance of future profit remaining unstable. In this case, which of the three policy options will you recommend to the company? Provide reasons to support your answer. **(3 marks)**
- (d) Assume XYZ at present has a long term debt of \$350M and equity value of \$1,000M, i.e. a Debt/Equity (D/E) ratio of 35%. In addition, a debt protective covenant indicates the D/E ratio cannot be higher than 37%. What is the maximum amount of dividend payment or share repurchase that XYZ can make, if total equity remains at \$1,000M before the cash distribution? **(6 marks)**

**(Total = 20 marks)**

**HKICPA June 2012**

## Dividend

**32 minutes**

Grand Reily (GR) is a listed conglomerate with a market capitalisation of more than HK\$120 billion. While its core business is in the retailing and entertainment industries, GR had a real-estate arm which invested in fifteen residential and commercial properties in China, Hong Kong, Korea and Singapore. This property portfolio contributed 12.5% of the underlying profit to the group last year.

Having benefited from the rally in the property markets across the Asia Pacific region, the values of these properties have appreciated more than 50% from GR's initial investment. Considering that the yield of the portfolio has shrunk to below 2.5%, GR was not without concern with regard to the over-heating of the property market and thus decided that it would be to the benefit of the company to retreat from this investment. After several months of negotiation, GR successfully sold the entire property portfolio last week to an Asian Property Fund at a price of HK\$35 billion.

After this transaction, GR has repaid most of the outstanding debts but is still sitting with a cash balance of over HK\$24.5 billion. As a result of this, the Chief Financial Officer (CFO) of GR is considering a change in the dividend policy by substantially increasing the payout ratio for this year and distributing all the cash to the shareholders.

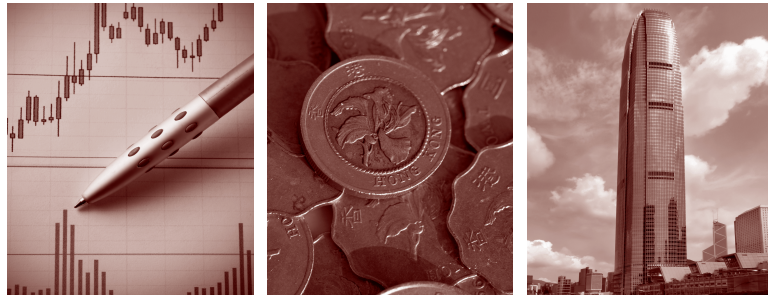
### *Required*

- (a) You are the Finance Manager of GR and have been requested by the CFO to analyse the pros and cons of his idea regarding the dividend for this year. **(12 marks)**
- (b) Apart from the dividend, what is another common way of returning the money to the shareholders? In what situations will it be considered a more suitable alternative? **(6 marks)**

**(Total = 18 marks)****HKICPA December 2010**







## chapter 11

# Identifying, measuring and managing financial risks

### Topic list

- 1 The risk framework**
  - 1.1 Introduction
  - 1.2 Risk strategy and management
  - 1.3 Business and financial risk
  - 1.4 Types of financial risk
- 2 The treasury function and risk**
- 3 Risk management**
  - 3.1 Attitude to risk
  - 3.2 Methods of managing risks
  - 3.3 Insurance and risk management
- 4 Risk/return trade-off**
- 5 Identification of specific risks**
- 6 Risk identification and assessment**
  - 6.1 Risk identification
  - 6.2 Risk assessment
  - 6.3 Institute of Risk Management approach
- 7 Enterprise risk management (ERM)**
  - 7.1 Nature of ERM
  - 7.2 COSO and ERM
  - 7.3 Goals of an ERM programme (from COSO)
  - 7.4 Typical risk functions (from COSO)
  - 7.5 Common challenges in ERM implementation (from COSO)
  - 7.6 Internal audit role (from COSO)
- 8 Foreign exchange risk**
  - 8.1 Exchange rates
  - 8.2 The causes of exchange rate fluctuations
  - 8.3 The basics of foreign currency risk management
  - 8.4 Forward exchange contracts
  - 8.5 Money market hedging
  - 8.6 Foreign currency derivatives: futures contracts
  - 8.7 Currency options
  - 8.8 Currency swaps
- 9 Interest rate risk**
  - 9.1 Introduction
  - 9.2 Interest rate risk
  - 9.3 Gap exposure
  - 9.4 Duration
  - 9.5 The causes of interest rate fluctuations
  - 9.6 Interest rate risk management

### Learning focus

In this chapter, we begin by looking at the various types of risks facing any business today. We then examine how a business can identify which of these risks impact on its operation and how these might be measured.

We look at various techniques for the management of **risk**, in particular **foreign currency risk** and **interest rate risk**.

This is a very important chapter. Risk identification and management are critical aspects of any business. You need to have a good understanding of various hedging methods, and be able to determine in a given situation what exposure needs hedging and how best to do it.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Risk identification and management</b> Identify risks which a business is exposed to and apply appropriate risk management strategies:		
<b>7.01</b>	<b>Concept of financial risk and return</b>	3
7.01.01	Explain the concept of the risk/return trade-off and discuss the various attitudes to risk that may exist	
7.01.02	Explain how the attitude to risk adopted by an organisation influences its approach to risk management	
7.01.03	Discuss how Enterprise Risk Management (ERM) is applied to form an integral part of an organisation's governance system	
<b>7.02</b>	<b>Identification and evaluation of business and financial risk</b>	3
7.02.01	Identify the key financial, operational, political, legal and business risks facing a company and explain their potential impact	
7.02.02	Explain how foreign exchange risk arises from exchange rate volatility	
7.02.03	Outline the sources of interest rate risk and liquidity risk	
<b>7.03</b>	<b>Measurement of risk</b>	2
7.03.01	Demonstrate an understanding of key methods of assessing financial risk	
7.03.02	Define financial risk exposures including interest rate, liquidity, foreign exchange, commodity, credit and capital risks and their potential impact upon the organisation	
<b>7.04</b>	<b>Risk management including the use of financial products, including derivatives</b>	2
7.04.01	Identify and discuss the main elements of a risk management process	
7.04.02	Discuss the main benefits to be derived from implementing risk management processes	
7.04.03	Identify alternative strategies for managing and controlling financial risk	
7.04.04	Explain and recommend appropriate methods for hedging foreign exchange risk, including derivative products	
7.04.05	Outline procedures for the identification and management of interest rate risk	

# 1 The risk framework



## Topic highlights

Risks to a business can come in many forms: they may be categorised as financial, operational, political, legal and business risks.

## 1.1 Introduction

Treasury (i.e. financial) management, introduced in Chapter 7, requires an understanding of, and a holistic approach to, all risks faced by a business. Essential to this is an understanding of:

- |                                |                 |
|--------------------------------|-----------------|
| (1) What can go wrong?         | Risk assessment |
| (2) What can be done about it? | Risk control    |
| (3) How is it to be paid for?  | Risk financing  |

Risk management is a dynamic rather than static issue and often requires proactive, forward looking and innovative actions. The company's policy on risk management has a direct impact on its finances. Given today's ever-changing economic and business climate, it is essential that the process of risk management must adapt rapidly to the effects of a constantly "moving" environment.

Risks exposure could arise from four broad areas:

Financial	Political	Operational	Legal
Some examples are:	Some examples are:	Some examples are:	Some examples are:
Liquidity	Regulation	Personnel/internal control	Contracts
Funding	Government action	Time and delay/opportunity cost	Product liability
Interest rate		Criminal/loss from fraud	
Currency		Consequential/business continuity loss	
Business		Physical damage/replacement cost	

These potential risk exposures need to be mitigated through control. Failure to do this means the risk must be financed. In addition, there is an adverse economic impact from waiting until risk strikes.

The treasurer must understand the potential effects of risks on the cash flows and financing of the company.

## 1.2 Risk strategy and management



## Topic highlights

**Risk management** happens at three levels:

- **Strategic:** risks derived from external sources – the responsibility of the board of directors
- **Operational:** risks derived from the processes – the responsibility of process owners, but risk management solutions must consider the needs of the company as a whole
- **Tactical:** to synchronise actions that address both strategic and operational risks – the responsibility of a "risk manager"

A company should have a proactive and pre-emptive approach to risk management. This should be led by the board through the involvement of people who can command credibility throughout the company to facilitate continuous corporate communication involving the board, the strategic business units and the business risk/management process owners. On-going, permanent resources should be committed to the risk management function.

The risk management process must develop a process that identifies all risks and their potential impact on the finances of the company. A company must complete an internal risk assessment/audit on a regular basis covering issues such as asking what can go wrong, how can the business control things that go wrong and how is it to be paid for.

### 1.3 Business and financial risk

Risk, in business, is the possibility that a company's operations will deteriorate, and that future results will be worse than predicted. Companies face two broad types of risk:



#### Key terms

**Business risk:** The risk that a company's commercial activities and operations are less successful than in the past or as forecast (for example, a fall in revenues due to a competitor introducing a rival product).

**Financial risk:** The risk that financial conditions (for example, the cost of borrowing, the yield from investments, the availability of money to borrow, customer bad debts) could change or be less favourable than expected, resulting in a deterioration of business positions in financial terms (i.e. profitability and solvency).

The treasury function is responsible for each of the following areas:

- (a) **Liquidity (i.e. working capital) management:** Measuring, monitoring and managing cash flow to protect solvency.
- (b) **Funding (i.e. long-term finance):** Creating an optimal mix of equity and debt to meet capital expenditure and investment requirements, matching the maturity and conditions of the use and source of finance, and establishing and maintaining good banking and credit agency relations.
- (c) **Financial risk management:** This will vary according to the nature, size and complexity of the business and the availability of experienced staff. To ensure effectiveness and efficiency, resources must be given to the treasury function needs:
  - Clear policies (including risk limits within which it can operate)
  - Resources to perform the functions
  - Operational flexibility to react quickly to changes in financial markets

### 1.4 Types of financial risk

Please refer to other chapters of this Learning Pack for more coverage of financial risks; specifically, Chapter 8, Working Capital Management (liquidity risk), and Chapters 9, Types and Sources of Finance, and 16, Financial Markets (financing risk).

#### 1.4.1 Liquidity risk



#### Key term

**Liquidity risk** is the risk of having insufficient cash resources to meet day-to-day obligations, or take advantage of profitable opportunities when they arise. Liquidity is the ability to obtain:

- the right amount of funds
- in the right currency
- at the right cost
- at the right price
- in the right time zone
- at the right time.

Liquidity risk is that borrowed funds may not be available when the company requires them or they will not be available for the required term or at an acceptable cost, resulting in the company having insufficient financial resources to meet its liabilities (creditors and debts) as they fall due.

A company may lose credit lines from banks if it fails to comply with loan covenants. Therefore, the company may maintain adequate unused funding sources in view of such factors as future debt repayments, capital expenditure, seasonal fluctuations, potential acquisitions and contingencies. Funding sources may include equity issues, debt, supplier finance and leasing.

To control its liquidity risk, the treasury function will undertake:

- day-to-day cash management to ensure funds are available when needed
- short-term liquidity management of liquid assets and stand-by facilities
- long-term liquidity management to ensure funding facilities are available to meet future needs

### 1.4.2 Interest rate risk



#### Key term

**Interest rate risk** is the risk that adverse movements in **interest rates** will affect profit by increasing interest expense or reducing interest income.

Interest rate volatility has substantially increased interest rate risk since the deregulation of financial systems. Management of this risk by treasury can add to the profitability of the company, therefore the treasurer needs to be able to continually assess the impact on the income statement and cash flow for any given change in interest rates.

### 1.4.3 Foreign exchange risk



#### Key term

**Foreign exchange risk** is the risk that the rate of exchange used to convert foreign currency revenues, expenses, cash flows, assets or liabilities to the home currency will move adversely, resulting in reduced profitability and/or shareholder wealth.

Companies that sell to customers in other countries, buy from other countries or have business operations in other countries may have significant exposure to foreign exchange risk. There are three types of foreign exchange risk:

- Economic risk** arises where a company is exposed to the effect of exchange rate movements on its international competitiveness. Also covers operations in and with an overseas economy.
- Translation risk** arises from the conversion of long-term foreign currency assets and liabilities into the home currency at regular intervals for statutory reporting reasons (statement of financial position).
- Transaction risk** arises from normal operational business activities of converting foreign currency receipts or payments into the home currency.

In emerging markets, with capital and currency control, there is the additional risk of the timing and amount of foreign exchange conversion, as that may require regulatory approval (for example, in China by the State Administration of Foreign Exchange).

### 1.4.4 Commodity price risk



#### Key term

**Commodity price risk** is the risk of a price change in a key commodity (input or output) that would affect financial performance.

Often commodities on world markets are priced in a foreign currency (e.g. the US dollar) and this increases the risk. Managing commodity price risk is similar to managing foreign exchange risk.

### 1.4.5 Credit risk



#### Key term

**Credit risk** is the risk that the other party to a financial transaction defaults and does not meet its financial obligations, or fails to meet its financial obligations on time.

Non-payment by customers results in a loss. Delayed payments by customers also have a cost because the money that is still owed could have been used either to reduce a bank overdraft or earn interest on deposit).

There are three key categories of credit risk:

- (a) **Counterparty risk:** The other party to a financial transaction will not meet its obligations as to timing or amount of settlement.
- (b) **Country risk:** Can be divided into political, regulatory and economic risk and is generally beyond the direct control of the counterparty.
  - (i) **Political risk:** Government directives and policies that may affect the (financial) contractual performance of either party to the transaction or create continuing uncertainty about what the government might do next. This includes such event risks as geopolitical developments (North/South Korea tensions, Thailand problems), and the risk of terrorist activities.
  - (ii) **Regulatory risk:** Introduction of regulations affecting financial conditions or existing regulations will be enforced more severely.
  - (iii) **Economic risk:** Economic conditions within a country have adverse financial impacts (such as inflation, interest rates and foreign exchange rates). If a government increased public spending by borrowing, business opportunities would arise for suppliers and contractors to the government, but the financial consequences of a larger Public Sector Borrowing Requirement might be much higher interest rates for commercial and private borrowers.
- (c) **Settlement or delivery risk** is the risk that there is default in a single settlement or delivery.

### 1.4.6 Regulatory risk



#### Key term

**Regulatory risk** is the risk relating to the timing and amount of foreign exchange conversion that may require regulatory approval.

In emerging markets with capital and currency control, there is the additional risk relating to regulatory control of foreign exchange conversion. For example, in mainland China foreign exchange transactions are regulated by the State Administration of Foreign Exchange.

## 2 The treasury function and risk



#### Topic highlights

Treasurers have overall responsibility for the assets of the firm, including their purchase, financing and disposal. This financial responsibility, both long-term and short-term, flows from the Chief Financial Officer.

Examples of the types of financial risk are as follows:

Financial market movement	Effect on business
<b>Interest rates rise</b>	Working capital costs increase Interest costs of floating (variable) rate borrowing increase Existing fixed rate borrowings not affected until renegotiated Yields on floating rate investments increase
<b>Interest rates fall</b>	Working capital costs decrease Interest costs of floating (variable) rate borrowing decrease Existing fixed rate borrowing relatively more expensive than variable rate borrowing Yields on floating rate investments fall
<b>Value of domestic currency falls</b>	Exposure to foreign currencies has greater impact Cost of imported goods increases
<b>Value of domestic currency rises</b>	Products become less competitive on world markets Value of foreign earnings fall Value of overseas investments and property falls

The treasurer is expected to protect all the company's assets and profits against losses due to external financial events, in particular interest and foreign exchange rate movements. Financial risk management is a core activity of treasury management.

### 3 Risk management



#### Topic highlights

Risk management is the process of identifying and assessing (analysing and evaluating) risks and the development, implementation and monitoring of a strategy to respond to those risks.

Corporate governance standards encourage companies to adopt good practices in risk management. In addition, the success or failure of a business will in part be determined by how it manages risks and exploits opportunities to give it an advantage over its competitors.

Effective risk management enables a business to:

- reduce business threats to acceptable levels
- make informed decisions about potential opportunities allowing stakeholders (investors, customers, employees) to have confidence in the business and its future prospects.

This raises the question of what is acceptable to the business, which depends on the management's attitude towards risk.



### 3.1 Attitude to risk



#### Key term

**Risk appetite** (or “risk tolerance”) refers to the extent to which a company is prepared to take on risks in order to achieve its objectives.

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



#### Key terms

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.

A **risk neutral attitude** is that an investment should be chosen based on the expected (most likely) return, irrespective of the risk.

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

### 3.2 Methods of managing risks

- (a) **Avoidance.** Can result in opportunity loss.
- (b) **Retention.** This can be both active and passive. Active risk retention is a conscious decision to retain risk, such as self-insurance, or remaining exposed to interest rate or foreign exchange rate movements in financial markets. Risk retention should be considered when the cost of loss is regarded as small. Managed appropriately it can save money for the organisation. On the other hand, passive risk retention may be the retention of risk due to ignorance, indifference or laziness. It has the potential to destroy a company.
- (c) **Non-insurance risk transfers.** These involve transferring the risk to a party other than an insurance company. It includes transfer of risk by contracts and hedging price risks (such as interest rate, foreign exchange and commodity prices).
- (d) **Loss control.** Loss control comprises activities undertaken by the company to control the frequency and severity of losses with the objective of loss prevention and loss reduction.
- (e) **Insurance transfer.** Traditionally insurance has been seen as the most practical method of handling risk. Its application includes risk transference, the pooling technique, and the law of large numbers.



#### Illustrations: Risk management

- (a) If a company's only factory is destroyed by fire, the company may face business interruption and loss of business. Efforts must be directed to retaining customers and funding the cost of rebuilding the factory.

The cost to the company would be high unless the risk is managed through insurance (risk transfer). The cost of insurance (the insurance premium) may be reduced by measures to reduce the risks of fire (loss control) but insurance costs will affect the company's cash flow and profit for the period.

- (b) A company may be able to transfer its operations easily to another plant with little cost or disruption in the event of a fire.

The cost would not be high, so retention of the risk may be considered, but loss control to avoid the risk of disruption to business operations should be considered if the cost/benefit is appropriate. The only real impact here would be on the company's cash flow and profit if loss control is undertaken.

- (c) The general view is that interest rates stay the same or fall, but if interest rates increase by 1%, the company would experience financial difficulties.

The company, however, cannot control the movement of interest rates, so it may be more prudent to avoid or control the risk by reducing the amount of its borrowed funds and having a more conservative capital structure. The treasurer could consider repaying the company's borrowing, if this is possible, by issuing equity; however an issue of new shares would affect the share price and dilution of control may also be an issue for shareholders. Replacing debt capital with equity capital means that interest expenses would not impact on the cash flow or profit. It would, however, impact on cash flow if cash dividends are paid to shareholders.

- (d) The general view is that the foreign exchange rate will stay the same or fall, and if it falls by 1%, the company would experience financial difficulties.

The company cannot control the movement of exchange rates and so it would probably be prudent to transfer the risk (to a financial institution) as much as possible, using forward exchange contracts or foreign currency derivative instruments.

The company could also consider contracting to price its exported goods in the home currency, or buy imported goods in the home currency if this is possible. This would transfer the foreign exchange risk to customers and suppliers. For example, a Chinese company with a cost base in RMB can contract and receive in RMB.

- (e) There is a concern that debtors will not pay their commitments on time, but will eventually settle 60 days after the due date.

If the amount is not substantial, and it will not create cash flow difficulties for the company, then retention of the risk is probably a course of action.

If the amount is substantial, or it would create cash flow difficulties for the company, then risk avoidance (not providing credit) or risk transfer (insurance) are courses of action that could be considered if credit has not already been extended. If credit has already been extended, action for recovery or an interest cost payable by the debtor may be considered. At the same time, the treasurer must gain approval of an additional borrowing facility from a financial intermediary to overcome the cash flow deficiency; otherwise the company may face insolvency.

The company may have no other course of action but to retain the risk, and would have to ensure that it has financial resources available to manage the position, including the possibility of raising additional equity as a buffer to keep the optimal capital structure in line with policy.

In any event, receivables need to be monitored and the company will incur loss control expenses, affecting its cash flow and profit.

Financial risks are strongly inter-linked. Delay under credit risk has the potential to affect liquidity, solvency and profitability and the appropriate course of action to gain additional funding links the situation with funding risk and interest rate risk. Foreign exchange risk could be involved if the company borrowed in a foreign currency. Effect on the capital structure of the company needs to be considered.

- (f) There is a concern that a substantial volume of debtors will not pay their commitments at all.

This scenario refers to the expectation of non-receipt of amounts receivable. If credit has been extended, but it is expected that non-payment will be high, then transfer of the credit risk may be an appropriate way to attempt to deal with the situation. This may involve such actions as factoring receivables at a greater discount without recourse, or insurance at a higher premium cost.

### 3.3 Insurance and risk management

All companies' assets and activities are subject to many types of accidental loss, which have financial consequences of either replacement cost or liability related damage payments. This has three key implications:

- (1) The threat of accidents, even if they do not occur, imposes a very real “cost of risk” on every company (risk assessment and measurement).
- (2) The treasurer has responsibility for controlling and limiting accidental losses that may strike the company (defining risk tolerance limits).
- (3) Any accidental losses require the company to be able to access resources to finance a recovery (risk transfer and funding).

Treasurers need to consider the risk management implications of all financial decisions. In many types of financial analysis, a “most likely” or “expected value” outcome is assumed, and risk from losses may be included in overhead rather than in cash flow analysis.

Even if all losses can be covered by insurance, management will generally find that accidents tend to reduce the company's profitability, increase its liquidity requirements and impair its financial security.

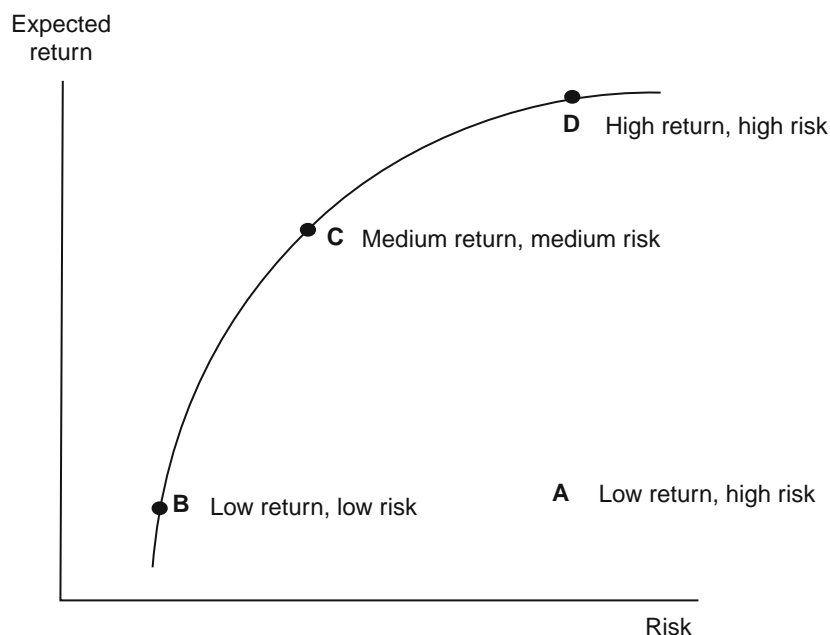
## 4 Risk/return trade-off



### Topic highlights

There is a trade-off between **risk** and **return**. Investors in riskier assets expect to be compensated for the higher exposure.

A company can fit into one of four general risk/return trade-off groups as shown in the following diagram. The four positions represent four different strategies of dealing with the risk/return trade-off.



**A** (low return/high risk). Exposure to high risk without compensating returns. Companies in this category are often unaware of their high-risk exposure because they usually lack the controls necessary to monitor these risk positions.

**B** (low return/low risk). Companies in this category are common in mature industries, conservatively managed businesses and government-owned enterprises.

**C** (medium return/medium risk). Companies in this category are usually protected by market controls, patents or are in a monopoly situation.

**D** (high return/high risk). Companies in this category are usually entrepreneurial and deliberately choose this profile, although others find themselves in this position if they underestimate their risk profile. Many companies caught in the after effects of the recent sub-prime crisis were in this category.

B, C and D may be acceptable because they represent alternative management attitudes to the risk/return trade-off. A is not acceptable. The board of directors, through clearly written policies, must direct the treasurer to the risk type position they require.

Usually the treasurer focuses on the negative effects of risk rather than the positive effects. Stability of cash flows for the company is often a major risk concern. Negative movements in commodity prices, interest rates or foreign exchange rates, compared to the company's position, are of the highest concern. The treasurer can determine a company's exposure to each risk factor and can estimate the sensitivity of its cash flows to these factors by reference to the estimated volatility of these factors. The company can then gauge the relative importance of each risk factor by examining their impact on cash flow and profits.

A company could remove its exposures by hedging its position. This may remove uncertainty or any downside risk but would also remove all opportunities to gain from movements in commodity prices, interest rates and foreign exchange rates.

Linked to this is the ability to judge the risk return trade-off in relation to investment projects. Getting this wrong could have a catastrophic impact on a company's profit or even survival. This has been brought into sharp focus by the sub-prime mortgage crisis recently in the US. This episode has shown the mismanagement by and incompetence of finance managers in their poor assessment of what the risks versus the returns really were.

## 5 Identification of specific risks

When the corporate treasurer understands the risks facing a company, the process of identifying and managing the various risks faced can be undertaken. Critical to this process is the requirement to have accurate, relevant and timely information, which is future-oriented. The treasurer needs well-defined and reliable information to make decisions, recognising the challenge of identifying all the unknowns.

**Internal information** requirements comprise:

- cash information and company systems (to determine where the company is)
- cash flow forecasts (to determine where the company is going)

**External information** requirements comprise:

- strategic information: data on relevant macroeconomic, historical and forecast trends
- tactical information: data on short-term forecasts of interest rates and foreign exchange rates
- operational information: current online data on interest and exchange rates

## 6 Risk identification and assessment



### Topic highlights

**Risk identification** involves considering the internal and external events that may give rise to specific risks for a particular business while **risk assessment** involves the evaluation or ranking of the identified risks in order to identify significant risks and implement suitable risk responses.

## 6.1 Risk identification

In section 1 we considered the types of risk that any business may face.

Suppose an organisation were considering launching a new product in China but knew absolutely nothing about doing business there. 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**.

Risk identification can start by considering:

- (a) **external events** such as political developments, economic changes, social considerations or technological advances (PESTEL or PESTE factors).
- (b) **internal events** such as equipment problems, human error or difficulties with processes and systems.

Risk identification must be a continuous process as potential new risks may arise and existing risks may change.

### 6.1.1 Identification techniques

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 a company starts offering a new service, it may consider how easy it would be for competitors to do likewise, and if they do, what impact that would have on their own plans and projections.

## 6.2 Risk assessment

Risk assessment should be undertaken for all new strategies and proposed investment projects as well as for routine operations.

Risk assessment involves the evaluation or ranking of the identified risks in order to identify significant risks and implement suitable risk responses.

Risk assessment involves for each risk:

- (a) **Analysis** – considering the nature of the risk, and what implications it might have for the organisation
- (b) **Evaluation** – making an initial judgment about the seriousness of the risk.

Remember that

Risk = probability × financial consequences

so each risk can be assessed from two aspects:

- (a) its potential **impact**, in other words how serious it would be.
- (b) its **probability of occurrence** (or likelihood).

### 6.2.1 Quantitative risk assessment

Quantitative risk assessment involves the determination of measured figures for probabilities and consequences producing a specifically quantified measure of risk.

In many cases the financial consequences are easy to measure, e.g. the value of lost inventories or the cost of rebuilding premises. More problematic, however, is the assessment of the probability of occurrence. Though insurance companies have detailed statistical information on the occurrence of many risk events, it is much more difficult to establish probabilities for the less likely events such as natural disasters.

Some types of risk lend themselves to a quantitative assessment process, such as many financial risks. For certain risks it may be very difficult to achieve, for example, the impact of an event on the reputation of a business is much harder to quantify, and from this perspective risk assessment is more subjective. The effort required and cost incurred in undertaking a full quantitative assessment is liable to be substantial, and may not be cost-effective.

### 6.2.2 Qualitative risk assessment

An alternative that may render risk prioritisation practical is qualitative risk estimation. This involves a subjective risk assessment perhaps using a relative high-medium-low style assessment.

The overall risk of an event can, by this system, be determined by reference to a **risk map** or **risk matrix**, with one axis for the impact or consequences of the risk and the other for the probability or frequency of occurrence. Such a **risk matrix** diagram can help management to reach a view about:

- which risks seem more serious than others (risks with a high impact and high probability would be considered a priority), and
- the nature of the risk management measures that might be appropriate for dealing with each risk.

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

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

A qualitative assessment has the advantage of being much easier to undertake, though it is highly subjective. However, if it is consistently applied to all risks it does facilitate prioritisation.

## 6.3 Institute of Risk Management approach

In *A structured approach to Enterprise Risk Management*, the Institute of Risk Management (IRM) identifies the following commonly used techniques for risk identification and assessment:

- (a) Use of structured approaches to risk recognition – Strengths Weaknesses Opportunities Threats (SWOT) and Political Economic Social Technological Environmental Legal (PESTEL) analyses. These approaches were described in Chapter 2.
- (b) Use of structured questionnaires and checklists to collect information to assist with the recognition of the significant risks.
- (c) Workshops and brainstorming to share ideas and discuss the events that could impact on the organisation.
- (d) Physical inspections of premises and activities and audits of compliance with established systems and procedures.
- (e) Use of flowcharts to analyse processes and operations within the organisation to identify critical components that are key to success.

The IRM also suggests the following approach for benchmarking the significance of risks:

- (a) For financial risks, a sum of money can be used as the benchmark test of significance.
- (b) For risks that can cause disruption to operations, the length of disruption may be a suitable test.
- (c) Reputational risks can be benchmarked in terms of the profile that the report of the event would receive, the likely impact of the event on share price, or the impact on the political and financial support received from key stakeholders.

## 7 Enterprise Risk Management (ERM)



### Topic highlights

In the last decade or so, risk management has been treated by many firms in a more all-encompassing and integrative manner. ERM has been elevated to a senior management responsibility.

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### 7.1 Nature of ERM

The adoption of an ERM approach recognises the Board's accountability and role in risk management, which is not just carried out at the functional level in the organisation by a risk/insurance manager reporting to the Treasurer or Chief Financial Officer.

In a large firm, the governance structure and processes to support ERM requires the creation of a Chief Risk Officer who has direct accountability to the Chief Executive Officers and the Board.

The scope of ERM extends beyond dealing with financial risks. It also covers broader areas such as succession planning. The focus also shifts from event-driven to process-driven management. Treasurers and CFOs need to align systems design, policy and procedures, organisation and staffing, performance incentives and remuneration, internal control and accountability.

## 7.2 COSO and ERM

Perhaps the seminal work on ERM in accounting literature was that published in 2004 by the Committee of Sponsoring Organisations of the Treadway Commission (COSO). This report contained the following definition of ERM:



### Key term

**Enterprise Risk Management (ERM)** 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 entity objectives”.

The following narrative is drawn from the COSO document, and describes succinctly the nature of ERM and its role in accounting.

The COSO ERM Framework has eight components and four objectives categories. It is an expansion of the COSO Internal Control – Integrated Framework published in 1992 and amended in 1994.

The eight components are:

- Internal Environment
- Objective Setting
- Event Identification
- Risk Assessment
- Risk Response
- Control Activities
- Information and Communication
- Monitoring

The four objectives categories are:

- Strategy – high-level goals, aligned with and supporting the organisation's mission
- Operations – effective and efficient use of resources
- Financial Reporting – reliability of operational and financial reporting
- Compliance – compliance with applicable laws and regulations

## 7.3 Goals of an ERM programme (from COSO)

Organisations by nature manage risks and have a variety of existing specialised departments or functions (“risk functions”) that identify and manage particular risks. However, each risk function varies in capability and how it co-ordinates with other risk functions. A central goal and challenge of ERM is improving this capability and co-ordination, while integrating the output to provide a unified picture of risk for stakeholders and improving the organisation's ability to manage the risks effectively.

## 7.4 Typical risk functions (from COSO)

The primary risk functions in large corporations that may participate in an ERM programme typically include the following:

- Strategic planning – identifies external threats and competitive opportunities, along with strategic initiatives to address them
- Marketing – understands the target customer to ensure product/service alignment with customer requirements
- Compliance and ethics – monitors compliance with code of conduct and directs fraud investigations
- Accounting / Financial compliance – directs the Sarbanes-Oxley sections 302 and 404 assessment, which identifies financial reporting risks. (Clearly this relates to the United States – in Hong Kong, financial reporting risks would be defined in relation to IFRS.)
- Law department – manages litigation and analyses emerging legal trends that may impact the organisation



- Insurance – ensures the proper insurance coverage for the organisation
- Treasury – ensures cash is sufficient to meet business needs, while managing risk related to commodity pricing or foreign exchange
- Operational Quality Assurance – verifies operational output is within tolerances
- Operations management – ensures the business runs day-to-day and that related barriers are surfaced for resolution
- Credit – ensures any credit provided to customers is appropriate to their ability to pay
- Customer service – ensures customer complaints are handled promptly and root causes are reported to operations for resolution
- Internal audit – evaluates the effectiveness of each of the above risk functions and recommends improvements.

## 7.5 Common challenges in ERM implementation (from COSO)

Various consulting firms offer suggestions for how to implement an ERM programme. Common topics and challenges include the following:

- Establishing a common risk language or glossary
- Describing the entity's risk appetite (i.e. risks it will and will not take)
- Identifying and describing the risks in a “risk inventory”
- Implementing a risk-ranking methodology to prioritise risks within and across functions
- Establishing a risk committee and or Chief Risk Officer (CRO) to co-ordinate certain activities of the risk functions
- Establishing ownership for particular risks and responses
- Demonstrating the cost-benefit of the risk management effort
- Developing action plans to ensure the risks are appropriately managed
- Developing consolidated reporting for various stakeholders
- Monitoring the results of actions taken to mitigate risk
- Ensuring efficient risk coverage by internal auditors, consulting teams, and other evaluating entities
- Developing a technical ERM framework that enables secure participation by third parties and remote employees.

## 7.6 Internal audit role (from COSO)

In addition to information technology audit, **internal auditors** play an important role in evaluating the risk management processes of an organisation and advocating their continued improvement. However, to preserve the organisational independence of internal auditors and their objective judgment, Internal Audit professional standards indicate the function should not take any direct responsibility for making risk management decisions for the enterprise or managing the risk management function.

Internal auditors typically perform an annual risk assessment of the enterprise, to develop a plan of audit engagements for the upcoming year. This plan is updated at various frequencies in practice. This typically involves review of the various risk assessments performed by the enterprise (e.g., strategic plans, competitive benchmarking and financial reporting top-down risk assessment), consideration of prior audits and interviews with a variety of senior management. It is designed for identifying audit projects, not to identify, prioritise and manage risks directly for the enterprise.

## 8 Foreign exchange risk



### Topic highlights

Currency risk occurs in three forms: **transaction exposure** (short-term), **economic exposure** (effect on present value of longer-term cash flows) and **translation exposure** (book gains or losses).

### 8.1 Exchange rates



#### Key terms

**Exchange rate** is the rate at which one country's currency can be traded in exchange for another country's currency.

**Spot rate** is the exchange or interest rate currently offered on a particular currency or security. The spot rate is the rate of exchange in currency for immediate delivery.

**Forward rate** is an exchange rate available now for currencies to be exchanged at a future date.

The globalisation of trade (goods and services as current account transactions) and capital flows (portfolio flows and foreign direct investment as capital transactions) have increased significantly in recent years. According to the most recent triennial survey by the Bank for International Settlements in September 2010, daily transactions in foreign currencies increased from an estimated US\$3.3 trillion in April 2007 to US\$4 trillion in April 2010. London is the largest financial centre for currency trading, but Hong Kong is significant, and in April 2010 accounted for about 5% of the total global market. Other important currency trading centres are the USA, Switzerland, Japan and Singapore.

#### 8.1.1 Foreign exchange demand

If an importer has to pay a foreign supplier in a foreign currency, he might ask his bank to sell him the required amount of the currency. For example, suppose that a bank's customer, a Hong Kong trading company, has imported goods from a UK supplier for which it must now pay £100,000.

- The company will ask the bank to sell it £100,000 (if the company is buying currency, the bank is selling it)
- When the bank agrees to sell £100,000 to the company, it will tell the company what the spot rate of exchange will be for the transaction. If the bank's selling rate (called the “**offer**”, or “**ask**” price) is, say \$10.7935 per £1 for the currency, the bank will charge the company:

$$£100,000 \times \$10.7935 = \$1,079,350$$

Similarly, if an exporter is paid £100,000 by a foreign customer in the UK, he may wish to exchange the sterling to obtain HK dollars. He will therefore ask his bank to buy the sterling from him. Since the exporter is selling currency to the bank, the bank is buying the currency.

If the bank quotes a buying rate (known as the **bid** price) of, say \$10.6075 per £1, for the currency the bank will pay the exporter:

$$£100,000 \times 10.6075 = \$1,060,750$$

A bank expects to make a profit from selling and buying currency, and it does so by offering a rate for selling a currency that is different from the rate for buying the currency.

If a bank were to buy a quantity of foreign currency from a customer, and then were to re-sell it to another customer, it would charge the second customer more (in sterling) for the currency than it would pay the first customer. The difference would be profit.

For example, the figures used for illustration in the previous paragraphs show a bank selling some sterling for \$1,079,350 and buying the same quantity of sterling for \$1,060,750, at selling and buying rates that might be in use at the same time. The bank would make a profit of \$18,600.

### 8.1.2 The foreign exchange (FX) markets

Banks buy currency from customers and sell currency to customers, typically exporting and importing firms. Banks may buy currency from the government or sell currency to the government (this is how a government builds up its official reserves). Banks also buy and sell currency between themselves.

International trade involves foreign currency, for either the buyer, the seller or both (for example, a Saudi Arabian firm might sell goods to a Hong Kong buyer and invoice for the goods in US dollars). As a consequence, it is quite likely that exporters might want to sell foreign currency earnings to a bank in exchange for domestic currency, and that importers might want to buy foreign currency from a bank in order to pay a foreign supplier.

Since most foreign exchange rates are not fixed but are allowed to vary, rates are continually changing and each bank will offer new rates for new customer enquiries according to how its dealers judge the market situation.

### 8.1.3 Economic risk



#### Key term

**Economic exposure** refers to the effect of exchange rate movements on the international competitiveness of a company and refers to the effect on the present value of longer-term cash flows.

For example, a Hong Kong company might use raw materials which are priced in £sterling, but export its products mainly to Europe. A depreciation of \$ against sterling or an appreciation of \$ against the euro will both erode the competitiveness of the company. Economic exposure can be difficult to avoid, although diversification of the supplier and customer base across different countries will reduce this kind of exposure to risk.

### 8.1.4 Translation risk



#### Key term

**Translation risk** is the risk that the organisation will make exchange losses when the accounting results of its foreign branches, divisions or subsidiaries are translated into the home currency.

Translation losses can result, for example, from restating the book value of a foreign subsidiary's assets at the exchange rate on the reporting date.

### 8.1.5 Transaction risk



#### Key term

**Transaction exposure** is the risk of adverse exchange rate movements occurring in the course of **normal international trading transactions**.

This arises when the prices of imports or exports are fixed in foreign currency terms and there is movement in the exchange rate between the date when the price is agreed and the date when the cash is paid or received in settlement.

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 will know in advance about the receipts and payments arising from their trade. They will know:

- what foreign currency they will receive or pay
- when the receipt or payment will occur
- how much of the currency will be received or paid

The great danger to profit margins is in the **movement in exchange rates**. The risk is faced by:

- exporters who invoice in a foreign currency
- importers who pay in a foreign currency

## 8.2 The causes of exchange rate fluctuations

### 8.2.1 Currency supply and demand



#### Topic highlights

Factors influencing the exchange rate include the comparative rates of inflation in different countries (**purchasing power parity**), comparative interest rates in different countries (**interest rate parity**), the underlying balance of payments, speculation and government policy on managing or fixing exchange rates.

The exchange rate between two currencies (i.e. the buying and selling rates, both “spot” and “forward”) is determined primarily by supply and demand in the foreign exchange markets. Demand comes from individuals, firms and governments who want to buy a currency and supply comes from those who want to sell it. Supply and demand for currencies are in turn influenced by:

- the rate of inflation, compared with the rate of inflation in other countries
- interest rates, compared with interest rates in other countries
- the balance of payments
- sentiment of foreign exchange market participants regarding economic prospects
- speculation
- government policy on intervention to influence the exchange rate.

### 8.2.2 Interest rate parity



#### Key term

**Interest rate parity** theory is a method of predicting foreign exchange rates based on the hypothesis that in the long term the difference between the interest rates in the two countries should explain changes in the spot rate of exchange between the currencies.

The difference between the spot rates and the forward foreign exchange rates between two currencies is the direct consequence of differences in interest rates for the two currencies over the period between the spot date (“now”) and the settlement date for the forward contract.

The difference between spot and forward rates reflects differences in interest rates. If this were not so, then investors holding the currency with the lower interest rates would switch to the other currency for (say) three months, ensuring that they would not lose on returning to the original currency by fixing the exchange rate in advance at the forward rate. If enough investors acted in this way (called arbitrage), forces of supply and demand would lead to a change in the forward rate to prevent such risk-free profit making.



### Formula to learn

The principle of interest rate parity links the foreign exchange markets and the international money markets. The principle can be stated as follows:

$$F_0 = S_0 \times \frac{(1+i_a)}{(1+i_b)}$$

Where:  $F_0$  = forward rate

$S_0$  = current spot rate

$i_a$  = interest rate in country a

$i_b$  = interest rate in country b



### Example: Interest rate parity

Spot exchange rates between two currencies, the Northland florin (NF) and the Southland dollar (S\$) are listed in the financial press as follows:

Spot rates: 4.72500 NF/\$S  
0.21164 \$S/NF

The money market interest rate for 90-day deposits in Northland florins is 7.5% annualised and for the Southland dollar it is 5.3%. Assume a 365-day year. (In practice, foreign currency interest rates are often calculated on an alternative 360-day basis, one month being treated as 30 days.)

What will be the 90-day forward exchange rate between the two currencies?

What is implied about interest rates in Southland?

Today S\$1,000 buys NF4,725.

- (a) If S\$1,000 is placed on deposit for 90 days at 5.3%, the value of the deposit after 90 days would be:  $S\$1,000 + (1,000 \times 0.053 \times 90/365) = \$1,013.07$ .
- (b) If NF4,275 is placed on deposit for 90 days at 7.5%, the value of the deposit after 90 days would be:  $NF4,275 + (4,275 \times 0.075 \times 90/365) = NF4,725 + NF87.38 = NF4,812.38$ .

The foreign exchange markets would ensure that these values are equivalent, which means that the 90-day forward exchange rate must be:

- (a)  $4,812.38/1,013.07 = NF4.7503 = S\$1$   
(b)  $1,013.07/4,812.4 = S\$0.2105 = NF1$

Alternative method of calculation:

90-day interest rate for the NF =  $7.5\% \times 90/365 = 1.85\% = 0.018493$

90-day interest rate for the S\$ =  $5.3\% \times 90/365 = 1.31\% = 0.0130685$

Forward exchange rate =

$$\frac{1+0.0130685}{1+0.018493} \times 0.21164 = S\$0.2105 \text{ to NF1}$$

or

$$\frac{1+0.018493}{1+0.0130685} \times 4.725 = NF4.7503 \text{ to S\$1}$$

### 8.2.3 Using interest rate parity to forecast future exchange rates

The **interest rate parity** formula links the forward exchange rate with interest rates in a fairly exact relationship, because risk-free gains are possible if the rates are out of alignment. The forward rate tends to be an unbiased predictor of the future spot exchange rate, so does this mean that future spot exchange rates can be predicted using interest rate parity?

The simple answer is “yes”, but the prediction is subject to very large inaccuracies, because events that arise in the future can cause large currency swings in the opposite direction to that predicted by interest rate parity.

The general formula for interest rate parity can be rearranged as:

$$\frac{(1+i_a)}{(1+i_b)} = \frac{\text{Future spot rate}}{\text{Current spot rate}} = \frac{\text{Expected future spot rate}}{\text{Current spot rate}}$$



#### Example: Using interest rate parity

A Canadian company is expecting to receive Kuwaiti dinars one year from now. The spot rate is Canadian \$/Kuwaiti dinar = 5.4670. The company could borrow in dinars at 9% or in Canadian dollars at 14%. There is no forward rate for one year from now. Predict what the spot exchange rate is likely to be in one year.

Using interest rate parity, the Canadian \$ is the numerator and the Kuwaiti dinar is the denominator. So the expected future spot exchange rate dollar/dinar, using interest rate parity theory, is given by:

$$S_0 \times \frac{(1+i_{\text{canada}})}{(1+i_{\text{kuwait}})}$$

$$5.4670 \times \frac{(1+0.14)}{(1+0.09)} = 5.7178$$

This prediction is subject to great inaccuracy, but note that the company could “lock into” this exchange rate, working a money market hedge by borrowing today in dinars at 9%, converting the cash to dollars at spot and repaying any 14% dollar debt. When the dinar cash is received from the customer, the dinar loan is repaid.

### 8.2.4 Purchasing power parity (PPP)



#### Key term

**Purchasing power parity theory (PPPT)** states that the exchange rate between two currencies is the same in equilibrium when the purchasing power of currency is the same in each country.

Interest rate parity should not be confused with purchasing power parity. PPPT predicts that the spot exchange value of foreign currency depends on the relative purchasing power of each currency in its own country and that spot exchange rates will vary over time according to relative price changes.



### Formula to learn

Formally, purchasing power parity can be expressed as:

$$S_1 = S_0 \times \frac{(1+i_b)}{(1+i_a)}$$

Where:  $S_1$  = expected spot rate at time 1  
 $S_0$  = current spot rate  
 $i_b$  = expected inflation rate in country b  
 $i_a$  = expected inflation rate in country a

Note that the expected future spot rate will probably not be the same as the “forward exchange rate” currently quoted for time 1.

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### Example: Purchasing power parity

The spot exchange rate between the HK\$ and the Danish kroner is \$1 = 8.00 kroner. Assuming that there is now purchasing parity, an amount of a commodity costing \$110 in Hong Kong will cost 880 kroner in Denmark. Over the next year, price inflation in Denmark is expected to be 5% while inflation in Hong Kong is expected to be 8%. What is the “expected spot exchange rate” at the end of the year?

$$S_1 = S_0 \times \frac{(1+i_c)}{(1+i_b)}$$

$$S_1 = 8 \times \frac{(1+0.05)}{(1+0.08)}$$

$$= 7.78$$

This is the same if the inflated prices for the commodity were compared. At the end of the year:

Hong Kong price = \$110 × 1.08 = \$118.80

Denmark price = Kr880 × 1.05 = Kr924

$S_1 = 924 \div 118.80 = 7.78$

In the real world, exchange rates move towards purchasing power parity only over the long term. However, the theory is sometimes used to predict future exchange rates in investment appraisal problems where forecasts of relative inflation rates are available.

An amusing example of PPP is *The Economist's* Big Mac index. Under PPP, movements in countries' exchange rates should in the long term mean that the prices of an identical basket of goods or services are equalised. The McDonald's Big Mac represents this basket. The index compares local Big Mac prices with the price of Big Macs in America. This comparison is used to forecast what exchange rates should be, and this is then compared with the actual exchange rates to decide which currencies are over- and under-valued.

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## 8.2.5 The Fisher effect



### Key term

The term **Fisher effect** is sometimes used in looking at the relationship between interest rates and expected rates of inflation. The rate of interest can be seen as made up of two parts, the real required rate of return (real interest rate) plus a premium for inflation.

Therefore:

$$(1 + \text{nominal (money) rate}) = (1 + \text{real interest rate}) (1 + \text{inflation rate})$$

$$(1 + n) = (1 + r)(1 + i)$$

Countries with relatively high rates of inflation will generally have high nominal rates of interest, partly because high interest rates are a mechanism for reducing inflation, and partly because of the Fisher effect: higher nominal interest rates serve to allow investors to obtain a high enough real rate of return where inflation is relatively high.

According to the international Fisher effect, interest rate differentials between countries provide an unbiased predictor of future changes in spot exchange rates. The currency of countries with relatively high interest rates is expected to depreciate against currencies with lower interest rates, because the higher interest rates are considered necessary to compensate for the anticipated currency depreciation. Given free movement of capital internationally, this idea suggests that the real rate of return in different countries will equalise as a result of adjustments to spot exchange rates.



### Key term

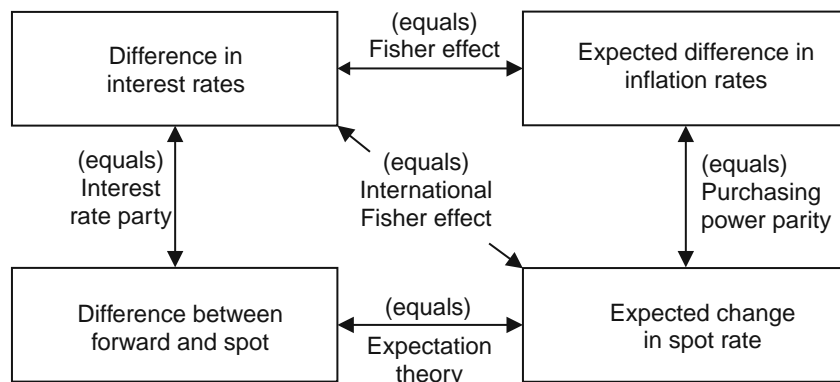
The **international Fisher effect** can be expressed as:

$$\frac{1+i_a}{1+i_b} = \frac{1+h_a}{1+h_b}$$

Where:  $i_a$  is the nominal interest rate in country a  
 $i_b$  is the nominal interest rate in country b  
 $h_a$  is the inflation rate in country a  
 $h_b$  is the inflation rate in country b

### 8.2.6 Four-way equivalence

The **four-way equivalence model** states that in equilibrium, differences between forward and spot rates, differences in interest rates, expected differences in inflation rates and expected changes in spot rates are **equal** to one another.





## 8.3 The basics of foreign currency risk management



### Topic highlights

Basic methods of managing currency risk include matching receipts and payments (sometimes called natural hedging), invoicing in own currency, and leading and lagging the times that cash is received and paid.

Exposures to currency risk can be hedged using forward contracts, money market hedging or derivatives (futures, options and swaps).

Risk management describes the policies that a company may adopt and the techniques it may use to manage the risks it faces. Exposure means being open to or vulnerable to risk. Why should businesses want to “manage” risk? There are two reasons why risk management makes good business sense:

- (a) First, a business may wish to reduce risks to which it is exposed to acceptable levels. What is an acceptable level of risk may depend upon various factors, including the scale of operations of the business and the degree to which its proprietors or shareholders are risk-averse.
- (b) Second, a business may wish to avoid particular kinds of risks. For example, a business may be averse to taking risks with exchange rates. The reasons may include the fact that the risks are simply too great. When exchange rates are volatile, and subject to large and unpredictable movements, the gains or losses arising from exchange rate movements (exchange risk) might be very large in comparison with the normal operating profits on the underlying trading transactions. In other words, the profits from trading activities may be significantly reduced, or even turned into losses, by adverse exchange rate movements, unless measures are taken to hedge the risks.



### Key term

A **hedge** is a transaction to reduce or eliminate an exposure to risk.

### 8.3.1 Currency of invoice

One way of avoiding exchange risk is for an exporter to invoice his foreign customer in his domestic currency, or for an importer to arrange with his foreign supplier to be invoiced in his domestic currency.

However, although either the exporter or the importer can avoid any exchange risk in this way, only one of them can deal in his domestic currency. The other must accept the exchange risk, since there will be a period of time elapsing between agreeing a contract and paying for the goods (unless payment is made with the order).

If a Hong Kong exporter is able to quote and invoice an overseas buyer in HK\$, then the foreign exchange risk is in effect transferred to the overseas buyer. 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.

There are certain advantages in invoicing in a foreign currency, which might persuade an exporter to take on the exchange risk:

- (a) There is the possible marketing advantage by proposing to invoice in the buyer's own currency, when there is competition for the sales contract.
- (b) The exporter may also be able to offset payments to his own suppliers in a particular foreign currency against receipts in that currency.

- (c) By arranging to sell goods to customers in a foreign currency, a Hong Kong exporter might be able to obtain a loan in that currency at a lower rate of interest than in Hong Kong and at the same time obtain cover against exchange risks by arranging to repay the loan out of the proceeds from the sales in that currency.

### 8.3.2 Matching receipts and payments

A company can reduce or eliminate its foreign exchange transaction exposures by matching receipts and payments.

Wherever possible, a company that expects to make payments and have receipts in the same foreign currency should plan to offset its payments against its receipts in the currency. Since the company will be setting off foreign currency receipts against foreign currency payments, it does not matter whether the currency strengthens or weakens against the company's "domestic" currency because there will be no purchase or sale of the currency.

The process of matching is made simpler by having foreign currency accounts with a bank. Receipts of foreign currency can be credited to the account pending subsequent payments in the currency. (Alternatively, a company might invest its foreign currency income in the country of the currency – for example, it might have a bank deposit account abroad – and make payments with these overseas assets/deposits.)

### 8.3.3 Matching assets and liabilities

A company that expects to receive a substantial amount of income in a foreign currency will be concerned that this currency may weaken. It can hedge against this possibility by borrowing in the foreign currency and using the foreign receipts to repay the loan.

For example, Australian dollar debtors can be hedged by taking out an Australian dollar liability. In the same way, Australian dollar trade creditors can be matched against an Australian dollar bank account that is used to pay the creditors.

A company that has a long-term foreign investment, for example an overseas subsidiary, will similarly try to match its foreign assets (property, plant etc.) by a long-term loan in the foreign currency.

### 8.3.4 Leading and lagging

Companies might try to use lead payments (payments in advance) or lagged payments (delaying payments beyond their due date) in order to take advantage of foreign exchange rate movements.

Suppose a Hong Kong company has to make a payment of US\$150,000 in two months' time, but US dollars are currently very cheap at the spot date. The company may choose to settle the liability early to take advantage of the current exchange rate and obtain US\$ for a low price, particularly if it were expecting the US\$ to strengthen (HK\$ to depreciate) over the next two months.

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, but early settlement discounts may be available.

### 8.3.5 Netting



#### Key term

**Netting** is a process in which credit balances are netted off against debit balances so that only the reduced net amounts remain due to be paid by actual currency flows.

Unlike matching, netting is not technically a method of managing exchange risk. However, it is conveniently dealt with at this stage. The objective is simply to save transactions costs by netting off inter-company balances before arranging payment. Many multinational groups of companies engage in intra-group trading. Where related companies located in different countries trade with one another, there is likely to be inter-company indebtedness denominated in different currencies.

Netting has the following advantages:

- (a) Foreign exchange purchase costs, including commission and the spread between selling and buying rates, and money transmission costs are reduced.
- (b) There is less loss in interest from having money in transit.

Local laws and regulations need to be considered before netting is used, as some countries restrict netting.



### Illustration: Netting

A and B are respectively Hong Kong and US based subsidiaries of a Swiss holding company. At 31 March, A owed B SFR300,000 and B owed A SFR220,000. Netting can reduce the value of the inter-company debts as the two inter-company balances are set against each other, leaving a net debt owed by A to B of SFR80,000 (i.e. SFR300,000 – SFR220,000).

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## 8.4 Forward exchange contracts



### Topic highlights

A **forward contract** specifies in advance the rate at which a specified quantity of currency will be bought and sold.

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### 8.4.1 Forward exchange rates

A forward exchange rate might be higher or lower than the spot rate. If it is higher, the quoted currency will be cheaper forward than spot. For example, if in the case of Swiss francs/£ sterling (SFR/GBP):

- The spot rate is: 2.1560 – 2.1660
- The three months forward rate is: 2.2070 – 2.2220
- A bank would sell SFR2,000 at the spot rate, now, for  $\text{SFR}2,000/2.1560 = \text{GBP}927.64$  or in three months' time, under a forward contract, for  $\text{SFR}2,000/2.070 = \text{GBP}906.21$
- A bank would buy SFR2,000 at the spot rate, now, for  $\text{SFR}2,000/2.1660 = \text{GBP}923.36$  or in three months' time, under a forward contract, for  $\text{SFR}2,000/2.2220 = \text{GBP}900.09$

In both cases, the quoted currency (Swiss franc) would be worth less against £sterling in a forward contract than at the current spot rate. This is because it is quoted forward “at a discount”, against £sterling. Therefore, if the forward rate is higher than the spot rate, then it is trading “at a discount” to the spot rate.

The forward rate can be calculated today without making any estimates of future exchange rates. Future exchange 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 spot exchange rate, based on the information available today. It is also likely that the spot rate will move in the direction indicated by the forward rate.

## 8.4.2 Forward exchange contracts



### Topic highlights

Forward exchange contracts are used as a hedge against transaction exposures by allowing the importer or exporter to arrange for a bank to sell or buy a quantity of foreign currency at a future date, at a rate of exchange determined when the forward contract is made.

Forward contracts are widely used to fix the exchange rate for a future payment or receipt of foreign currency, for example to fix the rate for a payment to a supplier in foreign currency or to fix the rate of conversion for expected future receipts in a foreign currency from a credit customer.

A forward exchange contract is:

- (a) an immediately firm and binding contract (for example, between a bank and its customer)
- (b) for the purchase or sale of a specified quantity of a stated foreign currency
- (c) at a rate of exchange fixed at the time the contract is made
- (d) for performance (delivery of the currency and payment for it) 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)



### Illustration: Forward exchange contracts

A Hong Kong importer knows on 1 April that he must pay a foreign seller 2.65 million dinars 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 2.65 million dinars to the importer on 1 May, at a fixed rate of (say) dinars2.6400/\$1.

The Hong Kong importer can be certain that whatever the spot rate is between HK\$ and dinars on 1 May, he will have to pay on that date, at this forward rate:

$$\frac{\text{Dinars } 2.65\text{m}}{2.64} = \text{HK\$ } 1,003,788$$

- If the spot rate is lower than dinars2.6400/HK\$1, the importer would have successfully protected himself against a weakening of the dollar, and would have avoided paying more \$ to obtain the dinars.
- If the spot rate is higher than dinars2.6400/HK\$1, the value of the dollar against the dinar 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 dinars at the spot rate on 1 May. He cannot avoid this extra cost, because a forward contract is a binding contract.

## 8.5 Money market hedging



### Topic highlights

**Money market hedging** involves borrowing in one currency, converting the money borrowed into another currency and putting the money on deposit until the time the transaction is completed, hoping to take advantage of favourable exchange rate movements.

Because of the close relationship between forward exchange rates and the interest rates in the two currencies, it is possible to “manufacture” a forward rate by using the spot exchange rate and money market lending or borrowing. This technique is known as a money market hedge or synthetic forward.

### 8.5.1 Setting up a money market hedge for a foreign currency payment

Suppose a Hong Kong company needs to pay a Swiss creditor in Swiss francs in three months' time. It does not have enough cash to pay now, but will have sufficient funds in three months' time. Instead of negotiating a forward contract, the company could:

- borrow the appropriate amount in dollars now
- convert the dollars to Swiss francs immediately
- put the Swiss francs on deposit in a Swiss franc bank account
- when the time comes to pay the company:
  - pay the creditor out of the Swiss franc bank account
  - repay the dollars loan account

The effect is exactly the same as using a forward contract, and will usually cost almost exactly the same amount. If the results from a money market hedge were very different from a forward hedge, speculators could make money without taking a risk. Therefore, market forces ensure that the two hedges produce very similar results.



#### Illustration: Money market hedge (Hong Kong importer)

A Hong Kong company owes a French supplier (i.e. creditor) €1 million in three months' time. Relevant data are:

Spot rate: 11.6000 – 11.8000 \$/€

Interest rates	Deposit %	Borrow %
Hong Kong	2	3
France (euro)	4	5

The process will be:

- Today: borrow \$, exchange into foreign currency and deposit foreign currency
- For period until settlement of transaction: pay interest on \$ borrowing, receive interest on foreign currency deposit
- On settlement date: use deposit of foreign currency to pay supplier
- Effective exchange rate is the dollars borrowing/euros deposit

The interest rates for three months are 0.75% to borrow in dollars (i.e. 3%/4) and 1% to deposit in euros (i.e. 4%/4). The company needs to deposit enough € now so that the total including interest will be €1 million in three months' time. This means depositing  $€1m / (1 + 0.01) = €990,099$ .

These € will cost \$11,683,168 (spot rate 11.8000). The company must borrow this amount and, with three months' interest of 0.75%, will have to repay  $\$11,683,168 \times (1 + 0.0075) = \$11,770,792$ .

Therefore, in three months, the French creditor will be paid out of the French bank account and the company will effectively be paying \$11,770,792 to satisfy this debt. The effective forward rate which the company has “manufactured” is  $\$11,770,792 / €1m = 11.7708$  \$/€. This effective forward rate shows the euros at a discount to the dollar because the euro interest rate is higher than the dollar rate. The foreign currency asset hedges the foreign currency liability.

Diagrammatically this could be shown as:

		Exchanged @ 11.8000	
	\$	France €	
Today	11,683,168	990,099	Today
Borrowed at 3% for 3 months (i.e. $3\% \times \frac{3}{12}$ )	↓ ↓	↓ ↓	Deposited at 4% for 3 months (i.e. $4\% \times \frac{3}{12}$ )
3 months	11,770,792	1,000,000	3 months
		Effective rate = 11.7708	Paid to supplier

### 8.5.2 Setting up a money market hedge for a foreign currency receipt

A similar technique can be used to cover a foreign currency **receipt** from a debtor. To manufacture a forward exchange rate the following steps need to be taken:

- Borrow an appropriate amount in the foreign currency today
- Convert it immediately to home currency
- Place it on deposit in the home currency
- When the debtor's cash is received:
  - repay the foreign currency loan
  - take the cash from the home currency deposit account



#### Illustration: Money market hedge (Hong Kong exporter)

A Hong Kong company is due to receive €1 million from a French customer (i.e. debtor) in three months' time. Relevant data are the same as the previous example:

Spot rate: 11.6000 – 11.8000 \$/€

Interest rates	<i>Deposit</i> %	<i>Borrow</i> %
Hong Kong	2	3
France	4	5

The process will be:

- Today: borrow foreign currency, exchange into \$ and deposit \$
- For period until settlement of transaction: pay interest on foreign currency borrowing, receive interest on \$ deposit
- On settlement date: payment from customer used to pay off foreign currency borrowing
- Effective exchange rate is the \$ deposit/foreign currency borrowing

The interest rates for three months are 0.5% to deposit in \$ (i.e.  $2\%/4$ ) and 1.25% to borrow in € (i.e.  $5\%/4$ ). The company needs to borrow  $\text{€}1\text{m}/1.0125 = \text{€}987,654$  today. These euros will be converted to \$11,456,790 (i.e.  $\text{€}987,654 \times \$11.6000$ ). The company must deposit this amount and, with three months' interest of 2.00%, will have earned  $\$11,456,790 \times (1 + 0.005) = \$11,514,074$ .

Therefore, in three months, the loan will be paid out of the proceeds from the French debtor and the company will receive \$11,514,074. The effective forward rate which the company has "manufactured" is  $\$11,514,074/\text{€}1\text{m} = \$11.5141$ . This effective forward rate shows the euro at a discount to the dollar because the euro interest rate is higher than the dollar rate.

Diagrammatically this could be shown as:

		Exchanged @ 11.6000	
	\$	France €	
Today	11,456,790	987,654	Today
Deposited at 2% for 3 months (i.e. $2\% \times \frac{3}{12}$ )	↓ ↓	↓ ↓	Borrowed at 5% for 3 months (i.e. $5\% \times \frac{3}{12}$ )
3 months	11,514,074	1,000,000	3 months Received from customer
		Effective rate = 11.5141	

### 8.5.3 Forward contract versus a money market hedge



#### Topic highlights

The choice between forward and money markets is generally made on the basis of which method is cheaper, with other factors being of limited significance. However the difference in cost should be very small; otherwise it would be possible to make profits simply by arranging money market hedges and forward exchange contracts at their different market rates.

When a company expects to receive or pay a sum of foreign currency in the next few months, it can choose between using the forward exchange market and the money market to hedge against the foreign exchange risk. Other methods may also be possible, such as making lead payments. The cheapest method available is the one that ought to be chosen.

### 8.6 Foreign currency derivatives: futures contracts



#### Topic highlights

Foreign currency derivatives can be used to hedge foreign currency risk. Futures contracts, options and swaps are types of derivative.

Currency futures are standardised contracts for the sale or purchase at a set future date of a set quantity of currency.

A future represents a commitment to an additional transaction in the future that limits the risk of existing commitments. Currency futures are not nearly as common as forward contracts, and their market is much smaller.



#### Key terms

A **currency future** is a standardised exchange-traded contract to buy or sell a specified quantity of foreign currency, for settlement at a future date. It is essentially a standardised, exchange-traded forward exchange contract. The prices at which futures are bought and sold are determined by the market (supply and demand).

A **futures market** is an exchange for the purchase or sale of futures. Each futures exchange may specialise in trading particular types of futures contracts. In addition to currency futures, there are interest rate futures, bond futures, stock index futures and commodity futures (such as wheat futures, oil futures and so on).

The **contract size** is the fixed minimum quantity of an item or commodity that is bought or sold with one futures contract. Dealing in futures involves buying or selling a quantity of standard-sized futures contracts. A person who has bought futures contracts is said to hold a **long position** in the futures. Someone who has sold futures (for settlement at a future date) holds a **short position** in the futures.

The **contract price** is the price at which a futures contract is bought/sold. The market price is the current price at which futures can be bought/sold, and as the market price changes, holders of long positions and short positions make a gain or loss, depending on which way the market price has moved.

The **settlement date** (or delivery date, or expiry date) is the date when trading on a particular futures contract stops and all futures contracts are settled. On the International Monetary Market (IMM), the settlement dates for all currency futures are at the end of March, June, September and December. However, most holders of futures positions “close” their position before the settlement date. A holder of a long position in 100 Japanese yen futures, for example, can close the position by selling 100 yen futures for the same settlement date, and make a gain or loss on the difference between the original buying price and the eventual selling price to close the position. The holder of a short position in futures can close the position before settlement date by buying an equal number of futures contracts.

A **futures price** may be different from the spot price, and this difference is the basis (basis = spot price – futures price).

**One tick** is the smallest measured movement in the contract price. For currency futures this is a movement in the fourth decimal place. Market traders will compute gains or losses on their futures positions by reference to the number of ticks by which the contract price has moved.



### Example: Currency futures contract

A US company buys goods worth €720,000 from a German company payable in 30 days. The US company wants to hedge against the euro strengthening against the US dollar. Relevant data are:

- The current spot rate is  $\text{US\$}1.3215 - 1.3221 = \text{€}1$ . The € futures price is  $\text{\$}1.3245 = \text{€}1$ .
- The standard size of a 3-month € futures contract is €125,000 (in exchange for US dollars)
- In 30 days' time the spot is  $\text{\$}1.3345 - 1.3351$
- Assume that the futures price after 30 days is  $\text{\$}1.3367$ .

*Required*

Evaluate the hedge.

#### Approach

- (1) Importing or exporting?  
Importing
- (2) What is the exposure to currency risk?  
The US company has an exposure of €0.72 million
- (3) What is the risk?

If the euro appreciates in value (spot rate) against US\$ in the next 30 days, the payment in euros will cost more in US dollars, unless the exposure to currency risk is hedged.



(4) Buy or sell futures?

If the euro appreciates in value against the US dollar, the US company will make a loss on the exchange rate movement. The hedge with futures should therefore ensure that if the euro appreciates in value against the US dollar the company will make a profit on its futures position. The profit made on the futures should offset the loss on the underlying trading position and the risk is hedged. As an importer in this example, the contract currency is euros, so the company will buy euros futures at a price of US\$1.3245/€1

**Note.** Another way of looking at this is that in order to pay for the goods the US company will need to **buy** euros, hence it needs to **buy** euros futures.

(5) Which futures contract?

The company should buy futures with the first settlement date after the settlement date for the payment of the €0.72 million. (This may be March, June, September or December futures.)

(6) How many contracts and tick value?

Divide the foreign currency exposure by the contract size. This gives the number of contracts, but remember futures can only be bought or sold as whole numbers of contracts.

$$\frac{€0.72m}{€125,000} = 5.76, \text{ rounded up to 6 contracts}$$

The value of one tick is the change in the value of a futures contract from a movement in the price by one tick (= US\$0.0001). Price in US\$, tick value = US\$12.50 (= US\$0.0001 × €125,000) per contract.

(7) In 30 days' time when the supplier payment must be made, the company should "close out" its futures position by selling six futures contracts (for the same settlement date as the futures that were originally bought). When a position is closed there is a net gain or loss on the futures transaction.

**Hedge outcome**

Outcome in futures market:

Opening futures price	1.3245	Buy at lower price
Closing futures price	1.3367	Sell at higher price
Movement in ticks	122 ticks	Profit

Futures profit = 122 × \$12.50 × 6 contracts = \$9,150

(8) Calculate the final position.

In 30 days' time, the company buys the required € at the spot rate in order to pay the supplier.

If the euro has appreciated against US dollar, as feared, the euros payment will be more expensive, however this will be offset by any profit on the futures contracts. (Conversely, if the euro has depreciated against the US dollar, the cheaper cost of buying the currency would be offset by a loss on the futures contracts.)

**Net outcome**

	US\$
Spot market payment (€720,000 × US\$1.3351/€)	961,272
Futures market profit	<u>(9,150)</u>
	<u>952,122</u>

This is close to the target exchange rate that was the spot rate on the day the original transaction took place (i.e. US\$1.3221/€1) and which would have cost US\$951,912.

### 8.6.1 Advantages of futures to hedge risks

Transaction costs should be lower than other hedging methods.

Futures are tradable and can be bought and sold on a secondary market so there is pricing transparency, unlike forward contracts where financial institutions set prices.

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.

### 8.6.2 Disadvantages of futures

The contracts cannot be tailored to the user's exact requirements.

Hedge inefficiencies are caused by having to deal in a whole number of contracts and by basis risk (the risk that the futures contract price may move by a different amount from the price of the underlying currency or commodity).

Only a limited number of currencies are the subject of futures contracts (although the number of currencies is growing, especially with the rapid development of Asian economies).

Unlike options, they do not allow a company to take advantage of favourable currency movements.

## 8.7 Currency options

Currency options can be used to protect against adverse exchange rate movements while allowing the investor to take advantage of favourable exchange rate movements. They are particularly useful in situations where the cash flow is not certain to occur (for example, when tendering for overseas contracts).



### Topic highlights

An option is the right, but not the obligation, to buy (call option) or sell (put option) any commodity at any time up to (American style options) or on (European style option) an agreed future date at a specified price, which is called the exercise price or strike price for the option. A currency option is a right of an option holder to buy (call) or sell (put) foreign currency in exchange for another at a specific exchange rate on or before a specified a future expiry date. The purchase price for an option is called the option premium.

The significant feature of an option is that the option holder can choose whether or not to exercise the option. If the option holder does not exercise the option, the option lapses at expiry and the option seller has made a profit equal to the full amount of the option premium. If the option holder exercises the option, the option seller must buy (call option) or sell (put option) the commodity at the agreed exercise price.

Option buyers can choose whether to buy over the counter or exchange traded options:

- (a) **OTC options** are simply a contract between two parties, one of whom is invariably a bank. They may be for any amount, exercise price or expiry date. Both put options and call options are available. They are usually European style options and do not have a secondary market.
- (b) **Traded options** are standardised products, which are traded on a recognised exchange. They are always American style options. Both puts and calls are available. Traded currency options are not available on the Hong Kong exchange.

The exercise price for the option may be the same as the current spot rate, or it may be more favourable or less favourable to the option holder than the current spot rate. Buying a currency option involves paying a premium, which is the most the buyer of the option can lose.

To construct an options hedge it is necessary to understand the trading rules for dealing in options:

- You make a profit when prices rise if you buy a call option before the price rises.
- You also make a profit when prices rise if you sell (or “write”) a put option.
- You make a profit when prices fall if you buy a put option before the price falls.
- You also make a profit when prices fall if you sell (“write”) a call option.

Anyone can buy a traded option and anyone can buy an OTC option. Anyone can write an OTC option but only members of the exchange can write traded options.

The basic procedure for designing an options hedge is similar to futures hedges: ask the question “given my underlying trading position what do I *not* want to occur?” Then, take up a position in the options market such that if the event you do not want to happen does happen you will make a profit on the options deal.

### 8.7.1 The purposes of currency options

The purpose of currency options is to reduce or eliminate exposure to currency risks, and they are particularly useful for companies in the following situations:

- (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
- (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

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.

### 8.7.2 Drawbacks of currency options

- (a) The cost depends on the expected volatility of the exchange rate.
- (b) Options must be paid for as soon as they are bought.
- (c) Tailor-made (over-the-counter) options cannot be sold on to someone else. Unlike exchange-traded options, there is no secondary market for OTC options.
- (d) Traded options are not available in every currency.



#### Illustration: Currency option

Caldwell Ltd is a Hong Kong based company that exports goods to the Middle East. The company is tendering for a contract to supply specialist electronic equipment to the Government of Saudi Arabia. The tender is to be submitted in the near future, with the tender price quoted in Saudi Arabian riyals. The Government's decision will be made after two months and the time period for delivery of the equipment will be a further two months after the contract is signed. The contract price will be paid on delivery.

Caldwell's management would like to put in a competitive tender price, giving the company a 25% mark-up on incremental costs of \$14.75 million. All Caldwell's costs will be incurred in \$. The company wishes to minimise its exposure to short-term exchange rate movements. The order for the Saudi Arabian Government has been priced using a comparatively low profit mark-up because of the extremely competitive nature of the business. As a result the management is particularly concerned that unexpected movements in the exchange rate could eliminate the company's profit on the order.

The current spot exchange rate is 2.1246 \$/riyal, but the company is concerned that the riyal may weaken. The company's bankers are prepared to sell Caldwell an option to sell riyal at 2.0798 \$/riyal to be exercised at any time over a 14-day period starting in four months' time. The cost of this option is 4.92 Hong Kong cents per riyal covered and payable in advance.

How could Caldwell use the currency option to hedge its exposure, and illustrate by considering the financial outcome if the dollar/riyal exchange rate moves in four months' time to 1.9300 or 2.2200. (Consider both that Caldwell is awarded the contract and that Caldwell is not awarded the contract.)

**Note.** Since the Hong Kong dollar is pegged against the US dollar, Caldwell could have hedged its exposure by dealing in US dollar options.

As an exporter due to receive a large sum in a foreign currency in four months' time Caldwell does not want the riyal to weaken (i.e. does not want the dollar to strengthen) so the company can take up a position such that if the dollar does strengthen it will make a profit on the options deal. To do this Caldwell should buy a dollar call option. (An alternative strategy would be to buy a riyal put option. Buying a dollar call and selling a riyal put are effectively the same thing.)

Since an option is the right but not the obligation to buy or sell Caldwell does not have to exercise its option if it is not awarded the contract. Given the company's contingent exposure an option may be the preferred hedging strategy.

### Approach

- (1) Importing or exporting?

Exporting

- (2) What is the value of currency that is exposed?

Riyals 8,865,035 (\*\*)

(\*\*) Caldwell's incremental costs are \$14.75 million. A 25% mark-up gives a target sales price of  $\$14.75\text{m} \times 1.25 = \$18.4375\text{ million}$ . This gives a target profit on the contract of  $\$18.4375\text{m} - \$14.75\text{m} = \$3.6875\text{ million}$ . At the option price offered ( $\$2.0798/\text{riyal}$ ) the tender price should be  $\$18.4375\text{m}/2.0798 = \text{riyals } 8,865,035$

- (3) What is the risk?

Caldwell will receive income from this contract in riyals, but its costs are in \$. If the riyal depreciates against the dollar, the profit margin (which is not very large) could be eroded or lost.

- (4) Buy a call or a put option?

The risk is that the riyal will fall in value against the dollar. The company will be selling its receipts in riyals in exchange for dollars. It should therefore buy a put option on riyals (or buy a call option on dollars) at a price of riyal/\$ 2.0798.

- (5) Expiry date for the option?

The option is an over-the-counter option, so the company should select as the exercise date a date by which time it will know whether or not it has won the contract. This will be in about four months' time.

Caldwell should therefore purchase an option to sell 8,865,035 riyals at \$2.0798/riyal for \$18.4375 million. (If the contract is won, then in four months' time Caldwell will receive 8,865,035 riyals from the customer which it will want to exchange into dollars.)

- (6) What premium is payable?

Premium =  $4.92\text{ cents} \times 8,865,035 = \$436,160$

## Outcome

If the company wins the contract and receives 8,865,035 riyals, it has a choice between:

- letting the option lapse at expiry and selling the riyals at the current spot exchange rate, and
- exercising the option to sell 8,865,035 riyals at the option exercise price of 2.0798.

	<i>Scenario 1</i>	<i>Scenario 2</i>
Exchange rate – date of receipt	1.9300	2.2200
Exercise 2.0798 option?	Yes	No
	\$	\$
Cash receipt (\$ million)	18,437,500	(19,680,378)
Contract costs	(14,750,000)	(14,750,000)
Option premium cost	(436,160)	(436,160)
Profit	<u>3,215,340</u>	<u>4,494,218</u>

If the option is exercised, the contract net profit (after payment of the option premium) is fixed at a minimum of \$3,251,340.

Without the option or any other form of cover if the exchange rate moved to 1.9300, the net contract profit would have been only \$(17.109518m – 14.75m – 0.43616m) = \$1,923,358.

If the contract is not won, it would still be worthwhile exercising the option if the spot rate is \$1.9300. The option would enable the company to make “windfall” exchange gains of \$18.4375m – (8.865.035 × 1.9300) = \$1,327,982. From this the cost of the option, the option premium of \$436,160 must be deducted to give a net exchange gain of \$891,823. However, a loss equal to the premium of \$436,160 is payable if the exchange rate is 2.2200. This would have been avoided if no cover had been taken out.

## 8.8 Currency swaps

Currency swaps effectively involve the exchange of debt from one currency to another. They can provide a hedge against exchange rate movements for longer periods than the forward market, and can be a means of obtaining finance from new countries.



### Key term

A **swap** is a formal agreement whereby two organisations contractually agree to exchange payments on different terms (for example, in different currencies) or one at a fixed rate and the other at a floating rate of interest.

In a currency swap, the parties agree to swap “interest payments” in equivalent amounts of currency for a period of time, usually at predetermined intervals over several years.

This effectively involves the exchange of debt from one currency to another. Liability on the main debt (the principal) is not transferred and the parties are liable to counterparty risk (i.e. if the other party defaults on the agreement to pay interest, the original borrower remains liable to the lender).

Consider a UK company “X” with a subsidiary “Y” in France that owns vineyards. Assume a spot rate of £1 = €1.6. Suppose the parent company “X” wishes to raise a loan of €1.6 million for the purpose of buying another French wine company. At the same time, the French subsidiary “Y” wishes to raise £1 million to pay for new up-to-date capital equipment imported from the UK. The UK parent company “X” could borrow the £1 million and the French subsidiary “Y” could borrow the €1.6 million, each effectively borrowing on the other’s behalf. They would then swap currencies.

### 8.8.1 Benefits of currency swaps

- (a) Swaps are easy to arrange and are flexible since they can be arranged in any size and are reversible.
- (b) Transaction costs are low, only amounting to legal fees, since there is no commission or premium to be paid.
- (c) The parties can obtain the currency they require, when it may not be possible to do so through the forward foreign exchange markets. This is because forward exchange contracts are almost invariably arranged for a settlement date less than 12 months in the future.
- (d) The company can gain access to debt finance in another country and currency where it is little known, and consequently has a poorer credit rating, than in its home country. It can therefore take advantage of lower interest rates than it could obtain if it arranged the currency loan itself.
- (e) Currency swaps may be used to restructure the currency base of the company's liabilities. This may be important where the company is trading overseas and receiving revenues in foreign currencies, but its borrowings are denominated in the currency of its home country. Currency swaps therefore provide a means of reducing exchange rate exposure.
- (f) At the same time as exchanging currency, the company may also be able to convert fixed rate debt to floating rate debt, or *vice versa*. Therefore, it may obtain some of the benefits of an interest rate swap in addition to achieving the other purposes of a currency swap.
- (g) 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.

In practice, most currency swaps are conducted between banks and their customers.



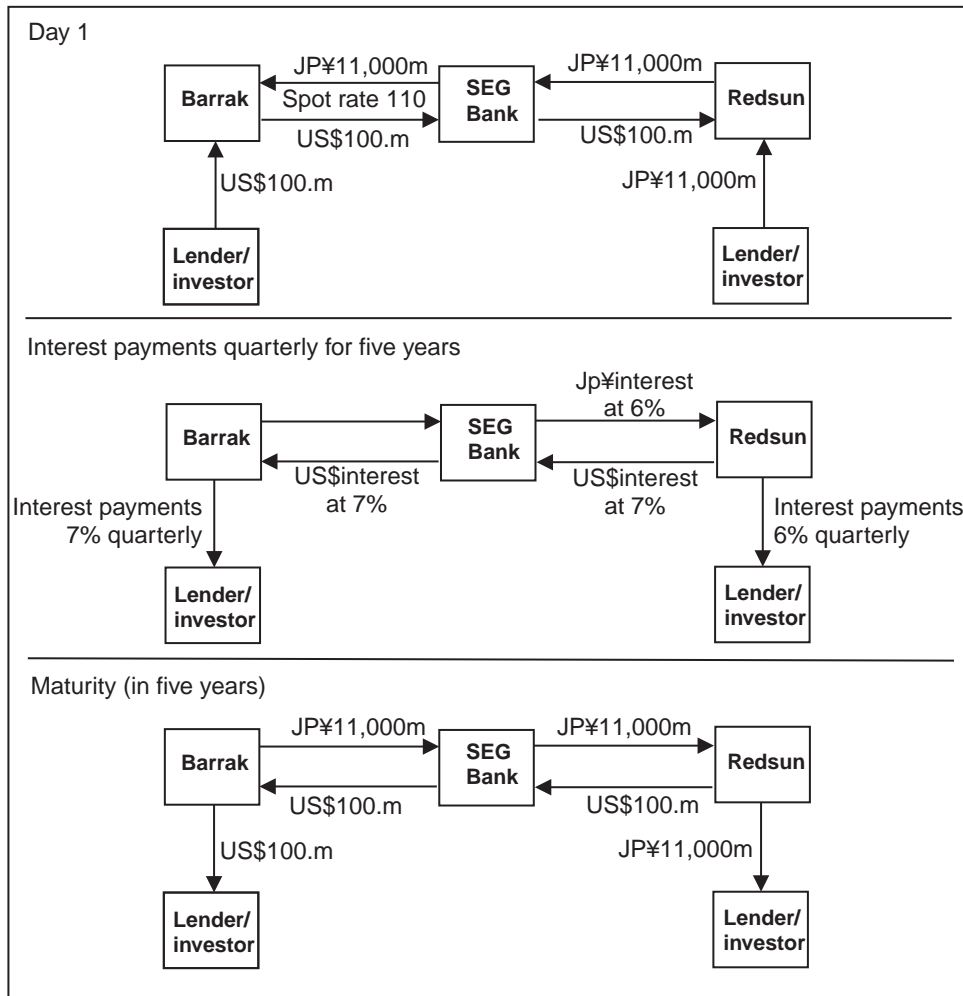
#### Illustration: Currency swap using a bank as counterparty

A Japanese company Redsun Ltd wants to borrow US\$100 million for five years and a US company Barrak Corp. wants to borrow JY¥ 11,000 million, also for five years. SEG Bank is aware of the borrowing requirements of the two companies, and is also aware that Redsun could borrow in yen at a lower interest rate than Barrak, and Barrak could borrow at a lower interest rate than Redsun in US dollars. The current exchange rate is US\$1 = JP¥110.

SEG Bank therefore sees an opportunity for a currency swap. Under the swap agreement, the bank would match the needs of the two companies, acting as an intermediary. There would be an agreement on:

- the amount of the principal to swap and the exchange rate. Barrak Corp. will borrow US\$100 million and Redsun will borrow JY¥ 11,000 million, and they will exchange these amounts on day 1 of the swap. It is assumed that Barrak will pay interest at 7% on the dollar loan and Redsun will pay interest at 6% on the yen loan.
- the period of the agreement. The swap will be for five years.
- the swap interest rates payable. Here it is assumed for simplicity that Barrak will pay 6% on the JY¥ 11,000 million received and Redsun will pay 7% interest on the dollars received in the swap.
- the frequency of the exchange of interest. Here it is assumed that interest payments will be exchanged under the swap agreement every three months.

A swap transaction would be completed as shown in the following diagram (ignoring the profit margin for SEG Bank on the transaction):



Ignore bank's profit

Day 1: Barrak borrows US\$100 million and Redsun borrows JY¥ 11,000 million and they swap these amounts.

Every quarter. Redsun pays interest to Barrak at 7% on US\$100 million, and Barrak uses this payment to make the interest payments on its US dollar loan. Barrak pays Redsun interest at 6% on JY¥ 11,000 million and Redsun uses this income to make the interest payments on its yen loan.

At the end of year 5 (end of the swap): The two companies re-exchange the capital amounts. Barrak pays JY¥ 11,000 million to Redsun and Redsun uses this to pay back the yen loan. Redsun pays US\$100 million to Barrak, and Barrak uses this to pay back its dollar loan.

The effect of the swap has been that in effect, Barrak has borrowed for five years in yen, and Redsun has borrowed for five years in US dollars, although the actual loans were in dollars for Barrak and yen for Redsun.

## 9 Interest rate risk



### Topic highlights

Interest rate risk is faced by companies with floating and fixed rate debt. It can arise from **gap exposure** and **basis risk**.

### 9.1 Introduction

The pattern of interest rates on financial assets is influenced by the risk of the assets, the duration of the lending, and the size of the loan. There is a trade-off between risk and return. Investors in riskier assets expect to be compensated for the risk. Interest rates are effectively the “prices” governing lending and borrowing. The borrower pays interest to the lender at a certain percentage of the capital sum, as the price for the use of the funds borrowed. As with other prices, supply and demand effects apply. For example, the higher the rates of interest that are charged, the lower will be the demand for funds from borrowers.

### 9.2 Interest rate risk

Companies with floating and fixed rate debt face interest rate risk. It can arise from gap exposure and basis risk. Interest rate risk relates to the sensitivity of profit and cash flows to changes in interest rates. A company will need to analyse how profits and cash flows are likely to be affected by forecast changes in interest rates and decide whether to take action.

#### 9.2.1 Floating interest rate debt

The most common form of interest rate risk faced by a company is the volatility of cash flows associated with a high proportion of floating interest rate debt. Floating interest rates, of course, change according to general market conditions.

Some of the interest rate risks to which a firm is exposed may cancel each other out, where there are both assets and liabilities with which there is exposure to interest rate changes. If interest rates rise, more interest will be payable on loans and other liabilities, but this will be compensated for by higher interest received on assets such as money market deposits.

#### 9.2.2 Fixed interest rate debt

A company with a high proportion of fixed interest rate debt has a commitment to fixed interest payments. If interest rates fall sharply, the company will suffer from a loss of competitive advantage compared with companies using floating rate borrowing whose interest costs and cost of capital will fall.

#### 9.2.3 Basis risk

It may appear that a company which has size-matched assets and liabilities, and is both receiving and paying interest, may not have any interest rate exposure. However, the two floating rates may not be determined using the same basis. For example, one may be linked to HIBOR but the other is not.

HIBOR or the Hong Kong Inter-Bank Offered Rate is the rate of interest applying to wholesale money market lending between Hong Kong banks.

This makes it unlikely that the two floating rates will move perfectly in line with each other. As one rate increases, the other rate might change by a different amount or might change later.



## 9.3 Gap exposure

The method of gap analysis can identify the degree to which a firm is exposed to interest rate risk. Gap analysis is based on the principle of grouping together assets and liabilities that are sensitive to interest rate changes according to their maturity dates. Two different types of “gap” may occur:

- (1) A negative gap occurs when a firm has a larger amount of interest-sensitive liabilities maturing at a certain time or in a certain period than it has interest-sensitive assets maturing at the same time. The difference between the two amounts indicates the net exposure.
- (2) There is a positive gap if the amount of interest-sensitive assets maturing in a particular time exceeds the amount of interest-sensitive liabilities maturing at the same time.

With a **negative gap**, the company faces **exposure if interest rates rise** by the time of maturity. With a **positive gap**, the company will **lose out if interest rates fall** by maturity.

“Gapping” looks at the re-pricing differences between assets and liabilities in terms of periods.



### Illustration: Gap exposure

The following table provides an example of the re-pricing characteristics of assets and liabilities:

	0–3 months	4–6 months	7–9 months	10–12 months	> 1 year	Total
<b>Rate sensitive assets (\$m)</b>	10	30	30	20	70	160
<b>Rate sensitive liabilities (\$m)</b>	50	70	30	250	0	400
<b>Gap (\$m)</b>	(40)	(40)	0	(230)	70	(240)

The company in the illustration has \$160 million of rate sensitive assets and \$400 million of rate sensitive liabilities, arranged as to their re-pricing or maturity periods, during which there could be adjustment of their interest rate. For example, in the 0 to 3 months period there are \$10 million of investments that could have their interest rate adjusted in an upward or downward direction and \$50 million of loans that could have their interest rate adjusted in an upward or downward direction. This creates a negative gap for this time period because \$40 million more in loans will have their interest rate renegotiated than investments.

In the time period greater than one year there is a positive gap of \$70 million, because \$70 million in investments will have their interest rate renegotiated whereas no loans in this time period (as at this date) will be renegotiated in terms of their pricing.

A negative gap is not necessarily bad. If interest rates fall the company will benefit from being able to renegotiate lower interest rates on more borrowing than investments. This will have a positive impact on interest cash flows. A positive gap in these circumstances would be a disadvantage, as the company would renegotiate lower interest rates on more investments than loans. This would affect interest cash flows negatively.

## 9.4 Duration



### Key terms

**Gapping** provides a signal about the effect of interest rate movements, but does not take into account the time value of money.

**Duration** calculates the weighted (by time) average of the present value of future cash flows.

Duration is a more useful measure because it can allocate a number to the risk; the only difficulty being that all the cash flows of the borrowing or investment must be known with certainty. For this reason it is used for measuring the risk of fixed income investments and fixed rate loans.



### Illustration: Duration

As an example, the following table is for a security that has a face value of \$10 million, an annual coupon of 15%, two years to maturity, and has a market rate of 14.0%.

Duration can be calculated by the weighted average formula, or by using simple bond valuation:

<i>Period (years)</i>	<i>Cash flow \$m</i>	<i>Present value interest factor @ 14%</i>	<i>Present Value (PV) \$m</i>	<i>Weighting (period PV divided by total PV)</i>	<i>Contribution to duration (period × weighting) years</i>
1	1.5	0.8772	1.31580	0.129444	0.129444
2	11.5	0.7695	8.84925	0.870556	1.741112
Total			<u>10.16505</u>	<u>1.000000</u>	<u>1.870556</u>

This means that, on average, the holder of the security waits 1.870556 years for the total cash flows. This occurs because the interest payment of \$1.5 million is received at the end of the first year. The investor does not wait two years for the total cash flows.

- Higher frequency coupon payments (interest) shorten the duration.
- Lower frequency coupon payments (interest) lengthen the duration.
- Duration always increases as yield falls.

The concept of duration provides a measure of risk. The longer the duration of a security, the greater is its interest rate risk. Duration reduces a security to a zero coupon bond equivalent and can be used for a single security or as a portfolio measure, by calculating the weighted average duration of individual assets using proportions (market values as weights). This can also be applied to liabilities of the company.

For example, if the above security represented an investment of the company and the company purchased another security with a market value of \$10.16505 million and a duration of 1.5 years, the company's investment portfolio would hold two securities, each having a 50% weighting in the portfolio.

The weighted average duration of the portfolio =  $(50\% \times 1.87 \text{ years} + 50\% \times 1.5 \text{ years}) = 1.685$  years.

The company could hedge this portfolio by treating it as a single \$20.3301 million zero coupon bond with 1.685 years to maturity.

## 9.5 The causes of interest rate fluctuations



### Topic highlights

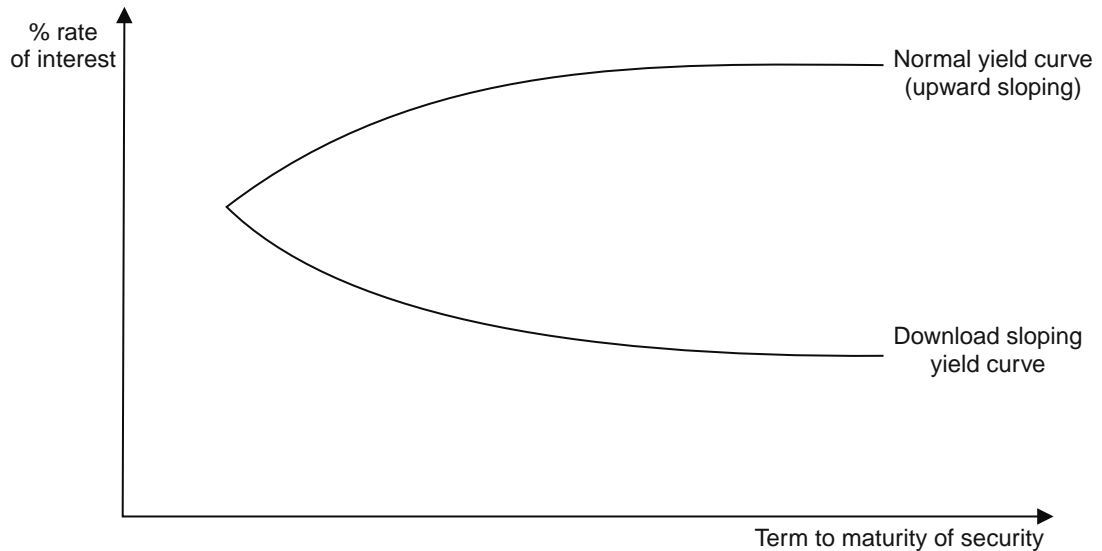
The **causes** of interest rate fluctuations include the **structure of interest rates and yield curves** and **changing economic factors**.

#### 9.5.1 The structure of interest rates

There are several reasons why interest rates differ in different markets and market segments.

- Risk:** Higher risk borrowers must pay higher rates on their borrowing, to compensate lenders for the greater risk involved.
- 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 size of the loan:** Deposits above a certain amount with a bank or building society might attract higher rates of interest than smaller deposits.
- (d) **Different types of financial asset:** Attract different rates of interest. This is largely because of the competition for deposits between different types of financial institution.
- (e) **The duration of the lending:** The term structure of interest rates refers to the way in which the yield on a security varies according to the term of the borrowing, that is the length of time until the debt will be repaid as shown by the yield curve. Normally, the longer the term of an asset to maturity, the higher the rate of interest paid on the asset.



- (f) **Liquidity preference theory:** Shows why, in theory, the yield curve will normally be upward sloping, so that long-term financial assets offer a higher yield than short-term assets. Liquidity preference means investors prefer cash now to later and want compensation in the form of a higher return for being unable to use their cash now. Long-term interest rates therefore not only reflect investors' assumptions about future interest rates but also include a premium for holding long-term bonds. This premium compensates investors for the added risk of having their money tied up for a longer period, including the greater price uncertainty. Because of this premium, long-term bond yields tend to be higher than short-term yields, and the yield curve slopes upward.
- (g) **Expectations theory:** States that the forward interest rate is due only to expectations of interest rate movements. When interest rates are expected to fall, short-term rates might be higher than long-term rates, and the yield curve would be downward sloping. Therefore, the shape of the yield curve gives an indication to the financial manager about how interest rates are expected to move in the future.
- (h) **Market segmentation theory of interest rates:** Suggests that the slope of the yield curve will reflect conditions in different segments of the market. This theory holds that the major investors are confined to a particular segment of the market and will not switch segment even if the forecast of likely future interests rates changes.
- (i) **Government policy on interest rates:** Might be significant too, as a policy of keeping interest rates relatively high might therefore have the effect of forcing short-term interest rates higher than long-term rates.

### 9.5.2 The general level of interest rates

Interest rates on any one type of financial asset will vary over time. In other words, the general level of interest rates might go up or down.

The general level of interest rates is affected by several factors:

- (a) **Need for a real return:** Investors normally want to earn a “real” rate of return on their investment. The appropriate “real” rate of return will depend on factors such as investment risk.
- (b) **Inflation:** Nominal rates of interest should be sufficient to cover expected rates of inflation over the term of the investment and to provide a real return.
- (c) **Uncertainty about future rates of inflation:** When investors are uncertain about inflation and therefore about what future nominal and real interest rates will be, they are likely to require higher interest yields to persuade them to take the risk of investing, especially in the longer term.
- (d) **Liquidity preference of investors and the demand for borrowing:** Higher interest rates have to be offered to persuade savers to invest their surplus money. When the demand to borrow increases, interest rates will rise.
- (e) **Balance of payments:** When a country has a continuing deficit on the current account of its balance of payments, and the authorities are unwilling to allow the exchange rate to depreciate by more than a certain amount, interest rates may have to be raised to attract capital into the country. The country can then finance the deficit by borrowing from abroad.
- (f) **Monetary policy:** If the central bank influences very short-term money market rates by means of open market operations. Usually longer term money market rates, and then banks' base rates, will respond to the authorities' wish for interest rate changes.
- (g) **Interest rates abroad:** The rate of interest in one country will be influenced by external factors, such as interest rates in other countries and expectations about the exchange rate. When interest rates in overseas countries are high, interest rates on domestic currency investments must also be comparably high, to avoid capital transfers abroad and a fall in the exchange rate of the domestic currency.

## 9.6 Interest rate risk management



### Topic highlights

Interest rate risk can be managed using **internal hedging** in the form of asset and liability management, matching and smoothing or using **external hedging** instruments such as forward rate agreements and derivatives.

### 9.6.1 Matching and smoothing

Matching and smoothing are two methods of internal hedging used to manage interest rate risk.



#### Key term

**Matching** is where liabilities and assets with a common interest rate are matched.

For example, subsidiary A of a company might be investing in the money markets at HIBOR and subsidiary B is borrowing through the same market at HIBOR. If HIBOR increases, subsidiary A's borrowing cost increases and subsidiary B's returns increase. The interest rates on the assets and liabilities are therefore matched.

This method is most widely used by financial institutions such as banks, which find it easier to match the magnitudes and characteristics of their assets and liabilities than commercial or industrial companies.



### Key term

**Smoothing** is where a company keeps a balance between its fixed rate and floating rate borrowing. A rise in interest rates will make the floating rate loan more expensive but this will be compensated for by the less expensive fixed rate loan. The company may however incur increased transaction and arrangement costs.

## 9.6.2 Forward rate agreements (FRAs)



### Key term

**Forward rate agreements (FRAs)** may be used by companies to hedge interest rate risk by fixing the interest rate on future short-term borrowing.

A company can enter into an FRA with a bank that fixes the rate of interest for short-term borrowing at a certain time in the future.

If the actual interest rate proves to be higher than the rate agreed, the bank pays the company the difference. If the actual interest rate is lower than the rate agreed, the company pays the bank the difference. The FRA does not need to be with the same bank as the loan, as the FRA is a hedging method independent of any loan agreement.

FRAs are forward rate contracts on future borrowing (or deposits). However, whereas a forward exchange contract is a contract for the actual exchange of currencies, an FRA is a contract relating to a notional future loan (or deposit). The FRA is settled by a payment from one party to the other, depending on interest rates at the settlement date.

One limitation of FRAs is that they are usually only available on notional loans of at least \$5 million. They are also likely to be difficult to obtain for future borrowing periods of over one year and settlement dates more than 12 months in the future.

An advantage of FRAs is that, for the period of the FRA at least, they protect the borrower from adverse market interest rate movements to levels above the rate negotiated for the FRA. With a normal variable rate loan (for example, linked to a bank's base rate or to HIBOR) the borrower is exposed to the risk of such adverse market movements. On the other hand, the borrower will similarly not benefit from the effects of favourable market interest rate movements.

The interest rates which banks will be willing to set for FRAs will reflect their current expectations of interest rate movements. If it is expected that interest rates are going to rise during the term for which the FRA is being negotiated, the bank is likely to seek a higher fixed rate of interest than the variable rate of interest that is current at the time of negotiating the FRA. There are different FRA rates for notional loans and notional deposits.

#### Key FRA terminology:

- 5.70–5.75 means that a company can fix a deposit rate of 5.70% and a borrowing rate at 5.75% by arranging an FRA. The bank makes its profit on its FRA deals from the difference between the notional loan and deposit rates at which it arranges FRAs.
- A “3–9” forward rate agreement is an FRA for a six-month notional period that starts after three months and ends at the end of month nine.
- A basis point is 0.01%.

The gain or loss on an FRA at settlement date is the difference between the fixed rate in the FRA contract and the current market rate of interest for a specified reference rate of interest such as the Hong Kong Inter-Bank Offered Rate (HIBOR). This difference in interest rates is applied to the principal amount of the notional loan or deposit, for the period of the loan or deposit, in order to calculate the amount payable by one party to the other.

**Illustration: Forward rate agreement**

It is the 30 June. Lynn Ltd will need a \$100 million six-month fixed rate loan from 1 October. Lynn wants to hedge using an FRA. The relevant FRA rate is 6% on 30 June.

The FRA required is “3-9”. What is the result of the FRA and the effective loan rate if the six-month FRA benchmark rate has moved to either 5% or 9%?

At 5% because interest rates have fallen, Lynn will make a payment to the bank:

	\$m
FRA payment $\$100m \times (6\% - 5\%) \times \frac{6}{12}$	(0.50)
Payment on underlying loan $5\% \times \$100m \times \frac{6}{12}$	(2.50)
Net payment on loan	<u>(3.00)</u>

Effective interest rate on loan = 6%

At 9% because interest rates have risen, the bank will make a payment to Lynn:

	\$m
FRA receipt $\$100m \times (9\% - 6\%) \times \frac{6}{12}$	1.50
Payment on underlying loan at market rate $9\% \times \$100m \times \frac{6}{12}$	(4.50)
Net payment on loan	<u>(3.00)</u>

Effective interest rate on loan = 6%

Note that the FRA and loan need not be with the same bank.

**9.6.3 Interest rate futures****Topic highlights**

**Interest rate futures** can be used to hedge against interest rate changes between the current date and the date at which the interest rate on the lending or borrowing is set. Borrowers **sell futures** to hedge against **interest rate rises** whereas lenders buy futures to hedge against **interest rate falls**.

Short-term interest rate futures are standardised contracts that are traded on a futures exchange. Each futures contract is for a notional deposit of a standard amount (e.g. US\$1 million) for a fixed period of time (usually a three-month deposit). The interest rate at which the futures are bought and sold is reflected in the price. For example, if the price of a future is 97.50, the interest rate is 2.5% ( $= 100 - 97.50$ ) and if the price is 94.00, the interest rate is 6%.

Interest rate futures contracts offer a means of hedging against the risk of interest rate movements. Like other futures contracts, interest rate futures offer a way in which speculators can “bet” on market movements just as they offer others who are more risk-averse a way of hedging risks.

Short-term interest rate futures are similar in effect to FRAs, except that they are exchange-traded contracts and the terms, amounts and periods are standardised.

If a company expects to have short-term borrowings starting in a few months' time, it can hedge its exposure to interest rate risk (a risk that interest rates will rise before that time) by selling short-term interest rate futures.

- (a) The futures price is likely to vary with changes in interest rates, and this acts as a hedge against adverse interest rate movements. For example, if interest rates go up, a company will have to pay a higher rate of interest on its future borrowing; but if it has sold interest rate futures, the futures price will fall, and it can close its position at a profit. The profit on its futures position will offset the higher cost of the future borrowing.

- (b) The outlay to buy futures is much less than for buying the financial instrument itself, and so a company can hedge large exposures of cash with a relatively small initial employment of cash. For example, it is much easier to sell short-term interest rate futures than to place large short-term cash deposits with a bank.

The standardised nature of interest rate futures is a limitation on their use by the corporate treasurer as a means of hedging, because they cannot always be matched with specific interest rate exposures. However, banks and other financial institutions frequently use futures contracts as a means of hedging their portfolios: such institutions are often not concerned with achieving an exact match with their underlying exposures to interest rate risk.

With interest rate futures what is bought is the entitlement to interest receipts and what is sold is the promise to make interest payments. So when a lender buys one 3-month sterling contract he has the right to receive interest for three months in pounds. When a borrower sells a 3-month sterling contract he incurs an obligation to make interest payments for three months.

- (a) Borrowers will wish to hedge against an interest rate rise by selling futures now and buying futures to close the (short) position on the day that the interest rate is fixed.
- (b) Lenders will wish to hedge against the possibility of falling interest rates by buying futures now and selling futures to close the (long) position on the date that the actual lending starts.

Short-term interest rate futures contracts normally represent interest receivable or payable on notional lending or borrowing for a three-month period beginning on a standard future date. The contract size depends on the currency in which the lending or borrowing takes place. For example, the 3-month sterling interest rate futures March contract represents the interest on notional lending or borrowing of £500,000 for three months, starting at the end of March. The contract size is £500,000. The contract size for a 3-month dollar interest rate futures contract is \$1 million.

As with all futures, a whole number of contracts must be dealt with. Note that the notional period of lending or borrowing starts when the contract expires, at the end of March. Generally, futures contracts are available with maturity dates at the end of March, June, September and December.

All the basic principles relating to currency futures apply equally to interest rate futures.

Some important terminology is shown in the definitions below.



### Key terms

**Basis risk:** This is the difference between the spot interest rate and the futures price. For example, if spot interest is 5% and the futures price (100-i) was not exactly equal to 95.00, then there would be basis. This existence of basis means that it is almost impossible to hedge a transaction 100% as the loss in one market will not always exactly equal their gain in the other.

**Contract size:** Futures can only be purchased in standard quantities. Unless the amount to be hedged is exactly divisible by the standard contract size, there will be some over- or under- hedging.

**Tick size and value:** Usually, the tick size is 0.0001% (i.e. four decimal places) and contracts have a three-month life duration. The value of a movement in the futures price by one tick is the tick size (0.0001%) multiplied by the standard contract size multiplied by 3/12 (life duration three months). For example, if the futures market prices were quoted in dollars, the minimum price movement would be 0.0001%. For a dollar contract with a standard contract size of \$1 million, the tick value is \$25. If the price of a dollar interest rate future falls by 24 ticks, a seller of 30 futures (holder of a short position) would make a gain of US\$18,000 (= 30 contracts × 24 ticks × \$25).

Borrowers can use futures to hedge against the risk of a rise in short-term interest rates. Market interest rates and the futures price will likely move together, in the same way as occurs with currency futures. (For example, if short-term interest rates go up by 0.25%, the futures price is likely to fall by about 25 ticks.)





An interest rate option grants its buyer the right, but not the obligation, to deal at an agreed interest rate (strike rate) at a future maturity date. A call option gives the buyer the right to borrow at the strike rate and a put option gives its holder the right to lend or deposit at the strike rate. A call option is sometimes called a borrower's option and a put option is called a lender's option.

On the date of expiry of the option, the buyer must decide whether or not to exercise the right. Clearly, a buyer of a call option to borrow will not exercise it if the market interest rate at expiry of the option is below the option strike rate. Similarly, a put option will not be exercised if the market interest rate at expiry of the option is higher than the option strike rate.

Tailor-made "over-the-counter" interest rate options can be purchased from major banks, with specific values, periods of maturity, denominated currencies and rates of agreed interest. The cost of the option is the "premium". Interest rate options offer more flexibility and are more expensive than FRAs.

Caps, floors and collars are OTC interest rate options, which are used to protect their holder against adverse movements in interest rate movements over a longer term, on a variable rate deposit or loan.



### Topic highlights

**Caps** set a ceiling to the interest rate; a **floor** sets a lower limit. A **collar** is the simultaneous purchase of a cap and sale of a floor.



### Key terms

**Caps:** An interest rate cap is a series of borrower's options setting a maximum interest rate on medium-term variable rate borrowing. Each borrower's option in the series can be timed to expire on a date that coincides with a rollover/interest rate reset date for the loan. For example, a company that borrows at a floating rate of interest for three years with interest payable every six months, may decide to purchase a cap which is a series of five borrowers' options, each with an expiry date six months after the previous one. Caps are cash settled. When the strike price is below the market rate of interest, the cap writer must pay a compensating amount to the holder.

**Floors:** An interest rate floor is a series of lender's options setting a minimum interest rate on a medium-term variable rate investment. Each option in the series can be timed to expire on a date coinciding with the interest rate reset date for the investment. Compensating cash settlements become payable if the market rate of interest on an interest reset date is lower than the strike price for the floor.

**Collars:** The cost of the premiums for caps and floors can be very high. Interest rate collars were devised to offer a lower premium than for caps or floors on their own. The collar holder either buys a cap and writes a floor, or writes a cap and buys a floor. Collars provide for the structuring of a maximum and minimum interest rate. It can provide the same upper rate protection as a cap but limits the benefits from a fall in rates to a predetermined level.

The cost of a collar is lower than for buying a cap or a floor. However, the borrowing company forgoes the benefit of movements in interest rates below the floor limit in exchange for this cost reduction and an investing company forgoes the benefit of movements in interest rates above the cap level. (A zero cost collar can even be negotiated sometimes, when the premium paid for buying the cap equals the premium received for selling the floor.)



### Illustration: An interest rate option

Zuma has US\$20 million of borrowings at a floating rate, US\$ base rate + 0.75%, with a three-month rollover. The treasurer is considering hedging the interest rate for the period starting on the next rollover date and has been offered a cap at 10% interest for a premium cost of 1% per annum payable quarterly in arrears.

The effective interest rate paid for the quarter if Zuma buys the cap under each of the following scenarios is:

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	%	%	%	%
US \$ base rate	6.50	8.25	10.00	12.00
Bank margin	0.75	0.75	0.75	0.75
Zuma's rate paid if no hedge	<u>7.25</u>	<u>9.00</u>	<u>10.75</u>	<u>12.75</u>
Use of 10% option (cap):				
Exercise option? (Yes if rate > 10%)	No	No	Yes	Yes
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	%	%	%	%
Interest rate paid (pa)	7.25	9.00	10.75	10.75
Option cost (pa)	1.00	1.00	1.00	1.00
Total effective rate	<u>8.25</u>	<u>10.00</u>	<u>11.75</u>	<u>11.75</u>

The option effectively caps Zuma's borrowing cost at a maximum of 11.75%, but allows the company to take advantage of any fall in interest rates.



### Illustration: An interest collar

Suppose in the previous example Zuma is offered the cap at 10% interest, but the treasurer regards the cost of 1% per annum (pa) as too expensive. Upon negotiation, he discovers that bank is prepared to buy an 8% floor from Zuma for a premium cost of 0.75% per annum payable quarterly in arrears. Zuma purchases the 10% cap for 1% pa and sells the 8% floor for 0.75% pa giving a net cost of the collar of 0.25% pa.

The effective interest rate paid for the quarter (under the same four scenarios) if Zuma buys the cap and sells the floor (i.e. buys the collar) is:

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	%	%	%	%
Zuma's rate with no hedge	<u>7.25</u>	<u>9.00</u>	<u>10.75</u>	<u>12.75</u>
Exercise 10% cap? (Yes if rate > 10%)	No	No	Yes	Yes
Floor exercised by bank? (Yes if rate < 8%)	Yes	No	No	No
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	%	%	%	%
Interest paid pa	8.75	9.00	10.75	10.75
Net collar cost paid pa	0.25	0.25	0.25	0.25
Total effective rate	<u>9.00</u>	<u>9.25</u>	<u>11.00</u>	<u>11.00</u>

The collar between 9% and 11% effectively fixes Zuma's borrowing cost.

## 9.6.5 Interest rate swaps



### Topic highlights

An **interest rate swap** is an agreement whereby the parties to the agreement exchange interest rate commitments. Interest rate swaps can act as a means of switching from paying one type of interest to another, raising less expensive loans and securing better deposit rates. A fixed to floating rate currency swap is a combination of a currency and interest rate swap.

Interest rate swaps involve two parties agreeing to exchange interest payments with each other over an agreed period. In practice, however, the major players in the swaps market are banks and many other types of institution can become involved, for example national and local governments and international institutions.

In the simplest form of interest rate swap, party A agrees to pay the interest on party B's loan, while party B reciprocates by paying the interest on A's loan. If the swap is to make sense, the two parties must swap interest that has different characteristics. Assuming that the interest swapped is in the same currency, the most common motivation for the swap is to switch from paying floating rate interest to fixed interest or *vice versa*. This type of swap is known as a "plain vanilla" or generic swap.

Why do the companies bother swapping interest payments with each other? 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.



### Illustration: An interest rate swap

Green Ltd has a \$15 million loan with five years to run to maturity at a fixed interest rate of 8% per annum, payable semi-annually. White Ltd has floating rate borrowings totalling \$15 million costing the HIBOR + 1.20% per annum. HIBOR is currently 8%.

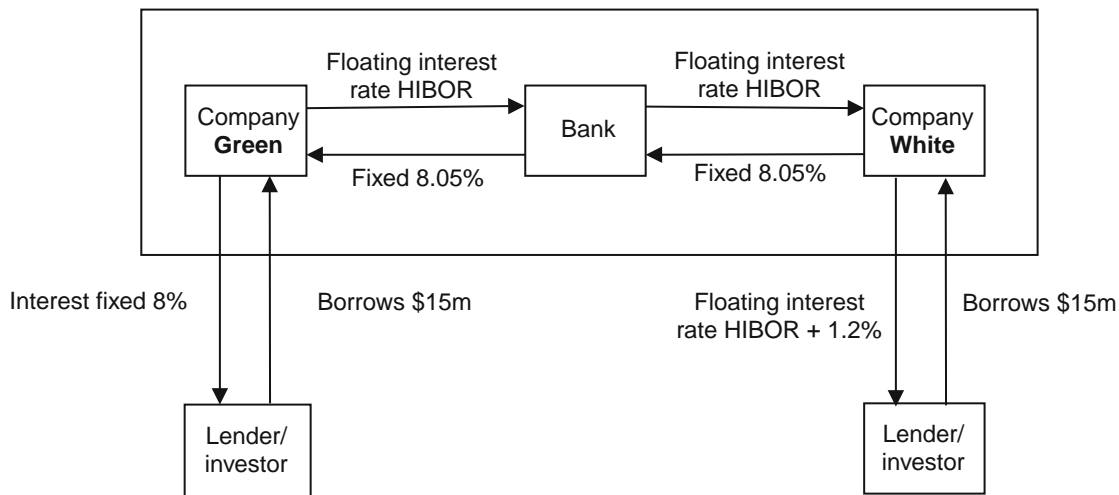
Green decides that it would prefer floating rate borrowings because its earnings fluctuate somewhat in line with HIBOR. White decides that it would prefer fixed rate borrowings because it is seeking a known cost of funds for a particular investment project, or is simply taking the view that prevailing fixed rates are at attractive levels.

These desired positions would be achieved by Green agreeing to pay floating rate swap payments to White at HIBOR, and White paying fixed rate swap payments to Green at 8.05% (the agreed interest premium negotiated between the parties).

The effect is that Green borrows at a floating rate of HIBOR less 0.05%, and White borrows at a fixed rate of 9.25% (8.05% plus the 1.20% premium over HIBOR).

	<i>Green</i> %	<i>White</i> %
Borrowing costs before swap	8.00	HIBOR + 1.2
Swap receipts	8.05	HIBOR
Net borrowing costs	<u>(0.05)</u>	<u>1.20</u>
Swap payments	<u>- IBOR</u>	<u>8.05</u>
Final borrowing costs	<u>HIBOR - 0.05</u>	<u>9.25</u>

Assuming that the bank imposes no charges (unlikely in reality) this transaction is shown in the following diagram:



# Topic recap

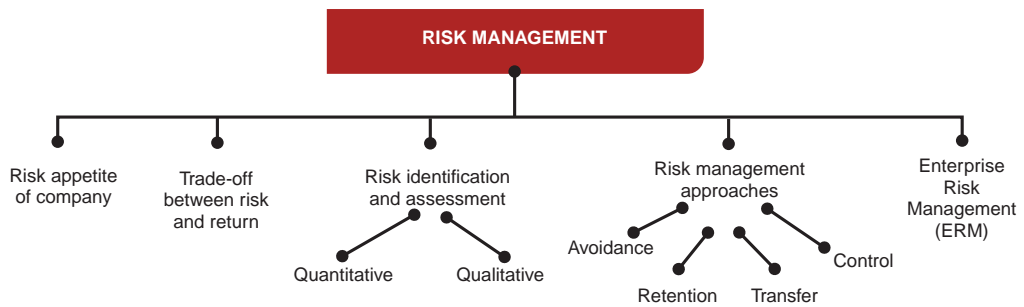
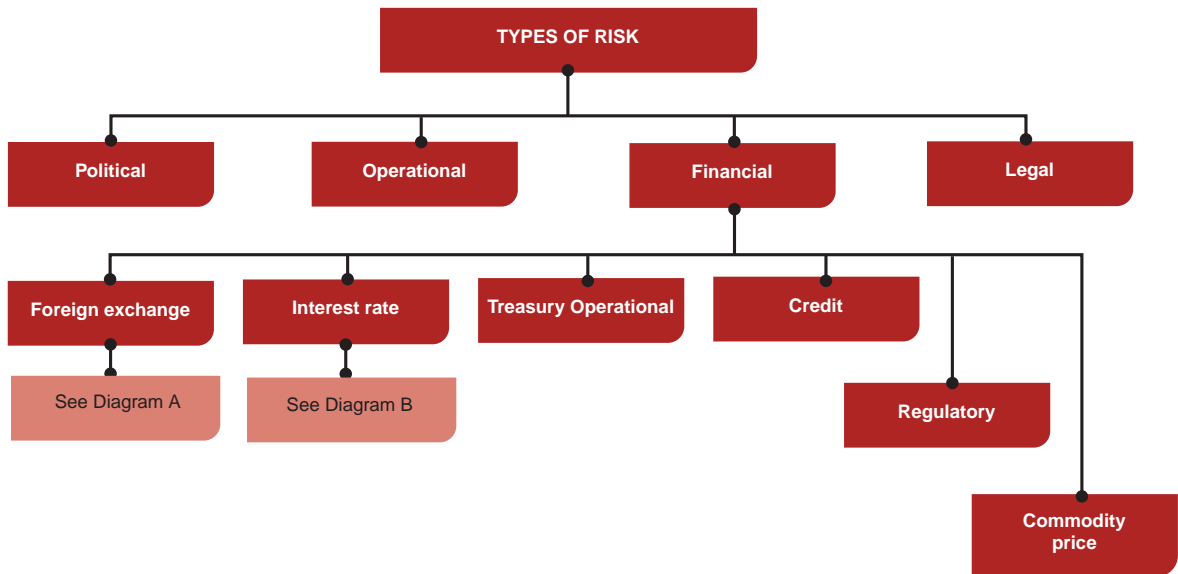


Diagram A

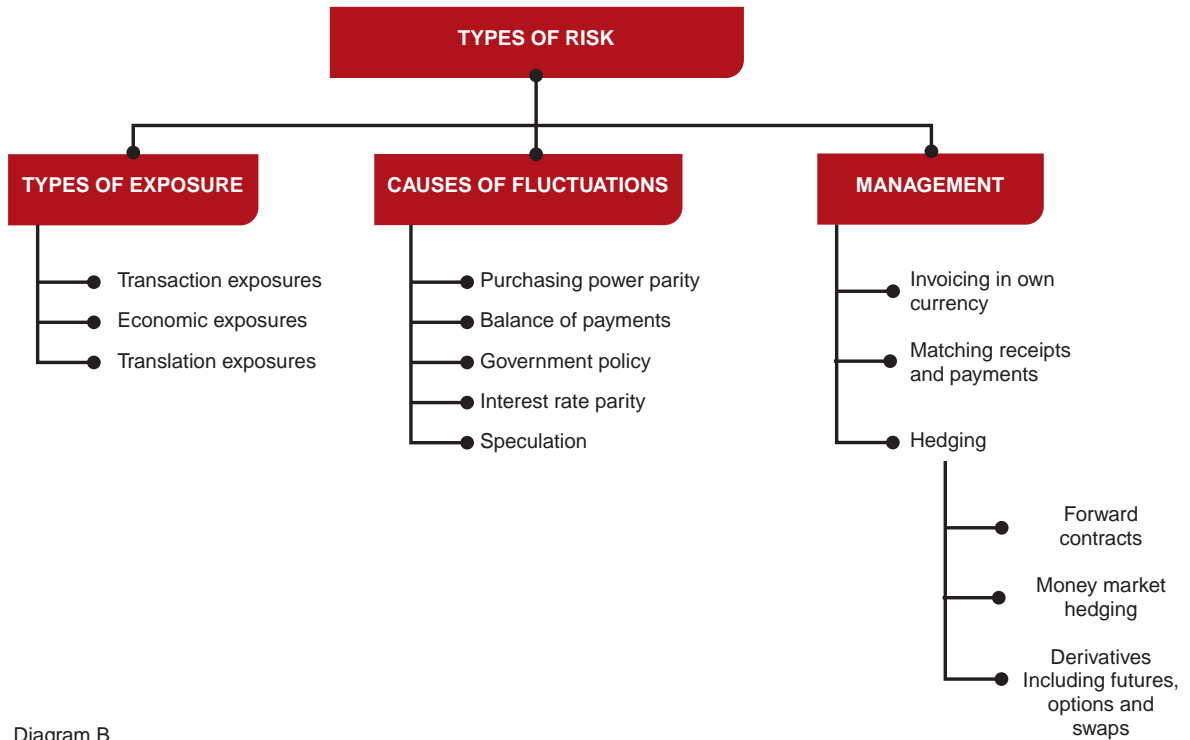
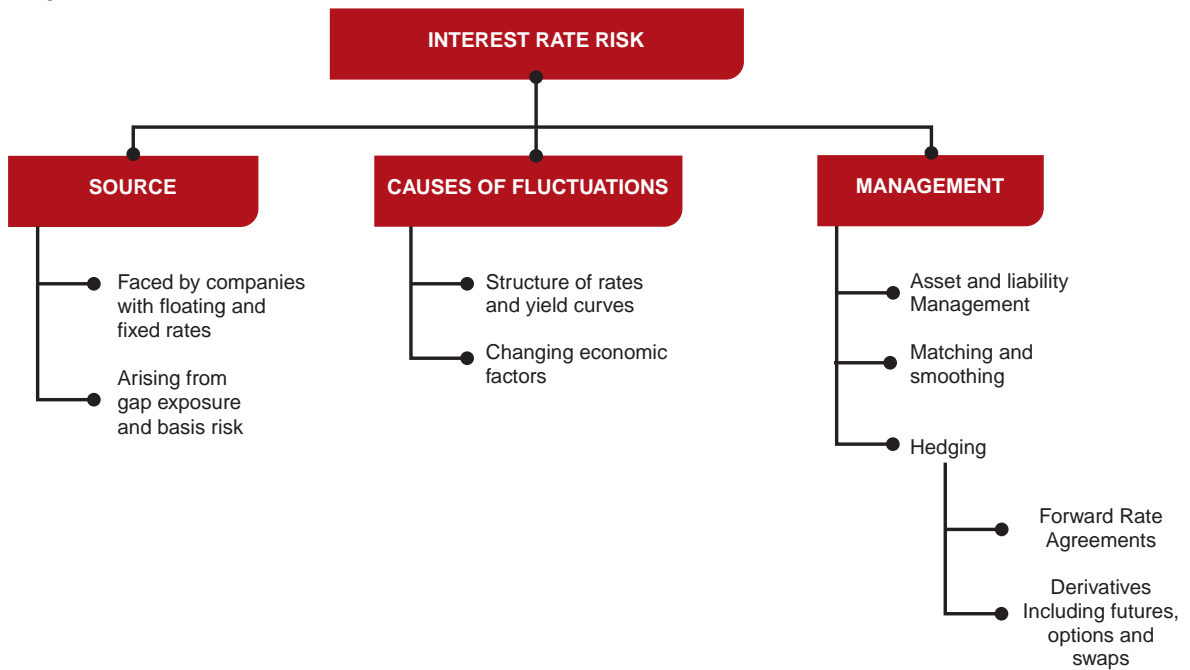


Diagram B



## Exam practice

**DEF****27 minutes**

DEF is a UK company that regularly trades with companies in the United States. It has a number of transactions listed below the cash settlement of which will be due in six months:

Receipts from US	US\$6 million
Payment to US	US\$10 million

The CEO of the company would like to hedge its US\$ exposure by either a forward contract or money market hedge. Relevant information is provided below:

- (i) US\$/£ rate:  
Spot: 1.5580
- (ii) 6 month forward rate: 1.5000
- (iii) 6 month interest rates to DEF:

	<i>Borrow (%)</i>	<i>Investing (%)</i>
£	6.5	5
US\$	6.0	4

*Required*

Assume you are the CFO of DEF:

- (a) Advise the CEO which alternative should be used. Show all relevant calculations. **(10 marks)**
- (b) The company is also considering using options to hedge its exposure going forward. Discuss the advantages and disadvantages of currency options as a hedging tool compared with forward contracts. **(5 marks)**

**(Total = 15 marks)****HKICPA June 2012****Tin Tin Trading****29 minutes**

Tin Tin Trading (TTT) Limited is expecting to receive 20 million Foreign Currency (FC\$) in three months' time. The current spot rate is FC\$/HK\$ 23.2060 – 23.2298 (bank sell / bank buy).

*Required*

Estimate the net benefit / costs if the receipts are hedged by using an over-the-counter option from the bank, exercise price FC\$/HK\$ 23.16, premium cost 14.4 HK cents per 100 FC\$ and the spot rate in the three months moves to:

- (a) FC\$/HK\$: 25.2000 **(5 marks)**
- (b) FC\$/HK\$: 21.1200 **(5 marks)**
- (c) In addition to over-the-counter options, certain currency options are traded in the market. What are the advantages and disadvantages of hedging using a "traded" currency option over a forward contract? **(8 marks)**

**(Total = 18 marks)****HKICPA December 2012**

## Lipport

44 minutes

Max is the newly hired treasurer of Lipport Company Ltd. (Lipport). Lipport relies heavily on external borrowing to fund its operations and several acquisitions made in the last five years. As at the end of last month, the total borrowing of Lipport amounted to HK\$5.3 billion. However, thanks to the quantitative easing policy in all major countries after the global financial crisis, the borrowing costs of Lipport have declined significantly. While the views on when this monetary policy will end are still very diverse, Max believes that inflation is taking root in many countries and that once the monetary stimuli are withdrawn, market interest rates would spike up shortly. Therefore, he does not feel comfortable having this borrowing based on floating rates.

### Required

- (a) After meeting a few banks, he has received proposals on making use of the following instruments to hedge the interest rate exposures:
- interest rate caps
  - interest rate swaps
  - forward rate agreements
- (i) Briefly explain the key features of these three instruments. **(6 marks)**
- (ii) Given Max's view on the interest rates, recommend **one** instrument and explain the advantages and disadvantages of using the instrument in hedging interest rate risk. **(6 marks)**
- (b) When projecting the future interest rate trend, Max has consulted a leading economic analyst who has come up with the following projection:

	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3-month HIBOR	0.15%	0.50%	1.05%	1.50%	2.00%	2.45%	3.00%	3.65%

Max has decided to cover the interest-rate exposure for the next two years with an interest-rate cap set at HIBOR of 1%. The most competitive market quote for the cap premium is 1.05% on the notional amount of the intended transaction. The premium is to be paid upfront. According to the latest forecast, Lipport's debt level will remain at HK\$5.3 billion throughout the next two years and all of the loans are based on floating-rates refixing every quarter.

Assume that the actual market interest rates will be the same as the projection and that the borrowing margin is 1.1% on top of the HIBOR:

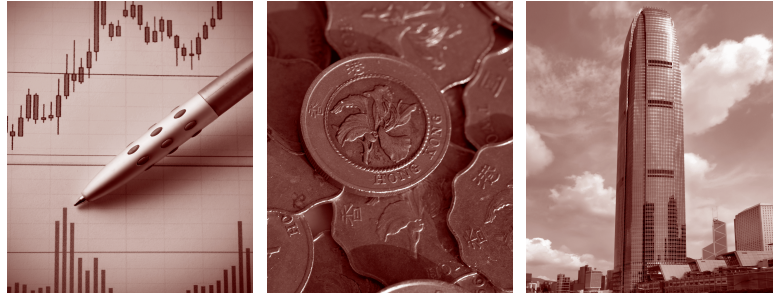
- (i) What will be the total interest cost to Lipport for the next two-years if all the borrowing is based on floating-rates? **(5 marks)**
- (ii) What will be the total borrowing cost (interest cost plus hedging cost) for the next two years if the borrowing is covered by the interest rate cap? **(5 marks)**
- (iii) Will the use of a cap bring any cost savings to Lipport? If so, how much will it be? **(2 marks)**

**(Total = 24 marks)**

**HKICPA December 2010**





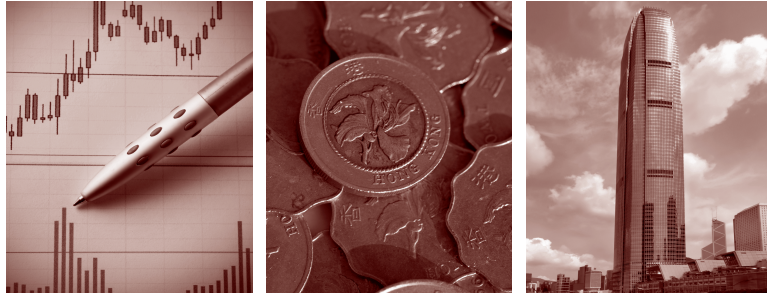


## Part E

# Corporate finance

The emphasis in this section is on an in-depth understanding of the capital structure and long-term financing needs of an organisation. The purpose of this section is to develop candidates' appreciation of financial markets and their regulation. After studying this section candidates should be able to apply various models in evaluating the value of a business, to assess and make appropriate recommendations on an offer or reorganisation, and to decide the best option in raising finance.





## chapter 12

# Investment appraisal

### Topic list

- 1 Investment**
  - 1.1 Non-current asset investment and working capital investment
- 2 The capital budgeting process**
  - 2.1 Creation of capital budgets
  - 2.2 The investment decision-making process
  - 2.3 Origination of proposals
  - 2.4 Project screening
  - 2.5 Analysis and acceptance
  - 2.6 Monitoring the progress of the project
- 3 Relevant cash flows**
  - 3.1 Relevant cash flows in investment appraisal
  - 3.2 Relevant benefits of investments
- 4 The payback period**
  - 4.1 Why is payback alone an inadequate investment appraisal technique?
  - 4.2 Disadvantages of the payback method
  - 4.3 Advantages of the payback method
- 5 The return on capital employed**
  - 5.1 ROCE and the comparison of mutually exclusive projects
  - 5.2 The drawbacks to the ROCE method of capital investment appraisal
- 6 Discounted cash flow (DCF)**
- 7 NPV and IRR compared**
  - 7.1 Advantages and disadvantages of IRR method
  - 7.2 Non-conventional cash flows
  - 7.3 Mutually exclusive projects
  - 7.4 Reinvestment assumptions
  - 7.5 Summary of NPV and IRR comparison
- 8 Assessment of DCF methods of project appraisal**
  - 8.1 Advantages of DCF methods
  - 8.2 Problems with DCF methods
  - 8.3 The use of appraisal methods in practice
- 9 Allowing for inflation**
  - 9.1 Real rate or the nominal rate?
  - 9.2 The advantages and misuses of real values and a real rate of return
  - 9.3 Costs and benefits which inflate at different rates
  - 9.4 Variations in the expected rate of inflation
  - 9.5 Expectations of inflation and the effects of inflation
  - 9.6 Mid-year and end-of year-money values
- 10 Allowing for taxation**
  - 10.1 General points
  - 10.2 Tax-allowable depreciation
  - 10.3 Taxation and DCF
  - 10.4 NPV layout
- 11 Working capital**
- 12 Impact of cost of capital on investments**
  - 12.1 The relationship between company value and cost of capital
  - 12.2 Using the WACC in investment appraisal
  - 12.3 The arguments against using the WACC
- 13 Risk and uncertainty**
  - 13.1 Distinction between the terms risk and uncertainty
  - 13.2 Sensitivity analysis
  - 13.3 Probability analysis
  - 13.4 Other risk adjustment techniques
- 14 Capital rationing**
  - 14.1 Soft and hard capital rationing
  - 14.2 Relaxation of capital constraints
  - 14.3 Single period capital rationing
  - 14.4 Problems with the profitability index method
  - 14.5 Postponing projects
  - 14.6 Single period rationing with non-divisible projects
- 15 Qualitative factors**
- 16 Behavioural implications of capital budgeting**
  - 16.1 Eight behavioural factors
- 17 Post-completion audit**
  - 17.1 Example of post-completion audit

### Learning focus

This chapter introduces **investment appraisal** and covers the manner in which investment opportunities are identified. It also introduces two relatively straightforward, but widely used, investment appraisal methods: **payback period** and **return on capital employed**. The chapter then goes on to look at investment appraisal using the more sophisticated **Discounted Cash Flow (DCF)** methods, which address some of the weaknesses of the traditional approaches covered in this chapter (make sure you know what these are!).

You must be able to discuss the relative merits of the various investment appraisal techniques as well as apply the techniques themselves.

These **Discounted Cash Flow (DCF) methods** of investment appraisal take into account changes in the value of money over time. These two methods, **Net Present Value (NPV)** and **Internal Rate of Return (IRR)**, use the technique of **discounting** to bring all cash flows resulting from the investment to a present day value by eliminating the **interest** that would have been earned on that cash flow had it happened now rather than later.

The interest rate (referred to as **discount rate** in this context) used in this calculation is specific to each organisation, and depends on the relative levels of debt and equity funding of the organisation. This links to later studies in this Learning Pack concerning cost of capital and capital structure.

The chapter will demonstrate how to incorporate **inflation** and **taxation** into investment decisions. A key concept in this chapter that you must grasp is the difference between **nominal rates of return** and **real rates of return**, and when each is to be used as the discount rate.

We consider various ways of incorporating the effects of changing capital structure into cost of capital and net present value calculations.

Also covered briefly will be some of the different methods of assessing and taking account of the **risk** and **uncertainty** associated with a project and how to assess projects when capital is a scarce resource.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Strategic management</b>		
Analyse and advise upon an organisation's strategy		
<b>1.02</b>	<b>Project appraisal techniques and process</b>	3
1.02.01	Apply various models in evaluating the value of a business	
1.02.02	Select appropriate investment appraisal techniques given the objectives and circumstances of an organisation and apply them in order to evaluate a proposed investment project	
1.02.03	Identify and calculate relevant cash flows and discount rates for investment appraisal purposes, taking into account inflation and tax	
1.02.04	Justify the selection of an appropriate discount rate in discounted cash flow analysis for investment appraisal purposes	
1.02.05	Advise on an appropriate investment strategy when capital is rationed	
1.02.06	Advise on other non-financial considerations in project appraisal	
<b>1.03</b>	<b>Post-appraisal audit of projects</b>	3
1.03.01	Explain the role of a post-appraisal (or post-completion) audit in assessing the success of a project	
1.03.02	Explain the steps in carrying out a post-appraisal audit	
1.03.03	Evaluate an organisation's system for the post-appraisal audit of projects	
1.03.04	Understand management behaviour in a post-appraisal audit	

		Competency level
<b>Performance control</b> Design, implement and review performance measurement and control systems in organisations		
<b>2.05</b>	<b>Behavioural and ethical aspects of control systems</b>	3
2.05.01	Explain the behavioural issues associated with capital budgeting and performance management and control systems	
<b>Financial analysis</b> Analyse and advise upon an organisation's financial strategy		
<b>3.05</b>	<b>Sensitivity analysis</b>	3
3.05.01	Describe and discuss the difference between risk and uncertainty	
3.05.02	Recognise how the outcome of an organisation's decisions is affected by the accuracy of the data on which projections are based and factors which could not be included in any computational analysis	
3.05.03	Explain the role of sensitivity analysis as a method of dealing with uncertainty in forecasting and be able to apply appropriate techniques	
3.05.04	Apply sensitivity analysis and probability analysis to investment projects and discuss the usefulness of these techniques in assisting investment decisions	
3.05.05	Consider ethical issues in sensitivity analysis	

## 1 Investment



### Topic highlights

Investment can be divided into capital expenditure and revenue expenditure and can be made in non-current assets or working capital.

Investment is any expenditure in the expectation of future benefits. We can divide such expenditure into two categories: capital expenditure, and revenue expenditure.

Suppose that a business purchases a building for \$30 million. It then adds an extension to the building at a cost of \$10 million. The building needs to have a few broken windows mended, its floors polished and some missing roof tiles replaced. These cleaning and maintenance jobs cost \$0.9 million.

The original purchase (\$30 million) and the cost of the extension (\$10 million) are capital expenditure because they are incurred to acquire and then improve a non-current asset. The other costs of \$0.9 million are revenue expenditure because they merely maintain the building and thus the earning capacity of the building.



### Key terms

**Capital expenditure** is expenditure which results in the acquisition of non-current assets or an improvement in their earning capacity. It is not charged as an expense in the income statement; the expenditure appears as a non-current asset in the statement of financial position.

**Revenue expenditure** is charged to the income statement and is expenditure which is incurred:

- for the purpose of the trade of the business – this includes expenditure classified as selling, and distribution expenses, administration expenses and finance charges.
- to maintain the existing earning capacity of non-current assets.

## 1.1 Non-current asset investment and working capital investment

Investment can be made in non-current assets or working capital.

- (a) Investment in non-current assets involves a significant elapse of time between commitment of funds and recoupment of the investment. Money is paid out to acquire resources which are going to be used on a continuing basis within the organisation.
- (b) Investment in working capital arises from the need to pay out money for resources (such as raw materials) before it can be recovered from sales of the finished product or service. The funds are therefore only committed for a short period of time.

### 1.1.1 Investment by the commercial sector

Investment by commercial organisations might include investment in:

- plant and machinery
- research and development
- advertising
- warehouse facilities

The overriding feature of a commercial sector investment is that it is generally based on financial considerations alone. The various capital expenditure appraisal techniques that we will be looking at assess the financial aspects of capital investment.

### 1.1.2 Investment by not-for-profit organisations

Investment by not-for-profit organisations differs from investment by commercial organisations for several reasons:

- (a) Relatively few not-for-profit organisations' capital investments are made with the intention of earning a financial return.
- (b) When there are two or more ways of achieving the same objective (mutually exclusive investment opportunities), a commercial organisation might prefer the option with the lowest present value of cost. Not-for-profit organisations, however, rather than just considering financial cost and financial benefits, will often have regard to the social costs and social benefits of investments.
- (c) The cost of capital that is applied to project cash flows by the public sector will not be a "commercial" rate of return, but one that is determined by the government. Any targets that a public sector investment has to meet before being accepted will therefore not be based on the same criteria as those in the commercial sector.

## 2 The capital budgeting process



### Topic highlights

Capital budgeting is the process of identifying, analysing and selecting investment projects whose returns are expected to extend beyond one year.

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### 2.1 Creation of capital budgets

The capital budget will normally be prepared to cover a longer period than sales, production and resource budgets, say from three to five years, although it should be broken down into periods matching those of other budgets. It should indicate the expenditure required to cover capital

projects already underway and those it is anticipated will start in the three- to five-year period (say) of the capital budget.

The budget should therefore be based on the current production budget, future expected levels of production and the long-term development of the organisation, and industry, as a whole.

Organisations may have defined time periods during which proposals are considered so as to allow for an indication of expected capital expenditure in the forthcoming budget period. Alternatively, proposals may be accepted on a regular basis, allowing greater scope for investment in unanticipated opportunities. Projects which emerge during a budget period may be disadvantaged compared with those anticipated when the budget was set, however, as specific funds will not be set aside for them in the budget. If funds are limited, such projects may undergo more rigorous analysis than an anticipated project to justify the allocation of funds.



### Key terms

**Capital rationing** is where budget limits or constraints are imposed on the availability of finance.

Budget limits or constraints might be imposed internally or externally.

- (1) The imposition of internal constraints, which are often imposed when managerial resources are limited, is known as **soft capital rationing**.
- (2) **Hard capital rationing** occurs when external limits are set, perhaps because of scarcity of financing, high financing costs or restrictions on the amount of external financing an organisation can seek.

Projects can be classified in the budget into those that generally arise from top management policy decisions or from sources such as mandatory government regulations (health, safety and welfare capital expenditure) and those that tend to be appraised using investment appraisal techniques.

- Cost reduction and replacement expenditure
- Expenditure on the expansion of existing product lines
- New product expenditure

The administration of the capital budget is usually separate from that of the other budgets. Overall responsibility for authorisation and monitoring of capital expenditure is, in most large organisations, the responsibility of a committee. For example:

- (a) Expenditure up to \$750,000 may be approved by individual divisional managers.
- (b) Expenditure between \$750,000 and \$1,500,000 may be approved by divisional management.
- (c) Expenditure over \$1,500,000 may be approved by the board of directors.

## 2.2 The investment decision-making process

Capital expenditure often involves the outlay of large sums of money, and that any expected benefits may take a number of years to accrue. For these reasons it is vital that capital expenditure is subject to a rigorous process of appraisal and control.



### Topic highlights

A typical model for investment decision making has a number of distinct stages:

- Origination of proposals
- Project screening
- Analysis and acceptance
- Monitoring and review



We will look at these stages in more detail below.

## 2.3 Origination of proposals

Investment opportunities do not just appear out of thin air. They must be created.

An organisation must therefore set up a mechanism that scans the environment for potential opportunities and gives an early warning of future problems. A technological change that might result in a drop in sales might be picked up by this scanning process, and steps should be taken immediately to respond to such a threat.

Ideas for investment might come from those working in technical positions. A factory manager, for example, could be well placed to identify ways in which expanded capacity or new machinery could increase output or the efficiency of the manufacturing process. Innovative ideas, such as new product lines, are more likely to come from those in higher levels of management, given their strategic view of the organisation's direction and their knowledge of the competitive environment.

The overriding feature of any proposal is that it should be consistent with the organisation's overall strategy to achieve its objectives. For example, an organisation's strategy could be to increase revenue by introducing new products, or targeting new customers or markets. Employees from across the organisation can be involved in the evaluation of alternative technologies, machines and project specifications. Some alternatives will be rejected early on. Others will be more thoroughly evaluated.

## 2.4 Project screening

Each proposal must be subject to detailed screening. So that a qualitative evaluation of a proposal can be made, a number of key questions such as those below might be asked before any financial analysis is undertaken. Only if the project passes this initial screening will more detailed financial analysis begin.

- (a) What is the purpose of the project?
- (b) Does it "fit" with the organisation's long-term objectives?
- (c) Is it a mandatory investment, for example to conform with safety legislation?
- (d) What resources are required and are they available, e.g. money, capacity, labour?
- (e) Do we have the necessary management expertise to guide the project to completion?
- (f) Does the project expose the organisation to unnecessary risk?
- (g) How long will the project last and what factors are key to its success?
- (h) Have all possible alternatives been considered?

## 2.5 Analysis and acceptance

The analysis stage can be broken down into a number of steps.

### Step 1

Complete and submit standard format financial information as a formal investment proposal.

### Step 2

Classify the project by type (to separate projects into those that require more or less rigorous financial appraisal, and those that must achieve a greater or lesser rate of return in order to be deemed acceptable).

### Step 3

Carry out financial analysis of the project.

### Step 4

Compare the outcome of the financial analysis to predetermined acceptance criteria periods.

### Step 5

Consider the project in the light of the capital budget for current and future operating costs.

**Step 6**

Make the decision (go/no go).

**Step 7**

Monitor the progress of the project.

**2.5.1 Financial analysis**

The financial analysis will involve the application of the organisation's preferred investment appraisal techniques. In many projects some of the financial implications will be extremely difficult to quantify, but every effort must be made to do so, in order to have a formal basis for planning and controlling the project.

Here are examples of the type of question that will be addressed at this stage.

- (1) What cash flows/profits will arise from the project and when?
- (2) Has inflation been considered in the determination of the cash flows?
- (3) What are the results of the financial appraisal?
- (4) Has any allowance been made for risk, and if so, what was the outcome?

Some types of project, for example a marketing investment decision, may give rise to cash inflows and returns which are so intangible and difficult to quantify that a full financial appraisal may not be possible. In this case more weight may be given to a consideration of the qualitative issues.

**2.5.2 Qualitative issues**

Financial analysis of capital projects is obviously vital because of the amount of money involved and the length of time for which it is tied up. A consideration of qualitative issues is also relevant to the decision, however (i.e. factors which are difficult or impossible to quantify). We have already seen that qualitative issues would be considered in the initial screening stage, for example in reviewing the project's "fit" with the organisation's overall objectives and whether it is a mandatory investment. There is a very wide range of other qualitative issues that may be relevant to a particular project.

- (1) What are the implications of not undertaking the investment, e.g. adverse effect on staff morale, loss of market share?
- (2) Will acceptance of this project lead to the need for further investment activity in future?
- (3) What will be the effect on the company's image?
- (4) Will the organisation be more flexible as a result of the investment, and better able to respond to market and technology changes?

**2.5.3 Go/no go decision**

Go/no go decisions on projects may be made at different levels within the organisational hierarchy, depending on three factors:

- The type of investment
- Its perceived riskiness
- The amount of expenditure required

For example, a divisional manager may be authorised to make decisions up to \$250,000, an area manager up to \$1,500,000 and a group manager up to \$3,000,000, with board approval for greater amounts.

Once the go/no go (or accept/reject) decision has been made, the organisation is committed to the project, and the decision maker must accept that the project's success or failure reflects on his or her ability to make sound decisions.

## 2.6 Monitoring the progress of the project



### Topic highlights

During the project's progress, **project controls** should be applied to ensure the following:

- Capital spending does not exceed the amount authorised.
  - The implementation of the project is not delayed.
  - The anticipated benefits are eventually obtained.
- 

The first two items are probably easier to control than the third, because the controls can normally be applied soon after the capital expenditure has been authorised, whereas monitoring the benefits will span a longer period of time.

## 3 Relevant cash flows



### Topic highlights

**Relevant costs** of investment appraisal include opportunity costs, working capital costs and wider costs such as infrastructure and human development costs. **Non-relevant costs** include past costs and committed costs.

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### 3.1 Relevant cash flows in investment appraisal

The cash flows that should be considered in investment appraisals are those which arise as a consequence of the investment decision under evaluation. Any costs incurred in the past, or any committed costs which will be incurred regardless of whether or not an investment is undertaken, are not relevant cash flows. They have occurred, or will occur, whatever investment decision is taken. This includes centrally-allocated overheads that are not a consequence of undertaking the project.

The annual profits from a project can be calculated as the incremental contribution earned minus any incremental fixed costs which are additional cash items of expenditure (that is, ignoring depreciation and so on).

There are, however, other cash flows to consider. These might include the following.

#### 3.1.1 Opportunity costs

These are the costs incurred or revenues lost from diverting existing resources from their best use.



#### Illustration: Opportunity costs

If a salesman, who is paid a fixed annual salary of \$300,000, is diverted to work on a new project and as a result existing sales of \$500,000 are lost, the opportunity cost to the new project will be the loss of contribution on the \$500,000 of lost sales. The salesman's salary of \$300,000 is not an opportunity cost since it will be incurred however the salesman's time is spent.

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### 3.1.2 Tax

The extra taxation that will be payable on extra profits, or the reductions in tax arising from capital allowances or operating losses in any year.

### 3.1.3 Residual value

The residual value or disposal value of equipment at the end of its life, or its disposal cost.

### 3.1.4 Working capital

Changes in working capital create a difference between “cash profit” and actual cash flows in a period. For example, if a company invests \$2 million in working capital and earns cash profits of \$5 million, the net cash receipts in the period will be \$3 million. Working capital will be released again at the end of a project's life, and so there will be a cash inflow arising out of the eventual realisation into cash of the project's inventory and receivables in the final year of the project.

### 3.1.5 Other relevant costs

Costs that will often need to be considered include:

- (a) incremental infrastructure costs, such as additional information technology or communication systems
- (b) marketing costs, which may be substantial, particularly if the investment is in a new product or service. They will include the costs of market research, promotion and branding and the organisation of new distribution channels
- (c) human resource costs, including training costs and the costs of reorganisation arising from investments.

## 3.2 Relevant benefits of investments



### Topic highlights

**Relevant benefits** from investments include not only **increased cash flows**, but also **savings** and **better relationships** with **customers and employees**.

### 3.2.1 Types of benefit

The benefits from a proposed investment must also be evaluated. These might consist of benefits of several types:

- (a) Savings because assets used currently will no longer be used. The savings should include:
  - (i) Savings in staff costs
  - (ii) Savings in other operating costs, such as consumable materials
- (b) Extra savings or revenue benefits because of the improvements or enhancements that the investment might bring:
  - (i) More sales revenue and so additional contribution
  - (ii) More efficient system operation
  - (iii) Further savings in staff time, resulting perhaps in reduced future staff growth
- (c) Possibly, some one-off revenue benefits from the sale of assets that are currently in use, but which will no longer be required.

Some benefits might be intangible, or impossible to give a money value to:

- (a) Greater customer satisfaction, arising from a more prompt service (e.g. because of a computerised sales and delivery service)
- (b) Improved staff morale from working with higher-quality assets
- (c) Better decision making may result from better information systems



### Example: Relevant cash flows

Elsie Ltd is considering the manufacture of a new product which would involve the use of both a new machine (costing \$1.5 million) and an existing machine, which cost \$0.8 million two years ago and has a current carrying amount of \$0.6 million. There is sufficient capacity on this machine, which has so far been under-utilised. Annual sales of the product would be 5,000 units, selling at \$320 per unit.

Unit costs would be as follows:

	\$
Direct labour (4 hours at \$20 per hour)	80
Direct materials	70
Fixed costs including depreciation	<u>90</u>
	<u>240</u>

The project would have a five-year life, after which the new machine would have a net residual value of \$0.1m. Because direct labour is continually in short supply, labour resources would have to be diverted from other work which currently earns a contribution of \$15 per direct labour hour. The fixed overhead absorption rate would be \$22.50 per hour (\$90 per unit) but actual expenditure on fixed overhead would not alter.

Working capital requirements would be \$0.1 million in the first year, rising to \$0.15 million in the second year and remaining at this level until the end of the project, when it will all be recovered. The company's cost of capital is 20%. Ignore taxation.

Identify the relevant cash flows for the decision as to whether or not the project is worthwhile.

### Solution

The relevant cash flows are as follows:

	\$m
<i>Year 0</i>	
Purchase of new machine	<u>1.50</u>
<i>Years 1–5</i>	
Contribution from new product (5,000 units × \$(320 – 150))	0.85
Less: contribution foregone: (5,000 × (4 × \$15))	<u>0.30</u>
	<u>0.55</u>

The project requires \$0.10 million of working capital at the end of year 1 and a further \$0.05 million at the start of year 2. Increases in working capital reduce the net cash flow for the period to which they relate. When the working capital tied up in the project is “recovered” at the end of the project, it will provide an extra cash inflow (for example, debtors will eventually pay up).

All other costs, which are past costs, notional accounting costs or costs which would be incurred anyway without the project, are not relevant to the investment decision.

## 4 The payback period



### Topic highlights

The **payback method** of investment appraisal and the **ROCE/ARR/ROI** methods of investment appraisal are popular appraisal techniques despite their limitations (of which you should be aware).



### Key term

**Payback** is the amount of time it takes for cash inflows = cash outflows.

In other words, payback is the time it takes the cash inflows from a capital investment project to equal the cash outflows, usually expressed in years.

Payback is often used as a “first screening method”. By this, we mean that when a capital investment project is being considered, the first question to ask is: “How long will it take to pay back its cost?” The organisation might have a target payback, and so it would reject a capital project unless its payback period was less than a certain number of years.

However, a project should not be evaluated on the basis of payback alone. If a project gets through the payback test, it ought then to be evaluated with a more sophisticated investment appraisal technique.

### 4.1 Why is payback alone an inadequate investment appraisal technique?

The reason why payback should not be used on its own to evaluate capital investments should seem fairly obvious if you look at the figures below for two mutually exclusive projects (this means that only one of them can be undertaken).

	<i>Project P</i>	<i>Project Q</i>
	\$'000	\$'000
Capital investment	60,000	60,000
Profits before depreciation (an approximation of cash flows)		
Year 1	20,000	50,000
Year 2	30,000	20,000
Year 3	40,000	5,000
Year 4	50,000	5,000
Year 5	60,000	5,000

Project P pays back in year 3 (about one quarter of the way through year 3). Project Q pays back half way through year 2. Using payback alone to judge capital investments, project Q would be preferred.

However the returns from project P over its life are much higher than the returns from project Q.

- Project P will earn total profits before depreciation of \$140 million on an investment of \$60 million.
- Project Q will earn total profits before depreciation of only \$25 million on an investment of \$60 million.

## 4.2 Disadvantages of the payback method

There are a number of serious drawbacks to the payback method.

- (a) It ignores the timing of cash flows within the payback period.
- (b) It ignores the cash flows after the end of payback period and therefore the total project return.
- (c) It ignores the time value of money (a concept incorporated into more sophisticated appraisal methods). This means that it does not take account of the fact that \$1 today is worth more than \$1 in one year's time. An investor who has \$1 today can either consume it immediately or alternatively can invest it at the prevailing interest rate, say 10%, to get a return of \$1.10 in a year's time.
- (d) Payback is unable to distinguish between projects with the same payback period.
- (e) The choice of any cut-off payback period by an organisation is arbitrary.
- (f) It may lead to excessive investment in short-term projects.
- (g) It takes account of the risk of the timing of cash flows but not the variability of those cash flows.

## 4.3 Advantages of the payback method

In spite of its limitations, the payback method continues to be popular, and the following points can be made in its favour:

- (a) It is simple to calculate and simple to understand. This may be important when management resources are limited. It is similarly helpful in communicating information about minimum requirements to managers responsible for submitting projects.
- (b) It uses cash flows rather than accounting profits.
- (c) It can be used as a screening device as a first stage in eliminating obviously inappropriate projects prior to more detailed evaluation.
- (d) The fact that it tends to bias in favour of short-term projects means that it tends to minimise both financial and business risk.
- (e) It can be used when there is a capital rationing situation to identify those projects which generate additional cash for investment quickly.

# 5 The return on capital employed



### Key term

$$\text{ROCE} = \frac{\text{Estimated average/total profits}}{\text{Estimated average/initial investment}} \times 100\%$$

The return on capital employed (ROCE) method is also called the Accounting Rate of Return (ARR) method or the Return on Investment (ROI) method.

The ROCE method of appraising a capital project is to estimate the accounting rate of return that the project should yield. If it exceeds a target rate of return, the project will be undertaken.

This ROCE is different from how return on capital employed is measured for financial accounting purposes. Here the measure is calculated in relation to investments.

Unfortunately, there are several different definitions of “return on capital employed”. Read the exam question carefully. One of the most popular is as follows:

$$\text{ROCE} = \frac{\text{Estimated average annual accounting profits}}{\text{Estimated average investment}} \times 100\%$$

$$\text{Where average investment} = \frac{\text{Capital cost} + \text{disposal value}}{2}$$

Other definitions include:

$$\text{ROCE} = \frac{\text{Estimated total accounting profits}}{\text{Estimated initial investment}} \times 100\%$$

$$\text{ROCE} = \frac{\text{Estimated average accounting profits}}{\text{Estimated initial investment}} \times 100\%$$

There are arguments in favour of each of these definitions. The most important point is, however, that the method selected should be used consistently. For examination purposes we recommend the first definition unless the question clearly indicates that some other one is to be used.



### Example: The return on capital employed

A company has a target return on capital employed of 20% (using the first definition from above), and is now considering the following project:

	\$'000
Capital cost of asset	800
Estimated life: 4 years	
Estimated profits before depreciation:	
Year 1	200
Year 2	250
Year 3	350
Year 4	250

The capital asset would be depreciated by 25% of its cost each year, and will have no residual value. Assess whether the project should be undertaken.

### Solution

The annual profits after depreciation, and the mid-year carrying amount of the asset, would be as follows:

Year	<i>Profit after depreciation</i>	<i>Mid-year carrying amount</i>	<i>ROCE in the year</i>
	\$	\$	%
1	0	700,000	0
2	50,000	500,000	10
3	150,000	300,000	50
4	50,000	100,000	50

As the table shows, the ROCE is low in the early stages of the project, partly because of low profits in year 1, but mainly because the carrying amount of the asset is much higher early on in its life.

The project does not achieve the target ROCE of 20% in its first two years, but exceeds it in years 3 and 4. So should it be undertaken?

When the ROCE from a project varies from year to year, it makes sense to take an overall or “average” view of the project's return. In this case, we should look at the return as a whole over the four-year period.



	\$
Total profit before depreciation over four years	1,050,000
Total profit after depreciation over four years	250,000
Average annual profit after depreciation	62,500
Original cost of investment	800,000
Average carrying amount over the four year period	$\frac{(800,000 + 0)}{2} = \$400,000$

$$\text{ROCE} = \frac{\text{Estimated average annual accounting profits}}{\text{Estimated average investment}} \times 100\%$$

$$\text{ROCE} = \frac{\$62,500}{\$400,000} \times 100\% = 15.6\%$$

The project would not be undertaken because it would fail to yield the target return of 20%.

## 5.1 ROCE and the comparison of mutually exclusive projects

The ROCE method of capital investment appraisal can also be used to compare two or more projects which are mutually exclusive. The project with the highest ROCE would be selected (provided that the expected ROCE is higher than the company's target ROCE).



### Example: ROCE and mutually exclusive projects

Arrow Ltd wants to buy a new item of equipment which will be used to provide a service to customers of the company. Two models of equipment are available, one with a slightly higher capacity and greater reliability than the other. The expected costs and profits of each item are as follows:

	<i>Equipment</i>	
	<i>Item X</i>	<i>Item Y</i>
Capital cost	\$800,000	\$1,500,000
Life	<i>5 years</i>	<i>5 years</i>
Profits before depreciation	\$'000	\$'000
Year 1	500,000	500
Year 2	500,000	500
Year 3	300,000	600
Year 4	200,000	600
Year 5	100,000	600
Disposal value	–	–

ROCE is measured as the average annual profit after depreciation, divided by the average carrying amount of the asset. Decide which item of equipment should be selected, if any, if the company's target ROCE is 30%.

### Solution

	<i>Equipment</i>	
	<i>Item X</i>	<i>Item Y</i>
	\$'000	\$'000
Total profit over life of equipment:		
Before depreciation	1,600	2,800
After depreciation	800	1,300
Average annual profit after depreciation	160	260
Average investment = (Capital cost + disposal value)/2	400	750
ROCE	40%	34.7%

Both projects would earn a return in excess of 30%, but since item X would earn a bigger ROCE, it would be preferred to item Y, even though the profits from Y would be higher by an average of \$100,000 a year.

## 5.2 The drawbacks to the ROCE method of capital investment appraisal

The ROCE method of capital investment appraisal has the serious drawback that it does not take account of the timing of the profits from an investment. Whenever capital is invested in a project, money is tied up until the project begins to earn profits which pay back the investment. Money tied up in one project cannot be invested anywhere else until the profits come in. Management should be aware of the benefits of early repayments from an investment, which will provide the money for other investments.

There are a number of other disadvantages:

- (a) It is based on accounting profits and not cash flows. Accounting profits are subject to a number of different accounting treatments.
- (b) It is a relative measure rather than an absolute measure and hence takes no account of the size of the investment.
- (c) It takes no account of the length of the project.
- (d) Like the payback method, it ignores the time value of money.

There are, however, advantages to the ROCE method.

- (a) It is a quick and simple calculation.
- (b) It involves the familiar concept of a percentage return.
- (c) It looks at the entire project life.

## 6 Discounted cash flow (DCF)



### Topic highlights

There are two methods of using DCF to evaluate capital investments, the **NPV method** and the **IRR method**.

It is assumed that candidates will have a good knowledge of these methods from their previous studies. Those wishing to review the topics should refer to a basic finance textbook.

## 7 NPV and IRR compared



### Topic highlights

If the aim is to maximise shareholders' wealth then NPV should be used as a decision-making technique, since the project NPV represents the gain to the shareholders based on the actual cost of capital. The IRR is useful in assessing the sensitivity of a project since it gives the cost of capital at which the project will break even in NPV terms.

Given that there are two methods of using DCF, the NPV method and the IRR method, the relative merits of each method have to be considered.

**Reminder: calculating an IRR**

The internal rate of return (IRR) for an investment is the cost of capital where the NPV = 0. It is therefore the average annual discounted rate of return on the investment.

A manual technique for estimating the IRR of an investment is known as the interpolation method. This involves calculating two NPVs for the investment at two different costs of capital:

- a lower cost of capital where the NPV is positive
- a higher cost of capital where the NPV is negative.

The IRR must lie between these two costs of capital. It can be estimated as:

$$IRR = L + \left[ \frac{NPV_L}{(NPV_L + NPV_H)} \times (H - L) \right]$$

Where:

NPV<sub>L</sub> = the positive NPV at the lower discount rate

NPV<sub>H</sub> = the negative NPV at the higher discount rate

H = the higher discount rate, where the NP is negative

L = the lower discount rate, where the NP is positive

**7.1 Advantages and disadvantages of IRR method**

The main advantage of the IRR method is that the information it provides is more easily understood by managers, especially non-financial managers. For example, it is fairly easy to understand the meaning of the following statement.

“The project will be expected to have an initial capital outlay of \$100,000, and to earn a yield of 25%. This is in excess of the target yield of 15% for investments.”

It is not so easy to understand the meaning of this statement.

“The project will cost \$100,000 and have an NPV of \$30,000 when discounted at the minimum required rate of 15%.”

However, managers may confuse IRR and accounting return on capital employed, ROCE.

The IRR method ignores the relative size of investments. Both the following projects have an IRR of 18%.

	<i>Project A</i>	<i>Project B</i>
	\$	\$
Cost, year 0	350,000	35,000
Annual savings, years 1-6	100,000	10,000

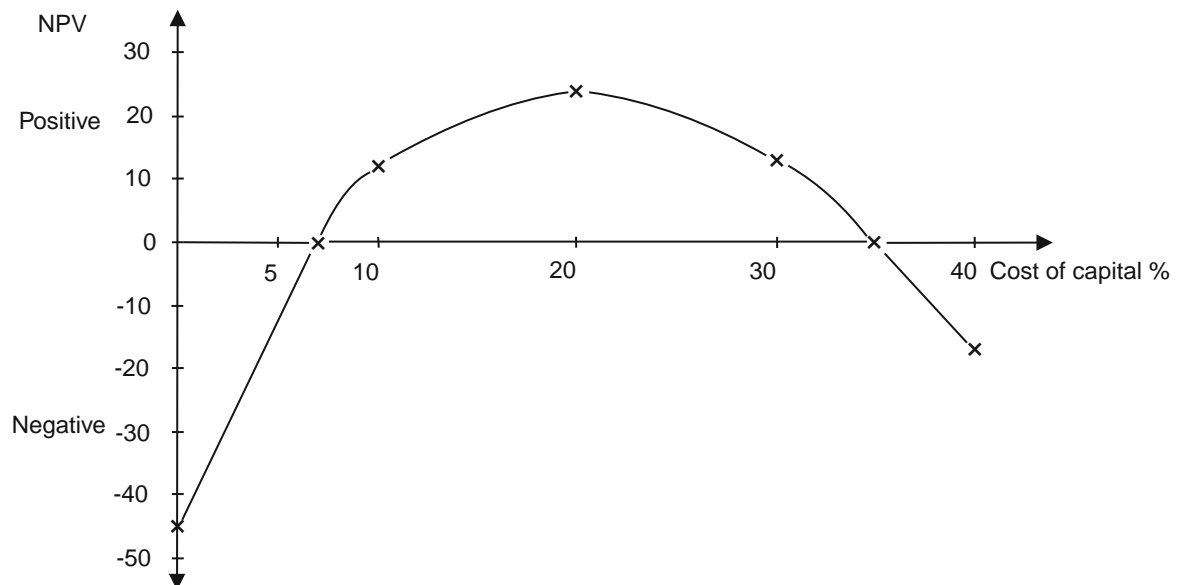
Clearly, project A is bigger (ten times as big) and so more “profitable” but if the only information on which the projects were judged were to be their IRR of 18%, project B would be made to seem just as beneficial as project A, which is not the case.

## 7.2 Non-conventional cash flows

The projects we have considered so far have had conventional cash flows (an initial cash outflow followed by a series of inflows). When flows vary from this they are termed non-conventional. The following project has non-conventional cash flows:

Year	Project X \$'000
0	(1,900)
1	4,590
2	(2,735)

Project X would have two IRRs as shown by this diagram:



The NPV rule suggests that the project is acceptable between costs of capital of 7% and 35%.

Suppose that the required rate on project X is 10% and that the IRR of 7% is used in deciding whether to accept or reject the project. The project would be rejected since it appears that it can only yield 7%.

The diagram shows, however, that between rates of 7% and 35% the project should be accepted. Using the IRR of 35% would produce the correct decision to accept the project. Lack of knowledge of multiple IRRs could therefore lead to serious errors in the decision of whether to accept or reject a project.

In general, if the sign of the net cash flow changes in successive periods, the calculations may produce as many IRRs as there are sign changes. IRR should not normally be used when there are non-conventional cash flows.

## 7.3 Mutually exclusive projects



### Key term

**Mutually exclusive projects** are two or more projects from which only one can be chosen.

Examples include the choice of a factory location or the choice of just one of a number of machines. The IRR and NPV methods can, however, give conflicting rankings as to which project should be given priority.



### Example: Mutually exclusive projects

Let us suppose that a company is considering two mutually exclusive options, option A and option B. The cash flows for each would be as follows:

Year		Option A	Option B
		\$'000	\$'000
0	Capital outlay	(10,200)	(35,250)
1	Net cash inflow	6,000	18,000
2	Net cash inflow	5,000	15,000
3	Net cash inflow	3,000	15,000

The company's cost of capital is 16%.

The NPV of each project is calculated below:

Year	Discount factor	Option A		Option B	
		Cash flow	Present value	Cash flow	Present value
		\$'000	\$'000	\$'000	\$'000
0	1.000	(10,200)	(10,200)	(35,250)	(35,250)
1	0.862	6,000	5,172	18,000	15,516
2	0.743	5,000	3,715	15,000	11,145
3	0.641	3,000	1,923		9,615
NPV			<u>610</u>		<u>1,026</u>

The IRR of option A is 20% and the IRR of option B is only 18% (workings not shown). On a comparison of NPVs, option B would be preferred, but on a comparison of IRRs, option A would be preferred.

If the projects were independent this would be irrelevant since under the NPV rule both would be accepted. With mutually exclusive projects, however, only one project can be accepted. Therefore, the ranking is crucial and we cannot be indifferent to the outcomes of the NPV and IRR appraisal methods. The NPV method is preferable.

## 7.4 Reinvestment assumptions

An assumption underlying the NPV method is that any net cash inflows generated during the life of the project will be reinvested at the cost of capital (that is, the discount rate). The IRR method, on the other hand, assumes these cash flows can be reinvested to earn a return equal to the IRR of the original project.

In the example (mutually exclusive projects) above, the NPV method assumes that the cash inflows of \$6,000, \$5,000 and \$3,000 for option A will be reinvested at the cost of capital of 16% whereas the IRR method assumes they will be reinvested at 20%. In theory, a firm will have accepted all projects which provide a return in excess of the cost of capital. Any other funds which become available can only be reinvested at the cost of capital. This is the assumption implied in the NPV rule.

## 7.5 Summary of NPV and IRR comparison

- When cash flow patterns are conventional both methods give the same accept or reject decision.
- The IRR method is more easily understood.
- NPV is technically superior to IRR and simpler to calculate.
- IRR and accounting ROCE can be confused.
- IRR ignores the relative sizes of investments.

- (f) Where cash flow patterns are non-conventional, there may be several IRRs which decision makers must be aware of to avoid making the wrong decision.
- (g) The NPV method is superior for ranking mutually exclusive projects in order of attractiveness.
- (h) The reinvestment assumption underlying the IRR method cannot be substantiated.
- (i) When discount rates are expected to differ over the life of the project, such variations can be incorporated easily into NPV calculations, but not into IRR calculations.
- (j) Despite the advantages of the NPV method over the IRR method, the IRR method is widely used in practice.

## 8 Assessment of DCF methods of project appraisal



### Topic highlights

**DCF methods of appraisal** have a number of **advantages** over other appraisal methods:

- The time value of money is taken into account.
- The method takes account of all of a project's cash flows.
- It allows for the timing of cash flows.
- There are universally accepted methods for calculating the NPV and the IRR.

### 8.1 Advantages of DCF methods

DCF is a capital appraisal technique that is based on a concept known as the **time value of money**: the concept that \$1 received today is not equal to \$1 received in the future. Given the choice between receiving \$100 today, and \$100 in one year's time, most people would opt to receive \$100 today because they could spend it or invest it to earn interest. If the interest rate was 10%, you could invest \$100 today and it would be worth  $(\$100 \times 1.10) = \$110$  in one year's time.

There are, however, other reasons why a present \$1 is worth more than a future \$1.

- (a) **Uncertainty**. Although there might be a promise of money to come in the future, it can never be certain that the money will be received until it has actually been paid.
- (b) **Inflation** also means \$1 now is worth more than \$1 in the future because of its current purchasing power.

The time value of money concept applies even if there is zero inflation but inflation obviously increases the discrepancy in value between monies received at different times.

Taking account of the time value of money (by discounting) is one of the principal advantages of the DCF appraisal method. Other advantages are as follows:

- The method uses all relevant cash flows relating to the project.
- It allows for the timing of the cash flows.
- There are universally accepted methods of calculating the NPV and the IRR.

### 8.2 Problems with DCF methods

Although DCF methods are theoretically the best methods of investment appraisal, you should be aware of their limitations:

- (a) DCF methods use future cash flows that may be difficult to forecast. Although other methods use these as well, arguably the problem is greater with DCF methods that take cash flows into the longer-term.

- (b) The basic decision rule, accept all projects with a positive NPV, will not apply when the capital available for investment is rationed (see section 14).
- (c) The cost of capital used in DCF calculations may be difficult to estimate.
- (d) The cost of capital may change over the life of the investment.

### 8.3 The use of appraisal methods in practice

Though the NPV approach is probably considered the primary technique, all the appraisal techniques considered in this chapter have their uses and limitations.

As a consequence, some businesses employ multiple methods of investment appraisal. They may use payback/discounted payback to demonstrate liquidity, NPV to demonstrate commercial viability and IRR to demonstrate the risk inherent in the NPV assessment as a result of the potential for interest rate changes.

Where multiple methods are used, however, the question arises of how the results can be assessed to decide on a project or, more awkwardly, how to decide between projects. As we have already seen with mutually exclusive projects, the highest IRR and the highest NPV do not necessarily coincide, and this fact can be extended to all of the techniques. The ideal project would have the shortest payback period, the highest NPV and highest IRR, but when assessing a range of alternatives this is unlikely to be the case.

If multiple methods are to be used then it will be important to have a pre-determined approach for prioritising the various results, although this will inevitably be somewhat subjective, based on opinions and experience.

One reason for the failure of many businesses to use NPV is that its (sometimes long-term) nature may conflict with judgments on a business that are concerned with its (short-term) profits. Managers' remuneration may depend upon the level of annual profits, and they may thus be unwilling to risk large initial expenditure on a project that only offers good returns in the significantly uncertain long-term.

In addition, the NPV method is based on the assumption that businesses seek to maximise the wealth of their shareholders. This may conflict with the interests of other stakeholders. Public sector organisations will be concerned with the social opportunity costs.

Even when wealth maximisation is the key objective, there may be factors that help maximise wealth, but cannot be quantified for NPV purposes, for example investment in a loss-making project for strategic reasons such as obtaining an initial share in an important market.

## 9 Allowing for inflation



### Topic highlights

**Real cash flows** (i.e. stated in current terms) should be discounted at a **real discount rate**.

**Nominal cash flows** (incorporating inflation) should be discounted at a nominal or money discount rate which incorporates inflation.

So far we have not considered the effect of inflation on the appraisal of capital investment proposals. As the inflation rate increases so will the minimum return required by an investor. For example, you might be happy with a return of 5% in an inflation-free world, but if inflation were running at 15% you would expect a considerably greater yield.

The **nominal interest rate** incorporates inflation. When the nominal rate of interest is higher than the rate of inflation, there is a positive real rate. When the rate of inflation is higher than the nominal rate of interest, the real rate of interest will be negative.



### Formula to learn

The relationship between real and nominal rates of interest is given by the Fisher formula:

$$(1 + n) = (1 + r)(1 + i)$$

Where:  $i$  = rate of inflation

$r$  = real rate of interest

$n$  = nominal (money) rate of interest



### Example: Inflation (1)

A company is considering investing in a project with the following cash flows:

<i>Time</i>	<i>Actual cash flows</i> \$'000
0	(15,000)
1	9,000
2	8,000
3	7,000

The company requires a minimum return of 20% under the present and anticipated conditions. Inflation is currently running at 10% a year, and this rate of inflation is expected to continue indefinitely. Should the company go ahead with the project?

Let us first look at the company's required rate of return. Suppose that it invested \$1,000 for one year on 1 January, then on 31 December it would require a minimum return of \$200. With the initial investment of \$1,000, the total value of the investment by 31 December must therefore increase to \$1,200. During the course of the year the purchasing value of the dollar would fall due to inflation.

We can restate the amount received on 31 December in terms of the purchasing power of the dollar at 1 January as follows:

Amount received on 31 December in terms of the value of the dollar at 1 January:

$$\frac{\$1,200}{(1.10)^1} = \$1,091$$

In terms of the value of the dollar at 1 January, the company would make a profit of \$91 which represents a rate of return of 9.1% in "today's money" terms. This is the real rate of return. The required rate of 20% is a nominal rate of return (sometimes called a money rate of return). The nominal rate measures the return in terms of the dollar which is, of course, falling in value. The real rate measures the return in constant price level terms.

The two rates of return and the inflation rate are linked by the equation,  $(1 + n) = (1 + r)(1 + i)$ , where all rates are expressed as proportions.

In our example:  $(1 + 0.2) = (1 + r)(1 + 0.1)$

$$\begin{aligned} \text{Therefore: } (1 + r) &= (1.2/1.1) \\ (1 + r) &= 1.091 \\ r &= 9.1\% \end{aligned}$$

## 9.1 Real rate or the nominal rate?

The rule is as follows:

If the cash flows are expressed in terms of the actual number of dollars that will be received or paid on the various future dates, use the nominal rate for discounting.



If the cash flows are expressed in terms of the value of the dollar at time 0 (that is, in constant price level terms), use the real rate.



### Example: Nominal flows and nominal rate

The cash flows given in the example (Inflation 1) above are expressed in terms of the actual number of dollars that will be received or paid at the relevant dates (nominal cash flows). We should, therefore, discount them using the nominal rate of return:

Time	Cash flow \$'000	Discount factor @ 20%	PV \$'000
0	(15,000)	1.000	(15,000)
1	9,000	0.833	7,497
2	8,000	0.694	5,552
3	7,000	0.579	4,053
			<u>2,102</u>

The project has a positive net present value of \$2,102.



### Example: Real flows and real rate

Alternatively the 10% inflation can be removed from the future cash flows in order to state them in current or real terms:

Time	Cash flow \$'000	Removing inflation	Real cashflow \$'000
0	(15,000)	1.000	(15,000)
1	9,000	$9,000 \times \frac{1}{1.10}$	8,182
2	8,000	$8,000 \times \frac{1}{1.10^2}$	6,612
3	7,000	$7,000 \times \frac{1}{1.10^3}$	5,259

The cash flows expressed in terms of the value of the dollar at time 0 (real cash flows) can now be discounted using the real rate of 9.1% (calculated earlier in example (Inflation 1)).

Time	Cash flow \$'000	Real discount rate	Real cash flow \$'000
0	(15,000)	1.000	(15,000)
1	8,182	$\frac{1}{1.091}$	7,500
2	6,612	$\frac{1}{1.091^2}$	5,555
3	5,259	$\frac{1}{1.091^3}$	4,050
NPV			<u>2,105</u>

Allowing for small discrepancies in rounding, the NPV is the same as before (and the present value of the cash flow in each year is the same as before) apart from rounding errors.

## 9.2 The advantages and misuses of real values and a real rate of return

Although generally companies should discount money values at the nominal cost of capital, there are some advantages of using real values discounted at a real cost of capital.

- When all costs and benefits rise at the same rate of price inflation, real values are the same as current day values, so that no further adjustments need be made to cash flows before discounting. In contrast, when nominal values are discounted at the nominal cost of capital, the prices in future years must be calculated before discounting can begin.
- The government might prefer to set a real return as a target for investments, as being more suitable than a commercial money rate of return.
- In the exam the real approach needs to be used for long annuities and perpetuities.

## 9.3 Costs and benefits which inflate at different rates

Not all costs and benefits will rise in line with the general level of inflation. In such cases, we can apply the nominal rate to inflated values to determine a project's NPV.



### Example: Inflation (2)

Rice Ltd is considering a project which would cost \$5 million now. The annual benefits, for four years, would be a fixed income of \$2.5 million a year, plus other savings of \$0.5 million a year in year 1, rising by 5% each year because of inflation. Running costs will be \$1 million in the first year, but would increase at 10% each year because of inflating labour costs. The general rate of inflation is expected to be 7.5% and the company's required nominal rate of return is 16%. Ignoring taxation, is the project worthwhile?

### Solution

The cash flows at inflated values are as follows:

Year	Fixed income \$'000	Other savings \$'000	Running costs \$'000	Net cash flow \$'000
1	2,500	500	1,000	2,000
2	2,500	525	1,100	1,925
3	2,500	551	1,210	1,841
4	2,500	579	1,331	1,748

The NPV of the project is as follows:

Year	Cash flow \$'000	Discount factor @ 16%	PV \$'000
0	(5,000)	1.000	(5,000)
1	2,000	0.862	1,724
2	1,925	0.743	1,430
3	1,841	0.641	1,180
4	1,748	0.552	965
NPV			<u>299</u>

The NPV is positive and the project would seem therefore to be worthwhile.

## 9.4 Variations in the expected rate of inflation

If the rate of inflation is expected to change over time, the net present value of a project can be estimated by calculating the expected cash flows at their inflated values, and discount these at the nominal cost of capital.



### Example: Inflation (3)

A company is considering an investment in a new item of equipment costing \$40,000. The equipment would have a five-year life and no residual value. The annual cash flows from the project at today's prices would be \$10,000 in years 1 and 2, \$15,000 in years 3 and 4 and \$5,000 in year 5. The nominal cost of capital is 10%. The rate of inflation is expected to be 4% in year 1, 5% in years 2 and 3 and 3% in years 4 and 5.

What is the net present value of the project?

### Solution

Year		Cash flow \$	PV factor @ 10%	PV at 15% \$
0		(40,000)	1.000	(40,000)
1	$(10,000 \times 1.04)$	10,400	0.909	9,454
2	$(10,000 \times 1.04 \times 1.05)$	10,920	0.826	9,020
3	$(15,000 \times 1.04 \times 1.05^2)$	17,199	0.751	12,916
4	$(15,000 \times 1.04 \times 1.05^2 \times 1.03)$	17,715	0.683	12,099
5	$(5,000 \times 1.04 \times 1.05^2 \times 1.03^2)$	6,082	0.621	3,777
			NPV	<u>+ 7,266</u>

The NPV is + \$7,266, indicating that the project should be undertaken on financial considerations. However, the accuracy of the estimated NPV depends on the reliability of the forecasts of annual inflation rates.

## 9.5 Expectations of inflation and the effects of inflation

When managers evaluate a particular project, or when shareholders evaluate their investments, they can only guess at what the rate of inflation is going to be. Their expectations will probably be inaccurate, because it is extremely difficult to forecast the rate of inflation correctly. The only way in which uncertainty about inflation can be allowed for in project evaluation is by risk and uncertainty analysis. Plans should be made to obtain "contingency funds", for example a higher bank overdraft facility, if the rate of inflation exceeds expectations.

Inflation may be general, affecting prices of all kinds, or specific to particular prices. Generalised inflation has the following effects:

- Since non-current (or fixed) assets and stocks (inventories) will increase in money value, the same quantities of assets must be financed by increasing amounts of capital.
- Inflation means higher costs and higher selling prices. The effect of higher prices on demand may not be easy to predict. A company that raises its prices by 10% because the general rate of inflation is running at 10% might suffer a serious fall in demand, depending for example, on the actions of competitors.
- Inflation, because it affects financing needs, is also likely to affect gearing, and so the cost of capital.

## 9.6 Mid-year and end-of year-money values

You might wonder why, in all the examples so far, the cash flows have been inflated to the end of year money prices. Inflation does not usually run at a steady rate.

In DCF calculations it is more appropriate to use end of year money values. This is because by convention, all cash flows are assumed to occur at the end of the year, and a discount factor appropriate to the end of the year is applied.

# 10 Allowing for taxation

## 10.1 General points



### Topic highlights

**Taxation** is a major practical consideration for businesses. It is vital to take it into account in making decisions.

In investment appraisal, tax is often assumed to be payable **one year in arrears**. Tax-allowable depreciation details should be checked in any question you attempt.

So far, in looking at project appraisal, we have ignored taxation.

The effect of taxation on capital budgeting is theoretically quite simple. Organisations must pay tax, and the effect of undertaking a project will be to increase or decrease tax payments each year. These incremental tax cash flows should be included in the cash flows of the project for discounting to arrive at the project's NPV.

When taxation is ignored in the DCF calculations, the discount rate will reflect the pre-tax rate of return required on capital investments. When taxation is included in the cash flows, a post-tax required rate of return should be used.

Assumptions which may be stated in questions are as follows:

- Tax is payable in the year following the one in which the taxable profits are made. Therefore, if a project increases taxable profits by \$10 million in year 2, there will be a tax payment, assuming tax at 16.5%, of \$1.65 million in year 3.
- Net cash flows from a project should be considered as the taxable profits (not just the taxable revenues) arising from the project (unless an indication is given to the contrary).
- Tax is payable in the same year as that in which the profits arise (in the above example, net cash flow in year 2 would have been \$8.4 million).

## 10.2 Tax-allowable depreciation

Tax-allowable depreciation (capital allowances) is used to reduce taxable profits, and the consequent reduction in a tax payment should be treated as a cash saving arising from the acceptance of a project.

For example, suppose tax-allowable depreciation is allowed on the cost of plant and machinery at the rate of 25% on a reducing balance basis. Therefore, if a company purchases plant costing \$80,000, the subsequent writing down allowances would be as follows:

Year		Tax-allowable depreciation \$	Reducing balance \$
1	(25% of cost)	20,000	60,000
2	(25% of RB)	15,000	45,000
3	(25% of RB)	11,250	33,750
4	(25% of RB)	8,438	25,312

When the plant is eventually sold, the difference between the sale price and the reducing balance amount at the time of sale will be treated as a:

- taxable profit if the sale price exceeds the reducing balance
- tax allowable loss if the reducing balance exceeds the sale price

The cash saving on tax-allowable depreciation (or the cash payment for the charge) is calculated by multiplying the depreciation by the tax rate.

Assumptions about tax-allowable depreciation are often simplified. For example, you might be told that tax-allowable depreciation can be claimed at the rate of 25% of cost on a straight line basis (that is, over four years).

There are two possible assumptions about the time when tax-allowable depreciation starts to be claimed:

- It can be assumed that the first claim occurs at the start of the project (at year 0).
- Alternatively, it can be assumed that the first claim occurs at the end of the first year.

It is generally clear which of the two assumptions is required but if not you should state any assumptions clearly. Assumption (b) is easier to use since there is one claim for tax-allowable depreciation for each year of the project.



### Example: Taxation

A company is considering whether or not to purchase an item of machinery costing \$400,000 payable immediately. It would have a life of four years, after which it would be sold for \$50,000. The machinery would create annual cost savings of \$140,000.

The company pays tax one year in arrears at an annual rate of 16.5% and can claim tax-allowable depreciation on a 25% reducing balance basis. A balancing allowance is claimed in the final year of operation. The company's cost of capital is 8%.

Should the machinery be purchased?

### Solution

Year		Tax-allowable depreciation \$	Year	Tax benefits (cash flow) \$
1	$400,000 \times 0.25$	100,000	2	$100,000 \times 0.165$
2	$100,000 \times 0.75$	75,000	3	$75,000 \times 0.165$
3	$75,000 \times 0.75$	56,250	4	$56,250 \times 0.165$
		<u>231,250</u>		
	Total allowance ( $400,000 - 50,000$ )	350,000		
4	Balancing amount	<u>118,750</u>	5	$118,750 \times 0.165$
				19,594

There are extra tax payments on annual cost savings of  $\$140,000 = 0.165 \times 140,000 = \$23,100$

## Calculation of NPV

	\$ Year 0	\$ Year 1	\$ Year 2	\$ Year 3	\$ Year 4	\$ Year 5
Machine costs	(400,000)				50,000	
Cost savings		140,000	140,000	140,000	140,000	
Tax on cost saving			(23,100)	(23,100)	(23,100)	(23,100)
Tax benefits from tax allowance			16,500	12,375	9,281	19,594
After-tax cash flow	(400,000)	140,000	133,400	129,275	176,181	(3,506)
Discount factor @ 8%	1.000	0.926	0.857	0.794	0.735	0.681
Present values	(400,000)	129,640	114,324	102,644	129,493	(2,388)

The net present value is \$73,713 and so the purchase appears to be worthwhile.

### 10.3 Taxation and DCF

A company is considering the purchase of an item of equipment, which would earn profits before tax of \$25,000 a year. Depreciation charges would be \$20,000 a year for six years. Tax-allowable depreciation would be \$30,000 a year for the first four years. Tax is at 16.5%.

What would be the annual net cash inflows of the project:

- for the first four years
- for the fifth and sixth years

assuming that tax payments occur in the same year as the profits giving rise to them, and there is no balancing charge or allowance when the machine is scrapped at the end of the sixth year?

(a)	Years 1–4 \$	Years 5–6 \$
Profit before tax	25,000	25,000
Add back depreciation	20,000	20,000
Net cash inflow before tax	45,000	45,000
Less tax-allowable depreciation	(30,000)	0
	<u>15,000</u>	<u>45,000</u>
Tax at 16.5%	2,475	7,425

Years 1–4 Net cash inflow after tax \$45,000 – \$2,475 = \$42,525

- Years 5–6 Net cash inflow after tax = \$45,000 – \$7,425 = \$37,575



#### Self-test question 1

A company is considering the purchase of a machine for \$150,000. It would be sold after four years for an estimated realisable value of \$50,000. By this time tax-allowable depreciation of \$120,000 would have been claimed. The rate of tax is 16.5%.

What are the tax implications of the sale of the machine at the end of four years?

**(The answer is at the end of the chapter)**

## 10.4 NPV layout

When producing an NPV calculation, you may find it helpful to use the following layout:

	Year 0	Year 1	Year 2	Year 3	Year 4
Sales receipts		X	X	X	
Costs		(X)	(X)	(X)	
Sales less costs		<u>X</u>	<u>X</u>	<u>X</u>	
Taxation on sales less costs		(X)	(X)	(X)	(X)
Capital expenditure	(X)				
Scrap value/disposal value				X	
Working capital	(X)			X	
Tax benefit of tax depreciation	—	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
Net cash flow	(X)	X	X	X	(X)
Discount factors @ post-tax cost of capital	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
Present value	<u>(X)</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>(X)</u>

## 11 Working capital

Increases in working capital reduce the net cash flow of the period to which they relate. The relevant cash flows are the incremental cash flows from one year's requirement to the next. So for example, if a project lasts for five years with a \$200,000 working capital requirement at the end of year 1, rising to \$300,000 at the end of year 2, the DCF calculation will show \$200,000 as a year 1 cash outflow and \$100,000 (300,000 – 200,000) as a year 2 cash outflow.

Working capital is assumed to be recovered at the end of the project. In the example above, this will be shown by a \$300,000 cash inflow at year 5.

Assume there are no associated tax effects for working capital flows.



### Example: Working capital

Elsie Ltd is considering the manufacture of a new product which would involve the use of both a new machine (costing \$1,500,000) and an existing machine, which cost \$800,000 two years ago and has a current carrying amount of \$600,000. There is sufficient capacity on this machine, which has so far been under-used.

Annual sales of the product would be 5,000 units, selling at \$320 a unit. Unit costs would be as follows:

	\$
Direct labour (4 hours at \$20)	80
Direct materials	70
Fixed costs including depreciation	<u>90</u>
	<u>240</u>

The project would have a five-year life, after which the new machine would have a net residual value of \$100,000. Because direct labour is continually in short supply, labour resources would have to be diverted from other work which currently earns a contribution of \$15 per direct labour hour. The fixed overhead absorption rate would be \$22.50 an hour (\$90 a unit) but actual expenditure on fixed overhead would not alter.

Working capital requirements would be \$100,000 in the first year, rising to \$150,000 in the second year and remaining at this level until the end of the project, when it will all be recovered. The company's cost of capital is 20%. Ignoring taxation, is the project worthwhile?

**Solution**

	<i>Years 1–5</i>
	\$
Contribution from new product (5,000 units × \$(320 – 150))	850,000
Less: contribution foregone: (5,000 × (4 × \$15))	<u>300,000</u>
	<u>550,000</u>

	<i>Year 0</i>	<i>Year 1</i>	<i>Years 1–5</i>	<i>Year 5</i>
	\$	\$	\$	\$
Contribution			550,000	
Equipment	(1,500,000)			100,000
Working capital	<u>(100,000)</u>	<u>(50,000)</u>		<u>150,000</u>
Net cash flows	<u>(1,600,000)</u>	<u>(50,000)</u>	<u>550,000</u>	<u>250,000</u>
Discount factor @ 20%	1.000	0.833	*2.991	0.402
Present value	(1,600,000)	(41,650)	1,645,050	100,500
NPV	+103,900			

The NPV is positive and the project is worthwhile.

\* The discount factor 2.991 applied to the annual contribution is an example of an annuity factor, which can be used for a series of equal annual cash flows starting at time 0. Annuity factors may be found from the table or from the formula, both given in the Appendix at the end of this Learning Pack.

## 12 Impact of cost of capital on investments



### Topic highlights

The lower a company's **WACC**, the higher the NPV of its future cash flows and the higher its market value.

### 12.1 The relationship between company value and cost of capital

The market value of a company depends on its cost of capital. This is the return on investment required by its providers of capital. The weighted average cost of capital is an average of the cost of the different sources of capital (equity and different types of debt capital), weighted to allow for the proportions of each type of capital in the total capital structure. The lower a company's WACC, the higher will be the net present value of its future cash flows and therefore the higher will be its market value.

### 12.2 Using the WACC in investment appraisal

The weighted average cost of capital can be used as the discount rate in investment appraisal if the:

- project being appraised is small relative to the company
- existing capital structure will be maintained (same financial risk)
- project has the same business risk as the company



## 12.3 The arguments against using the WACC

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).

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.

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.

## 13 Risk and uncertainty



### Topic highlights

**Risk** can be applied to a situation where there are several possible outcomes and, on the basis of past relevant experience, probabilities can be assigned to the various outcomes that could prevail.

**Uncertainty** can be applied to a situation where there are several possible outcomes but there is little past relevant experience to enable the probability of the possible outcomes to be predicted.

When evaluating a proposed investment project, risk and uncertainty should be considered before making a decision whether or not to invest. There are a wide range of techniques for incorporating risk into project appraisal.

### 13.1 Distinction between the terms risk and uncertainty

<b>Risk</b>	Several possible outcomes On basis of past relevant experience, assign probabilities to outcomes Increases as the variability of returns increases
<b>Uncertainty</b>	Several possible outcomes Little past experience, thus difficult to assign probabilities to outcomes Increases as project life increases

A risky situation is one where we can say that there is a 70% probability that returns from a project will be in excess of \$100 million but a 30% probability that returns will be less than \$100 million. If, however, no information can be provided on the returns from the project, we are faced with an uncertain situation.

In general, risky projects are those whose future cash flows, and hence the project returns, are likely to be variable. The greater the variability is, the greater the risk. The problem of risk is more acute with capital investment decisions than other decisions for the following reasons:

- (a) Estimates of capital expenditure might be for several years ahead, such as for major construction projects. Actual costs may escalate well above budget as the work progresses.
- (b) Estimates of benefits will be for several years ahead, sometimes 10, 15 or 20 years ahead or even longer, and such long-term estimates can at best be approximations.

## 13.2 Sensitivity analysis



### Topic highlights

**Sensitivity analysis** assesses how responsive the project's NPV is to changes in the variables used to calculate that NPV, such as the conversion of the expected cash flows of the project to riskless equivalent amounts.



### Key term

**Sensitivity analysis** assesses how responsive the project's NPV is to changes in the variables used to calculate that NPV.

One particular approach to sensitivity analysis, the certainty-equivalent approach, involves the conversion of the expected cash flows of the project to riskless equivalent amounts.

Sensitivity analysis is a method of assessing the risk of a capital expenditure project. It enables an assessment of how responsive the project's NPV is to changes in the variables that are used to calculate the NPV:

- Selling price
- Sales volume
- Cost of capital
- Initial capital investment
- Operating costs

The basic approach of sensitivity analysis is to calculate the project's NPV under alternative assumptions to determine how sensitive it is to changing conditions. An indication is thus provided of those variables to which the NPV is most sensitive (critical variables) and the extent to which those variables may change before the investment results in a negative NPV.

Sensitivity analysis therefore provides an indication of why a project might fail. Management should review critical variables to assess whether or not there is a strong possibility of events occurring which will lead to a negative NPV. Management should also pay particular attention to controlling those variables to which the NPV is particularly sensitive, once the decision has been taken to accept the investment.

A simple approach to deciding which variables the NPV is particularly sensitive to is to calculate the sensitivity of each variable:



### Formula to learn

$$\text{Sensitivity} = \frac{\text{NPV}}{\text{Present value of project variable}} \%$$

The lower the percentage, the more sensitive is NPV to that project variable as the variable would need to change by a smaller amount to make the project non-viable. Such estimates are therefore critical.



### Example: Sensitivity analysis

Kenney Ltd is considering a project with the following cash flows:

Year	Initial investment \$'000	Variable costs \$'000	Cash inflows \$'000	Net cash flows \$'000
0	7,000			
1		(2,000)	6,500	4,500
2		(2,000)	6,500	4,500

Cash flows arise from selling 650,000 units at \$10 per unit. Kenney Ltd has a cost of capital of 8%.

What is the sensitivity of the project to changes in variables?

### Solution

The PVs of the cash flow are as follows:

Year	Discount factor @ 8%	PV of initial investment \$'000	PV of variable costs \$'000	PV of cash inflows \$'000	PV of net cash flow \$'000
0	1.000	(7,000)			(7,000)
1	0.926		(1,852)	6,019	4,167
2	0.857		(1,714)	5,571	3,857
		<u>(7,000)</u>	<u>(3,566)</u>	<u>11,590</u>	<u>1,024</u>

The project has a positive NPV and would appear to be worthwhile. The sensitivity of each project variable is as follows:

$$\text{Initial investment sensitivity} = \frac{1,024}{7,000} \times 100\% = 14.6\%$$

$$\text{Sales volume sensitivity} = \frac{1,024}{11,590 - 3,566} \times 100\% = 12.8\%$$

$$\text{Selling price sensitivity} = \frac{1,024}{11,590} \times 100\% = 8.8\%$$

$$\text{Variable costs sensitivity} = \frac{1,024}{3,566} \times 100\% = 28.7\%$$

Cost of capital sensitivity: need to calculate the IRR of the project:

Year	Net cash flow \$'000	Discount factor @ 15%	PV \$'000	Discount factor @ 20%	PV \$'000
0	(7,000)	1.000	(7,000)	1.000	(7,000)
1	4,500	0.870	3,915	0.833	3,749
2	4,500	0.756	3,402	0.694	3,123
NPV			<u>317</u>		<u>(128)</u>

$$\text{The IRR} \approx 15 + \left( \left( \frac{317}{317 + 128} \right) (20 - 15) \right) \% = 18.56\%$$

$$\text{The cost of capital sensitivity} = \frac{18.56\%}{8\%} \times 100\% = 232\%$$

It can therefore increase by 232% before the NPV becomes negative.

The elements to which the NPV appears to be most sensitive are the selling price followed by the sales volume. Management should therefore pay particular attention to these factors so that they can be carefully monitored.

### 13.2.1 Weaknesses of this approach to sensitivity analysis

These are as follows:

- (a) The method requires that changes in each key variable are isolated. However management is more interested in the combination of the effects of changes in two or more key variables.
- (b) Looking at factors in isolation is unrealistic since they are often interdependent.
- (c) Sensitivity analysis does not examine the probability that any particular variation in costs or revenues might occur.
- (d) Critical factors may be those over which managers have no control.
- (e) In itself it does not provide a decision rule. Parameters defining acceptability must be laid down by managers.

### 13.3 Probability analysis



#### Topic highlights

A **probability analysis** of expected cash flows can often be estimated and used both to calculate an expected NPV and to measure risk.

A probability distribution of “expected cash flows” can often be estimated, recognising there are several possible outcomes, not just one. This may be used to do the following:

- (a) Calculate an expected value of the NPV
- (b) Measure risk, for example in the following ways:
  - (i) By calculating the worst possible outcome and its probability
  - (ii) By calculating the probability that the project will fail to achieve a positive NPV
  - (iii) By calculating the standard deviation of the NPV



#### Example: Probability estimates of cash flows

A company is considering a project involving the outlay of \$300,000 which it estimates will generate cash flows over its two-year life at the probabilities shown in the following table:

Cash flows for project:

Year 1

<i>Cash flow</i>	<i>Probability</i>
\$	
100,000	0.25
200,000	0.50
300,000	0.25
	1.00

Year 2

If cash flow in year 1 is:	there is a probability of:	that cash flow in year 2 will be:
\$		\$
100,000	0.25	NIL
	0.50	100,000
	0.25	200,000
	1.00	
200,000	0.25	100,000
	0.50	200,000
	0.25	300,000
	1.00	
300,000	0.25	200,000
	0.50	300,000
	0.25	350,000
	1.00	

The company's cost of capital for this type of project is 10%. What is the expected value (EV) of the project's NPV and the probability that the NPV will be negative?

### Solution

#### Step 1

Calculate expected value of the NPV.

Draw up a probability distribution of the expected cash flows. Begin by calculating the present values of the cash flows.

Year		Cash flow \$'000	Discount factor 10%	PV \$'000
1		100	0.909	90.90
1		200	0.909	181.80
1		300	0.909	272.70
2		100	0.826	82.60
2		200	0.826	165.20
2		300	0.826	247.80
2		350	0.826	289.10

Year 1 PV of cash flow \$'000 (a)	Probability (b)	Year 2 PV of cash flow \$'000 (c)	Probability (d)	Joint probability (b) × (d)	Total PV of cash inflows \$'000 (a) + (c)	EV of PV of cash inflows \$'000
90.9	0.25	0.0	0.25	0.0625	90.9	5.681
90.9	0.25	82.6	0.50	0.1250	173.5	21.688
90.9	0.25	165.2	0.25	0.0625	256.1	16.006
181.8	0.50	82.6	0.25	0.1250	264.4	33.050
181.8	0.50	165.2	0.50	0.2500	347.0	86.750
181.8	0.50	247.8	0.25	0.1250	429.6	53.700
272.7	0.25	165.2	0.25	0.0625	437.9	27.369
272.7	0.25	247.8	0.50	0.1250	520.5	65.063
272.7	0.25	289.1	0.25	0.0625	561.8	35.113
						<u>344.420</u>
						\$
EV of PV of cash inflows						344,420
Less project cost						<u>(300,000)</u>
EV of NPV						<u>44,420</u>

#### Step 2

##### Measure risk

Since the EV of the NPV is positive, the project should go ahead unless the risk is unacceptably high. The probability that the project will have a negative NPV is the probability that the total PV of cash inflows is less than \$300,000. From the column headed "Total PV of cash inflows", we can establish that this probability is  $0.0625 + 0.125 + 0.0625 + 0.125 = 0.375$  or 37.5%. This might be considered an unacceptably high risk.

### 13.3.1 Problems with expected values

There are the following problems with using expected values in making investment decisions:

- An investment may be one-off, and "expected" NPV may never actually occur.
- Assigning probabilities to events is highly subjective.
- Expected values do not evaluate the range of possible NPV outcomes.

## 13.4 Other risk adjustment techniques

### 13.4.1 Simulation

Simulation will overcome problems of having a very large number of possible outcomes, also the correlation of cash flows (a project which is successful in its early years is more likely to be successful in its later years).



#### Example: Simulation model

The following probability estimates have been prepared for a proposed project:

	Year	Probability	\$
Cost of equipment	0	1.00	(40,000)
Revenue each year	1–5	0.15	40,000
		0.40	50,000
		0.30	55,000
		0.15	60,000
Running costs each year	1–5	0.10	25,000
		0.25	30,000
		0.35	35,000
		0.30	40,000

The cost of capital is 12%. Assess how a simulation model might be used to assess the project's NPV.

#### Solution

A simulation model could be constructed by assigning a range of random number digits to each possible value for each of the uncertain variables. The random numbers must exactly match their respective probabilities. This is achieved by working upwards cumulatively from the lowest to the highest cash flow values and assigning numbers that will correspond to probability groupings as follows:

\$	Revenue probability	Random numbers		\$	Running costs probability	Random numbers
40,000	0.15	00–14	*	25,000	0.10	00–09
50,000	0.40	15–54	**	30,000	0.25	10–34
55,000	0.30	55–84	***	40,000	0.35	35–69
60,000	0.15	85–99		40,000	0.30	70–99

\* Probability is 0.15 (15%). Random numbers are 15% of range 00–99.

\*\* Probability is 0.40 (40%). Random numbers are 40% of range 00–99 but starting at 15.

\*\*\* Probability is 0.30 (30%). Random numbers are 30% of range 00–99 but starting at 55.

For revenue, the selection of a random number in the range 00 and 14 has a probability of 0.15. This probability represents revenue of \$40,000. Numbers have been assigned to cash flows so that when numbers are selected at random, the cash flows have exactly the same probability of being selected as is indicated in their respective probability distribution above.

Random numbers would be generated, for example by a computer program, and these would be used to assign values to each of the uncertain variables.

For example, if random numbers 378420015689 were generated, the values assigned to the variables would be as follows:

Calculation	Revenue		Costs	
	Random number	Value \$	Random number	Value \$
1	37	50,000	84	40,000
2	20	50,000	01	25,000
3	56	55,000	89	40,000

A computer would calculate the NPV many times over using the values established in this way with more random numbers, and the results would be analysed to provide the following:

- An expected NPV for the project
- A statistical distribution pattern for the possible variation in the NPV above or below this average

The decision whether to go ahead with the project would then be made on the basis of expected return and risk.

### 13.4.2 Adjusted payback

The payback method of investment appraisal recognises uncertainty in investment decisions by focusing on the near future. Short-term projects are preferred to long-term projects and liquidity is emphasised.

Adjusted payback uses discounted cash flows.

One way of dealing with risk is to shorten the payback period required. A maximum payback period can be set to reflect the fact that risk increases the longer the time period under consideration. However, the disadvantages of payback as an investment appraisal method mean that adjusted payback cannot be recommended as a method of adjusting for risk.

### 13.4.3 Risk-adjusted discount rates

Investors want higher returns for higher risk investments. The greater the risk attached to future returns, the greater the risk premium required. Investors also prefer cash now to later and require a higher return for longer time periods.

In investment appraisal, a risk-adjusted discount rate can be used for particular types or risk classes of investment projects to reflect their relative risks. For example, a high discount rate can be used so that a cash flow which occurs quite some time in the future will have less effect on the decision. Alternatively, with the launch of a new product, a higher initial risk premium may be used with a decrease in the discount rate as the product becomes established.

## 14 Capital rationing



### Topic highlights

**Capital rationing** may occur due to internal factors (soft capital rationing) or external factors (hard capital rationing).

Capital rationing: a situation in which a company has a limited amount of capital to invest in potential projects, such that the different possible investments need to be compared with one another in order to allocate the capital available most effectively.

- Soft capital rationing is brought about by internal factors
- Hard capital rationing is brought about by external factors

If an organisation is in a capital rationing situation it will not be able to enter into all projects with positive NPVs because there is not enough capital for all of the investments.

## 14.1 Soft and hard capital rationing

Soft capital rationing may arise for one of the following reasons:

- (a) Management may be reluctant to issue additional share capital because of concern that this may lead to outsiders gaining control of the business.
- (b) Management may be unwilling to issue additional share capital if it will lead to a dilution of earnings per share.
- (c) Management may not want to raise additional debt capital because they do not wish to be committed to large fixed interest payments.
- (d) Management may wish to limit investment to a level that can be financed solely from retained earnings.

Hard capital rationing may arise for one of the following reasons:

- (a) Raising money through the stock market may not be possible if share prices are depressed.
- (b) There may be restrictions on bank lending due to government control.
- (c) Lending institutions may consider an organisation to be too risky to be granted further loan facilities.
- (d) The costs associated with making small issues of capital may be too great.

## 14.2 Relaxation of capital constraints

If an organisation adopts a policy that restricts funds available for investment (soft capital rationing), the policy may be less than optimal. The organisation may reject projects with a positive net present value and forgo opportunities that would have enhanced the market value of the organisation.

A company may be able to limit the effects of hard capital rationing and exploit new opportunities.

- (a) It might seek joint venture partners with which to share projects.
- (b) As an alternative to direct investment in a project, the company may be able to consider a licensing or franchising agreement with another enterprise, under which the licensor/franchisor company would receive royalties.
- (c) It may be possible to contract out parts of a project to reduce the initial capital outlay required.
- (d) The company may seek new alternative sources of capital (subject to any restrictions which apply to it) for example:
  - (i) Venture capital
  - (ii) Debt finance secured on the assets of the project
  - (iii) Sale and leaseback of property or equipment (see the next chapter)
  - (iv) Grant aid
  - (v) More effective capital management



## 14.3 Single period capital rationing



### Topic highlights

When capital rationing occurs in a **single period**, projects are ranked in terms of **profitability index**.

We shall begin our analysis by assuming that capital rationing occurs in a single period, and that capital is freely available at all other times.

The following further assumptions will be made:

- If a company does not accept and undertake a project during the period of capital rationing, the opportunity to undertake it is lost. The project cannot be postponed until a subsequent period when no capital rationing exists.
- There is complete certainty about the outcome of each project, so that the choice between projects is not affected by considerations of risk.
- Projects are divisible, so that it is possible to undertake, say, half of project X in order to earn half of the net present value (NPV) of the whole project.

The basic approach is to rank all investment opportunities so that the NPVs can be maximised from the use of the available funds.

Ranking in terms of absolute NPVs will normally give incorrect results. This method leads to the selection of large projects, each of which has a high individual NPV but which have, in total, a lower NPV than a large number of smaller projects with lower individual NPVs. Ranking is therefore in terms of what is called the profitability index.

This profitability index is a ratio that measures the PV of future cash flows per \$1 of investment, and so indicates which investments make the best use of the limited resources available.



### Key term

**Profitability index** is the ratio of the present value of the project's future cash flows (not including the capital investment) divided by the present value of the total capital investment.



### Example: Capital rationing (1)

Suppose that Hard Times Ltd is considering four projects, W, X, Y and Z. Relevant details are as follows:

Project	Investment required \$	Present value of cash inflows \$	NPV \$	Profitability index (PI)	Ranking as per NPV	Ranking as per PI
W	(10,000)	11,240	1,240	1.12	3	1
X	(20,000)	20,991	991	1.05	4	4
Y	(30,000)	32,230	2,230	1.07	2	3
Z	(40,000)	43,801	3,801	1.10	1	2

Without capital rationing all four projects would be viable investments. Suppose, however, that only \$60,000 was available for capital investment. Let us look at the resulting NPV if we select projects in the order of ranking per NPV:

Project	Priority	Outlay	NPV	
		\$	\$	
Z	1 <sup>st</sup>	40,000	3,801	
Y (balance)*	2 <sup>nd</sup>	20,000	1,487	( <sup>2</sup> / <sub>3</sub> of \$2,230)
		60,000	5,288	

\* Projects are divisible. By spending the balancing \$20,000 on project Y, two-thirds of the full investment would be made to earn two-thirds of the NPV.

Suppose, on the other hand, that we adopt the profitability index approach. The selection of projects will be as follows:

Project	Priority	Outlay	NPV	
		\$	\$	
W	1 <sup>st</sup>	10,000	1,240	
Z	2 <sup>nd</sup>	40,000	3,801	
Y (balance)	3 <sup>rd</sup>	10,000	743	( <sup>1</sup> / <sub>3</sub> of \$2,230)
		60,000	5,784	

By choosing projects according to the PI, the resulting NPV if only \$60,000 is available is increased by \$496.

## 14.4 Problems with the profitability index method

The approach can only be used if projects are divisible. If the projects are not divisible a decision has to be made by examining the absolute NPVs of all possible combinations of complete projects that can be undertaken within the constraints of the capital available. The combination of projects which remains at or under the limit of available capital without any of them being divided, and which maximises the total NPV, should be chosen.

The selection criterion is fairly simplistic, taking no account of the possible strategic value of individual investments in the context of the overall objectives of the organisation.

The method is of limited use when projects have differing cash flow patterns. These patterns may be important to the company since they will affect the timing and availability of funds. With multi-period capital rationing, it is possible that the project with the highest profitability index is the slowest in generating returns.

The profitability index ignores the absolute size of individual projects. A project with a high index might be very small and therefore only generate a small NPV.



### Example: Capital rationing (2)

A company is experiencing capital rationing in year 0, when only \$60,000 of investment finance will be available. No capital rationing is expected in future periods, but none of the three projects under consideration by the company can be postponed. The expected cash flows of the three projects are as follows:

Project	Year 0	Year 1	Year 2	Year 3	Year 4
	\$	\$	\$	\$	\$
A	(50,000)	(20,000)	20,000	40,000	40,000
B	(28,000)	(50,000)	40,000	40,000	20,000
C	(30,000)	(30,000)	30,000	40,000	10,000

The cost of capital is 10%. Decide which projects should be undertaken in year 0, in view of the capital rationing, given that projects are divisible.

**Solution**

The ratio of NPV at 10% to outlay in year 0 (the year of capital rationing) is as follows:

Project	Outlay in year 0 \$	PV \$	NPV \$	Ratio	Ranking
A	50,000	55,700	5,700	1.114	3 <sup>rd</sup>
B	28,000	31,290	3,290	1.118	2 <sup>nd</sup>
C	30,000	34,380	4,380	1.146	1 <sup>st</sup>

Working

Present value A

Year	Cash flow \$	Discount factor @ 10%	Present value \$
1	(20,000)	0.909	(18,180)
2	20,000	0.826	16,520
3	40,000	0.751	30,040
4	40,000	0.683	27,320
			<u>55,700</u>

Present value B

Year	Cash flow \$	Discount factor @ 10%	Present value \$
1	(50,000)	0.909	(45,450)
2	40,000	0.826	33,040
3	40,000	0.751	30,040
4	20,000	0.683	13,660
			<u>31,290</u>

Present value C

Year	Cash flow \$	Discount factor @ 10%	Present value \$
1	(30,000)	0.909	(27,270)
2	30,000	0.826	24,780
3	40,000	0.751	30,040
4	10,000	0.683	6,830
			<u>34,380</u>

The optimal investment policy is as follows:

Project	Ranking	NPV \$	Year 0 outlay \$
C	1 <sup>st</sup>	4,380	30,000
B	2 <sup>nd</sup>	3,290	28,000
A (balance)	3 <sup>rd</sup>	228	2,000 (4% of 5,700)

NPV from total investment = 7,898

## 14.5 Postponing projects

We have so far assumed that projects cannot be postponed until year 1. If this assumption is removed, the choice of projects in year 0 would be made by reference to the loss of NPV from postponement.



### Example: Postponing projects

The figures in the previous example will be used to illustrate the method. If any project, A, B or C, were delayed by one year, the “NPV” would now relate to year 1 values, so that in year 0 terms, the NPVs would be as follows:

	<i>NPV in year 1</i> \$		<i>NPV in year 0 Value</i> \$	<i>Loss in NPV</i> \$
(a) Project A	5,700 ×	$\frac{1}{1.10}$	= 5,182	518
(b) Project B	3,290 ×	$\frac{1}{1.10}$	= 2,991	299
(c) Project C	4,380 ×	$\frac{1}{1.10}$	= 3,982	398

An index of postponability would be calculated as follows:

<i>Project</i>	<i>Loss in NPV from one- year postponement</i> \$	<i>Outlay deferred from year 0</i> \$	<i>Postponability index (loss/outlay)</i>
A	518	50,000	0.0104
B	299	28,000	0.0107
C	398	30,000	0.0133

The loss in NPV by deferring investment would be greatest for Project C, and least for Project A. It is therefore more profitable to postpone A, rather than B or C, as follows:

Investment in year 0:

<i>Project</i>	<i>Outlay</i> \$	<i>NPV</i> \$
C	30,000	4,380
B	28,000	3,290
A (balance)	2,000 (4% of 5,700)	228
	60,000	7,898

Investment in year 1 (balance):

<i>Project A</i>	\$
\$48,000 (96% of 5,182)	4,975
Total NPV (as at year 0) of investments in years 0 and 1	12,873

## 14.6 Single period rationing with non-divisible projects

If the projects are not divisible then the method shown above may not result in the optimal solution. Another complication which arises is that there is likely to be a small amount of unused capital with each combination of projects. The best way to deal with this situation is to use trial and error and

test the NPV available from different combinations of projects. This can be a laborious process if there are a large number of projects available.



### Example: Single period rationing with non-divisible projects

Short Ltd has capital of \$95,000 available for investment in the forthcoming period. The directors decide to consider projects P, Q and R only. They wish to invest only in whole projects, but surplus funds can be invested. Which combination of projects will produce the highest NPV at a cost of capital of 20%?

<i>Project</i>	<i>Investment required \$'000</i>	<i>Present value of inflows @ 20% \$'000</i>
P	40	56.50
Q	50	67.00
R	30	48.80

### Solution

The investment combinations are the various possible pairs of projects P, Q and R.

<i>Projects</i>	<i>Required investment \$'000</i>	<i>PV of inflows</i>	<i>NPV from projects \$'000</i>
P and Q	90	123.5	33.50
P and R	70	105.3	35.30
Q and R	80	115.8	35.80

The highest NPV will be achieved by undertaking projects Q and R and investing the unused funds of \$20,000 externally.

## 15 Qualitative factors



### Topic highlights

It is important to realise that in some situations capital expenditure decisions may be approved by management even though the financial computation of the investment's value shows a negative result. This could be due to behavioural, strategic or other qualitative factors.

Examples of factors which are difficult to quantify but which are relevant in evaluating projects are:

#### Benefits:

- Improving customer satisfaction with products/services
- Achieving greater business goodwill
- Improving quality
- Reducing quality costs
- Reducing lead times
- Increasing flexibility to respond to changes in consumer demand

**Costs** (i.e. uncertainty about cash flow risks emanating from the following):

- Foreign currency rate changes
- Commodity price changes
- Changes in government legislation (for example, tariffs)
- Other political risks

The potential benefits listed above are directly related to strategic goals or missions of many profit-oriented organisations. Hence alignment with the strategic mission may be sufficient to invest in a capital project even though the NPV may be zero or small because many of the benefits are unquantifiable. It does not mean value won't be generated. It just means that value is very difficult to quantify at the start of a project's life.

## 16 Behavioural implications of capital budgeting

Consideration has been given to the mathematical aspects of applying the various techniques involved in capital budgeting. However, behavioural factors can also be very important in the capital budgeting process.



### Illustration: Behavioural aspects

Klinsman Ltd is a decentralised company, which evaluates its divisional managers based on divisional net profit. New projects, if successful, will at some stage improve net profit. Conversely, if new projects fail they will have an adverse effect on the way the managers are evaluated. There are, therefore, strong economic incentives for the managers of these divisions to ensure that new projects are successful. If they succeed bonuses may accrue to them, their reputations will improve, they may be promoted and so on.

What can a manager at Klinsman Ltd do to increase the chance of a project's success in this case mentioned above?

The manager may have two competing projects:

- **Project 1** provides a negative NPV but has a very good effect on net profit for early periods and an adverse effect for later periods.
- **Project 2** has a steady increase in net profit over the project's life and a positive NPV.

We know from our discussion above that the positive NPV project should be accepted because that project increases firm value. However which project do you think the divisional manager might put forward to the Board for consideration? Assuming the divisional manager is a rational person who prefers more wealth to less, has a short-term focus (say three to five years) and is unlikely to suffer adverse consequences by not proposing the positive NPV project, the manager might only put the first project forward.

From this simple case we can see that there are many behavioural implications of capital budgeting projects. Some occur at the selection stage, some during the life of the project once implemented and some during the evaluation process. The management accountant needs to be aware of behavioural factors and to include them in project appraisals.

### 16.1 Eight behavioural factors

Siegel and Ramanauskas-Marconi (1989) suggest eight behavioural factors that are relevant to capital budgeting projects.

#### (1) Problems in identifying potential projects

The organisation must have individuals capable of identifying a range of possible projects for appraisal. This involves some creativity and talent. For example, people need to be able to "read the market" to determine market niches for exploitation and so on.

#### (2) Prediction problems caused by human behaviour

It may not be feasible to have experts in every area, such as labour rates, plant and equipment costs, foreign exchange forecasts and so on, involved in the decision making. Some important decisions may involve a significant amount of personal judgment.

(3) **Problem of short-term manager and short-term performance measures**

As in the case above, when managers are evaluated using short-term measures (such as ROI), there is an inherent conflict with the capital budgeting process. Another problem is the short-term focus of managers. Managers don't usually stay in their positions for say, ten years (which may be the life of a capital budgeting project). They may be promoted, move to a different organisation, retire and so on. If promotion is linked to performance, there is a strong incentive to make their time in the management role look as good as possible. If divisional managers can report significantly improved profits, this will enhance their job prospects. However, long-term capital projects may not improve short-term profit because the net revenues may not occur for some years, and the depreciation charges may be higher once new plant and equipment is installed and so on.

(4) **Problems caused by self-identification with projects**

This problem arises when one individual is associated with a particular project; for example, a financial controller with special responsibility to implement a new computer system into an organisation. If a project begins to fail, there can be an incentive for the individual associated with the project to use techniques to make the project look good, primarily to save face and reputation.

(5) **Personnel development and capital projects**

This issue relates to proposals that may offer a positive NPV but are out of the scope of the proposer (i.e., the division). If the resources and capabilities are not there to adequately implement the project it should not be entered into.

(6) **Capital budgeting as a ritual**

Some argue that capital budgeting has become a ritualised process so that once a proposal is put forward it is accepted. This is because lower level managers only put forward proposals that they are almost certain of getting approved.

(7) **Risk-seeking and risk-averse behaviour**

This factor is related to the particular personalities and circumstances of the decision makers. For example, a newly appointed manager, relatively unfamiliar with the industry, may avoid new capital investment projects or view them with scepticism or undue delay because of greater uncertainty.

(8) **Sharing the poverty**

Capital is a scarce resource. As a result, it needs to be allocated efficiently. For instance, money should not be wasted on unprofitable projects. Also, if there is a choice between project A or project B, both having the same life and B having the highest NPV, then based only on financial considerations, project B should be chosen. It is not always so simple, though.

## 17 Post-completion audit



### Topic highlights

The desirability of a capital expenditure project depends heavily on the accuracy of cash flow projections. If cash flows are highly inaccurate, undesirable projects may be accepted or desirable projects may be rejected. Because of the importance of the capital budgeting process, many companies systematically follow up projects to see how they turn out.



### Key term

In a **post-completion audit**, information is gathered about actual cash flows generated by a project and these are compared with the projections included in the capital expenditure proposal.

Companies that carry out post-completion audits of investment projects experience a number of benefits, including the following:

- Ensuring that resources are used wisely. If the project is doing well, it may call for additional funds to be invested to enhance profitability. If the project is not doing well, corrective action may be needed to improve performance. If the situation cannot be retrieved, consideration may be given to abandoning the project.
- Positive impact on the behaviour of managers. For example, those responsible for the initial evaluation are likely to be more careful if they know that their estimates will later be compared with the results. In other words, the existence of a post-completion audit policy should help improve future decision making.

On the other hand post-completion audits may have some drawbacks, including the following:

- They are not costless – some resources of time and money need to be devoted to post audit activities.
- The assumptions driving the original analysis may be invalidated by changes in the actual operating environment of the company. Not every future circumstance can be foreseen, and accountability for failure to mastermind the future must be tempered by the impossibility of foreseeing every possible eventuality.

A further issue relates to who should carry out the post-completion audit. It is best performed by independent staff, not by the person who originally carried out the analysis. If the firm has an internal audit department, staff from this unit would be in an ideal position to perform the post audit.

Post-completion audits require thoughtfulness and care. They should be performed only after project outcomes have stabilised because performing audits too soon may provide misleading feedback. Obtaining actual results for comparing against projections is often not easy – for example, measuring incremental overhead costs that relate to a specific project may be difficult, even if an activity based costing system is in place.

## 17.1 Example of post-completion audit



### Example: Post-completion audit

The following example uses simplified numbers, but should illustrate the process for a post-completion audit.

LCH Company manufactures product X. One year ago, the company considered the purchase of a new machine which would reduce operating costs.

The project had a positive NPV on a pre-tax basis, and a decision was taken to buy the machine.

The original NPV evaluation is reproduced below.

<i>Year</i>	<i>Cash flow</i> \$	<i>PV factor</i> @ 12%	<i>PV of cash flow</i> HK\$
0	(90,000)	1.000	(90,000)
1	30,000	0.893	26,790
2	30,000	0.797	23,910
3	30,000	0.712	21,360
4	40,000	0.636	<u>25,440</u>
NPV			<u><u>7,500</u></u>

At the end of year 1 a post audit of the project was carried out. This audit revealed the following:

- The original investment appraisal failed to include the installation costs of the new machine.

This amounted to \$5,000.



## Corporate Financing

- The actual variable operating costs in year 1 were higher than expected, and it is now expected that this higher level of cost will continue through the last three years of the project. These higher costs have reduced the cash flow benefits from the new machine.
- On the other hand, the actual fixed costs (cash flows) attributed to the project in year 1 were \$5,000 less than expected and this level of annual saving in fixed costs is expected to continue through the last three years of the project.
- There is no change in the expected disposal value of the machine at the end of year 4.

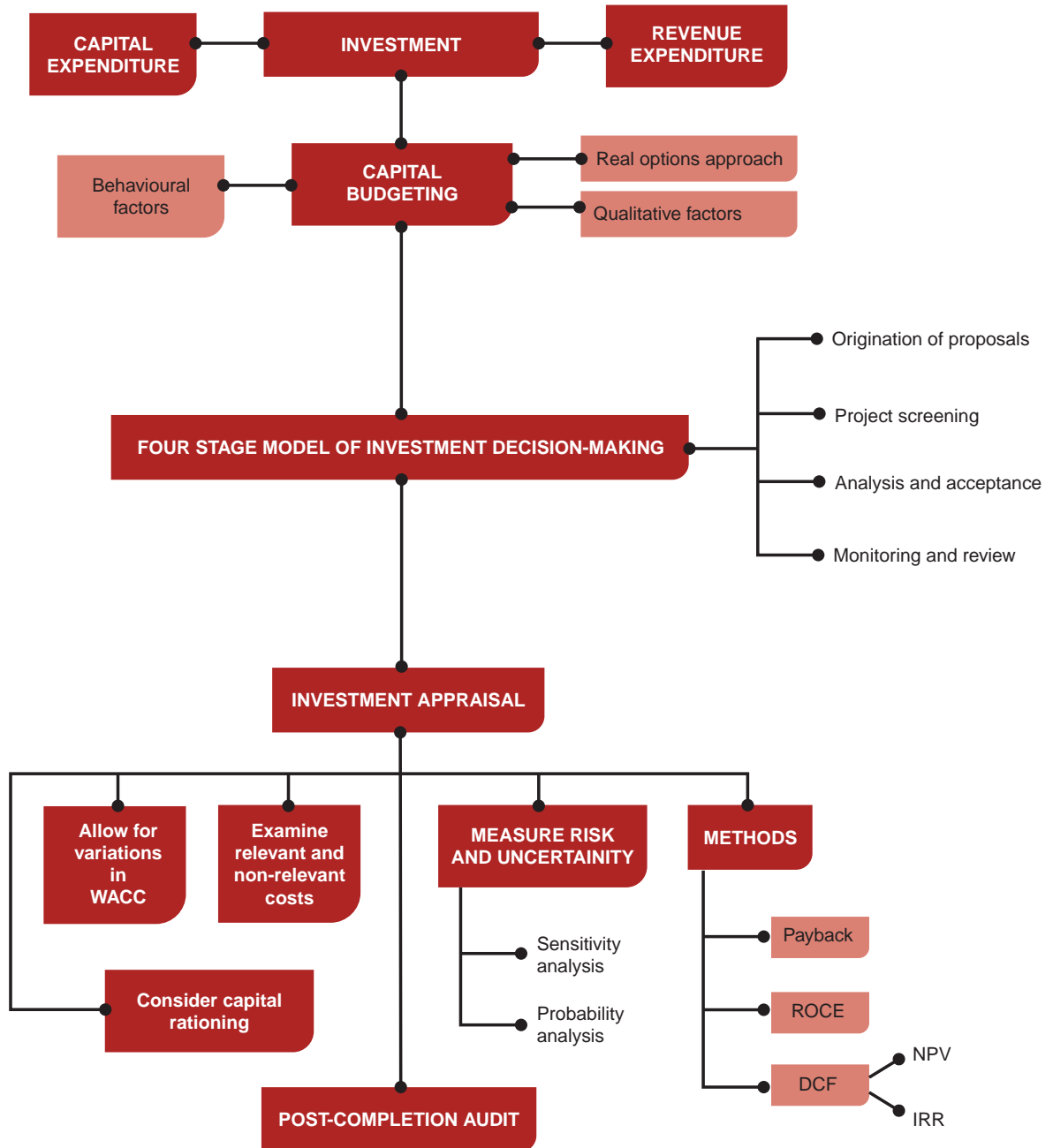
A new NPV calculation has been produced, showing what the NPV of the project would have been if the revised cash flows had been used.

<i>Year</i>	<i>Cash flow</i> \$	<i>PV factor</i> @ 12%	<i>PV of cash flow</i> \$
0	(95,000)	1.000	(95,000)
1	28,750	0.893	25,673
2	28,750	0.797	22,913
3	28,750	0.712	20,470
4	38,750	0.636	<u>24,645</u>
NPV			<u>(1,299)</u>

In the light of this post-completion audit, the issue is; should the project now be abandoned, or can ways be found to retrieve the situation? For example, can selling prices be increased to compensate for the increases in variable costs and machine installation costs?

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# Topic recap



## Answer to self-test question

### Answer 1

There will be a balancing charge on the sale of the machine of  $\$(50,000 - (150,000 - 120,000)) = \$20,000$ . This will give rise to a tax payment of  $16.5\% \times \$20,000 = \$3,300$ .

## Exam practice



## TTphone

29 minutes

TTphone is considering an investment in high-tech equipment. The useful life of this equipment is estimated to be four years. The CFO Mr. T.T. Chan estimates the cash flows as follows:

<i>Year End</i>	<i>Description</i>	<i>Amount (HK\$)</i>
0	Initial equipment investment	\$100 million
1-4	Estimated annual operational cash flows	\$40 million
4	Cash inflow from disposal of equipment	\$200,000

The depreciation is calculated on a straight line basis for tax purposes using the initial investment minus the disposal value of the equipment at the end of year 4. The company has a cost of capital of 10% and the applicable tax rate is 16%. It is also the company practice to use initial investment value and after tax results to measure the return of a project.

Assume the tax benefit could be claimed in the year of use and the tax would be paid at the end of each year. There would be no balancing charge and allowance at the year of disposal.

*Required*

- Calculate the net present value (NPV) and internal rate of return (IRR) of the project based on the above estimates and assumptions. **(6 marks)**
- Calculate two additional measures in order to reflect the liquidity and reported financial performance of the project. **(4 marks)**
- Identify the advantages and disadvantages of the two additional measures that you calculated. Make a recommendation for the project. **(6 marks)**

**(Total = 16 marks)****HKICPA June 2011**