

# CB1

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## **Business Finance**

**Combined Materials Pack  
for exams in 2019**

**The Actuarial Education Company**  
on behalf of the Institute and Faculty of Actuaries

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# Subject CB1

## 2019 Study Guide

### Introduction

This Study Guide has been created to help guide you through Subject CB1. It contains all the information that you will need before starting to study Subject CB1 for the 2019 exams and you may also find it useful to refer to throughout your Subject CB1 journey.

The guide is split into two parts:

- Part 1 contains general information about the Core Principles subjects
- Part 2 contains specific information about Subject CB1.

**Please read this Study Guide carefully before reading the Course Notes**, even if you have studied for some actuarial exams before.

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## 1.1 Before you start

When studying for the UK actuarial exams, you will need:

- a copy of the **Formulae and Tables for Examinations of the Faculty of Actuaries and the Institute of Actuaries, 2nd Edition (2002)** – these are often referred to as simply the *Yellow Tables* or the *Tables*
- a ‘permitted’ **scientific calculator** – you will find the list of permitted calculators on the profession’s website. Please check the list carefully, since it is reviewed each year.

These are both available from the Institute and Faculty of Actuaries’ eShop. Please visit [www.actuaries.org.uk](http://www.actuaries.org.uk).

## 1.2 Core study material

This section explains the role of the Syllabus, Core Reading and supplementary ActEd text. It also gives guidance on how to use these materials most effectively in order to pass the exam.

Some of the information below is also contained in the introduction to the Core Reading produced by the Institute and Faculty of Actuaries.

### Syllabus

The Syllabus for Subject CB1 has been produced by the Institute and Faculty of Actuaries. The relevant individual Syllabus Objectives are included at the start of each course chapter and a complete copy of the Syllabus is included in Section 2.2 of this Study Guide. We recommend that you use the Syllabus as an important part of your study.

### Core Reading

The Core Reading has been produced by the Institute and Faculty of Actuaries. The purpose of the Core Reading is to assist in ensuring that tutors, students and examiners have clear shared appreciation of the requirements of the syllabus for the qualification examinations for Fellowship of the Institute and Faculty of Actuaries.

The Core Reading supports coverage of the syllabus in helping to ensure that both depth and breadth are re-enforced. It is therefore important that students have a good understanding of the concepts covered by the Core Reading.

The examinations require students to demonstrate their understanding of the concepts given in the syllabus and described in the Core Reading; this will be based on the legislation, professional guidance *etc* that are in force when the Core Reading is published, *ie* on 31 May in the year preceding the examinations.

Therefore the exams in April and September 2019 will be based on the Syllabus and Core Reading as at 31 May 2018. We recommend that you always use the up-to-date Core Reading to prepare for the exams.

Examiners will have this Core Reading when setting the papers. In preparing for examinations, students are advised to work through past examination questions and will find additional tuition helpful. The Core Reading will be updated each year to reflect changes in the syllabus, to reflect current practice, and in the interest of clarity.

### Accreditation

The Institute and Faculty of Actuaries would like to thank the numerous people who have helped in the development of the material contained in this Core Reading.

## ActEd text

Core Reading deals with each syllabus objective and covers what is needed to pass the exam. However, the tuition material that has been written by ActEd enhances it by giving examples and further explanation of key points. Here is an excerpt from some ActEd Course Notes to show you how to identify Core Reading and the ActEd material. **Core Reading is shown in this bold font.**

Note that in the example given above, the index *will* fall if the actual share price goes below the theoretical ex-rights share price. Again, this is consistent with what would happen to an underlying portfolio.

After allowing for chain-linking, **the formula for the investment index then becomes:**

$$I(t) = \frac{\sum_i N_{i,t} P_{i,t}}{B(t)}$$

where  $N_{i,t}$  is the number of shares issued for the  $i$ th constituent at time  $t$ ;

$B(t)$  is the base value, or divisor, at time  $t$ .

This is ActEd text

This is Core Reading

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## 1.3 ActEd study support

This section gives a description of the products offered by ActEd.

Successful students tend to undertake three main study activities:

1. *Learning* – initial study and understanding of subject material
2. *Revision* – learning subject material and preparing to tackle exam-style questions
3. *Rehearsal* – answering exam-style questions, culminating in answering questions at exam speed without notes.

Different approaches suit different people. For example, you may like to learn material gradually over the months running up to the exams or you may do your revision in a shorter period just before the exams. Also, these three activities will almost certainly overlap.

We offer a flexible range of products to suit you and let you control your own learning and exam preparation. The following table shows the products that we produce. Note that not all products are available for all subjects.

LEARNING	LEARNING & REVISION	REVISION	REVISION & REHEARSAL	REHEARSAL
Course Notes	X Assignments	Flashcards	Revision Notes	Mock Exam
	Combined Materials Pack (CMP)		ASET	Mock Marking
	X Assignment Marking			
	Tutorials			
	Online Classroom			

The products and services are described in more detail below.

## **‘Learning’ products**

### ***Course Notes***

The Course Notes will help you develop the basic knowledge and understanding of principles needed to pass the exam. They incorporate the complete Core Reading and include full explanation of all the syllabus objectives, with worked examples and questions (including some past exam questions) to test your understanding.

Each chapter includes:

- the relevant syllabus objectives
- a chapter summary
- a page of important formulae or definitions (where appropriate)
- practice questions with full solutions.

## **‘Learning & revision’ products**

### ***X Assignments***

The Series X Assignments are written assessments that cover the material in each part of the course in turn. They can be used to both develop and test your understanding of the material.

### ***Combined Materials Pack (CMP)***

The Combined Materials Pack (CMP) comprises the Course Notes and the Series X Assignments.

The CMP is available in **eBook** format for viewing on a range of electronic devices. eBooks can be ordered separately or as an addition to paper products. Visit [www.ActEd.co.uk](http://www.ActEd.co.uk) for full details about the eBooks that are available, compatibility with different devices, software requirements and printing restrictions.

### ***X Assignment Marking***

We are happy to mark your attempts at the X assignments. Marking is not included with the Assignments or the CMP and you need to order it separately. You should submit your script as a PDF attached to an email. Your script will be marked electronically and you will be able to download your marked script via a secure link on the internet.

Don't underestimate the benefits of doing and submitting assignments:

- Question practice during this phase of your study gives an early focus on the end goal of answering exam-style questions.
- You're incentivised to keep up with your study plan and get a regular, realistic assessment of your progress.
- Objective, personalised feedback from a high quality marker will highlight areas on which to work and help with exam technique.



In a recent study, we found that students who attempt more than half the assignments have significantly higher pass rates.

There are two different types of marking product: Series Marking and Marking Vouchers.

### *Series Marking*

Series Marking applies to a specified subject, session and student. If you purchase Series Marking, you will **not** be able to defer the marking to a future exam sitting or transfer it to a different subject or student.

We typically send out full solutions with the Series X Assignments. However, if you order Series Marking at the same time as you order the Series X Assignments, you can choose whether or not to receive a copy of the solutions in advance. If you choose not to receive them with the study material, you will be able to download the solutions via a secure link on the internet when your marked script is returned (or following the final deadline date if you do not submit a script).

If you are having your attempts at the assignments marked by ActEd, you should submit your scripts regularly throughout the session, in accordance with the schedule of recommended dates set out in information provided with the assignments. This will help you to pace your study throughout the session and leave an adequate amount of time for revision and question practice.

The recommended submission dates are realistic targets for the majority of students. Your scripts will be returned more quickly if you submit them well before the final deadline dates.

Any script submitted *after* the relevant final deadline date will not be marked. It is your responsibility to ensure that we receive scripts in good time.

### *Marking Vouchers*

Marking Vouchers give the holder the right to submit a script for marking at any time, irrespective of the individual assignment deadlines, study session, subject or person.

Marking Vouchers can be used for any assignment. They are valid for four years from the date of purchase and can be refunded at any time up to the expiry date.

Although you may submit your script with a Marking Voucher at any time, you will need to adhere to the explicit Marking Voucher deadline dates to ensure that your script is returned before the date of the exam. The deadline dates are provided with the assignments.

### ***Tutorials***

Our tutorials are specifically designed to develop the knowledge that you will acquire from the course material into the higher-level understanding that is needed to pass the exam.

We run a range of different tutorials including face-to-face tutorials at various locations, and Live Online tutorials. Full details are set out in our *Tuition Bulletin*, which is available on our website at [www.ActEd.co.uk](http://www.ActEd.co.uk).

### *Regular and Block Tutorials*

In preparation for these tutorials, we expect you to have read the relevant part(s) of the Course Notes before attending the tutorial so that the group can spend time on exam questions and discussion to develop understanding rather than basic bookwork.

You can choose **one** of the following types of tutorial:

- **Regular Tutorials** spread over the session.
- **A Block Tutorial** held two to eight weeks before the exam.

### **Online Classroom**

The Online Classroom acts as either a valuable add-on or a great alternative to a face-to-face or Live Online tutorial.

At the heart of the Online Classroom in each subject is a comprehensive, easily-searched collection of tutorial units. These are a mix of:

- teaching units, helping you to really get to grips with the course material, and
- guided questions, enabling you to learn the most efficient ways to answer questions and avoid common exam pitfalls.

The best way to discover the Online Classroom is to see it in action. You can watch a sample of the Online Classroom tutorial units on our website at [www.ActEd.co.uk](http://www.ActEd.co.uk).

### **'Revision' products**

For most subjects, there is **a lot of material** to revise. Finding a way to fit revision into your routine as painlessly as possible has got to be a good strategy. Flashcards are an inexpensive option that can provide a massive boost. They can also provide a variation in activities during a study day, and so help you to maintain concentration and effectiveness.

#### **Flashcards**

Flashcards are a set of A6-sized cards that cover the key points of the subject that most students want to commit to memory. Each flashcard has questions on one side and the answers on the reverse. We recommend that you use the cards actively and test yourself as you go.

Flashcards are available in **eBook** format for viewing on a range of electronic devices. eBooks can be ordered separately or as an addition to paper products. Visit [www.ActEd.co.uk](http://www.ActEd.co.uk) for full details about the eBooks that are available, compatibility with different devices, software requirements and printing restrictions.

The following questions and comments might help you to decide if flashcards are suitable for you:

#### *Flashcards*

- Do you have a regular train or bus journey?

*Flashcards are ideal for regular bursts of revision on the move.*

- Do you want to fit more study into your routine?

*Flashcards are a good option for 'dead time', eg using flashcards on your phone or sticking them on the wall in your study.*

- Do you find yourself cramming for exams (even if that's not your original plan)?

*Flashcards are an extremely efficient way to do your pre-exam memorising.*

If you are retaking a subject, then you might consider using flashcards if you didn't use them on a previous attempt.

## **'Revision & rehearsal' products**

### ***Revision Notes***

Our Revision Notes have been designed with input from students to help you revise efficiently. They are suitable for first-time sitters who have worked through the ActEd Course Notes or for retakers (who should find them much more useful and challenging than simply reading through the course again).

The Revision Notes are a set of A5 booklets – perfect for revising on the train or tube to work. Each booklet covers one main theme or a set of related topics from the course and includes:

- Core Reading with a set of integrated short questions to develop your bookwork knowledge
- relevant past exam questions with concise solutions from the last ten years
- other useful revision aids.

### ***ActEd Solutions with Exam Technique (ASET)***

The ActEd Solutions with Exam Technique (ASET) contains our solutions to eight past exam papers, plus comment and explanation. In particular, it highlights how questions might have been analysed and interpreted so as to produce a good solution with a wide range of relevant points. This will be valuable in approaching questions in subsequent examinations.

## **'Rehearsal' products**

### ***Mock Exam***

The Mock Exam is a 100-mark mock exam paper that provides a realistic test of your exam preparation.

### ***Mock Marking***

We are happy to mark your attempts at the mock exams. The same general principles apply as for the X Assignment Marking. In particular:

- Mock Exam Marking is available for the Mock Exam and it applies to a specified subject, session and student
- Marking Vouchers can be used for the Mock Exam.

Recall that:

- marking is not included with the products themselves and you need to order it separately
- you should submit your script as a PDF attached to an email
- your script will be marked electronically and you will be able to download your marked script via a secure link on the internet.

## 1.4 Skills

### Technical skills

The Core Reading and exam papers for these subjects tend to be very technical. The exams themselves have many calculation and manipulation questions. The emphasis in the exam will therefore be on *understanding* the mathematical techniques and applying them to various, frequently unfamiliar, situations. It is important to have a feel for what the numerical answer should be by having a deep understanding of the material and by doing reasonableness checks.

As a high level of pure mathematics and statistics is generally required for the Core Principles subjects, it is important that your mathematical skills are extremely good. If you are a little rusty you may wish to consider purchasing additional material to help you get up to speed. The course 'Pure Maths and Statistics for Actuarial Studies' is available from ActEd and it covers the mathematical techniques that are required for the Core Principles subjects, some of which are beyond A-Level (or Higher) standard. You do not need to work through the whole course in order – you can just refer to it when you need help on a particular topic. An initial assessment to test your mathematical skills and further details regarding the course can be found on our website at [www.ActEd.co.uk](http://www.ActEd.co.uk).

### Study skills

#### *Overall study plan*

We suggest that you develop a realistic study plan, building in time for relaxation and allowing some time for contingencies. Be aware of busy times at work, when you may not be able to take as much study leave as you would like. Once you have set your plan, be determined to stick to it. You don't have to be too prescriptive at this stage about what precisely you do on each study day. The main thing is to be clear that you will cover all the important activities in an appropriate manner and leave plenty of time for revision and question practice.

Aim to manage your study so as to allow plenty of time for the concepts you meet in these courses to 'bed down' in your mind. Most successful students will probably aim to complete the courses at least a month before the exam, thereby leaving a sufficient amount of time for revision. By finishing the courses as quickly as possible, you will have a much clearer view of the big picture. It will also allow you to structure your revision so that you can concentrate on the important and difficult areas.

You can also try looking at our discussion forum on the internet, which can be accessed at [www.ActEd.co.uk/forums](http://www.ActEd.co.uk/forums) (or use the link from our home page at [www.ActEd.co.uk](http://www.ActEd.co.uk)). There are some good suggestions from students on how to study.

#### *Study sessions*

Only do activities that will increase your chance of passing. Try to avoid including activities for the sake of it and don't spend time reviewing material that you already understand. You will only improve your chances of passing the exam by getting on top of the material that you currently find difficult.

Ideally, each study session should have a specific purpose and be based on a specific task, *eg 'Finish reading Chapter 3 and attempt Practice Questions 1.4, 1.7 and 1.12'*, as opposed to a specific amount of time, *eg 'Three hours studying the material in Chapter 3'*.

Try to study somewhere quiet and free from distractions (*eg* a library or a desk at home dedicated to study). Find out when you operate at your peak, and endeavour to study at those times of the day. This might be between *8am* and *10am* or could be in the evening. Take short breaks during your study to remain focused – it's definitely time for a short break if you find that your brain is tired and that your concentration has started to drift from the information in front of you.

### **Order of study**

We suggest that you work through each of the chapters in turn. To get the maximum benefit from each chapter you should proceed in the following order:

1. Read the Syllabus Objectives. These are set out in the box at the start of each chapter.
2. Read the Chapter Summary at the end of each chapter. This will give you a useful overview of the material that you are about to study and help you to appreciate the context of the ideas that you meet.
3. Study the Course Notes in detail, annotating them and possibly making your own notes. Try the self-assessment questions as you come to them. As you study, pay particular attention to the listing of the Syllabus Objectives and to the Core Reading.
4. Read the Chapter Summary again carefully. If there are any ideas that you can't remember covering in the Course Notes, read the relevant section of the notes again to refresh your memory.
5. Attempt (at least some of) the Practice Questions that appear at the end of the chapter.

It's a fact that people are more likely to remember something if they review it several times. So, do look over the chapters you have studied so far from time to time. It is useful to re-read the Chapter Summaries or to try the Practice Questions again a few days after reading the chapter itself. It's a good idea to annotate the questions with details of when you attempted each one. This makes it easier to ensure that you try all of the questions as part of your revision without repeating any that you got right first time.

Once you've read the relevant part of the notes and tried a selection of questions from the Practice Questions (and attended a tutorial, if appropriate) you should attempt the corresponding assignment. If you submit your assignment for marking, spend some time looking through it carefully when it is returned. It can seem a bit depressing to analyse the errors you made, but you will increase your chances of passing the exam by learning from your mistakes. The markers will try their best to provide practical comments to help you to improve.

To be really prepared for the exam, you should not only know and understand the Core Reading but also be aware of what the examiners will expect. Your revision programme should include plenty of question practice so that you are aware of the typical style, content and marking structure of exam questions. You should attempt as many past exam questions as you can.

### Active study

Here are some techniques that may help you to study actively.

1. Don't believe everything you read. Good students tend to question everything that they read. They will ask 'why, how, what for, when?' when confronted with a new concept, and they will apply their own judgement. This contrasts with those who unquestioningly believe what they are told, learn it thoroughly, and reproduce it (unquestioningly?) in response to exam questions.
2. Another useful technique as you read the Course Notes is to think of possible questions that the examiners could ask. This will help you to understand the examiners' point of view and should mean that there are fewer nasty surprises in the exam room. Use the Syllabus to help you make up questions.
3. Annotate your notes with your own ideas and questions. This will make you study more actively and will help when you come to review and revise the material. Do not simply copy out the notes without thinking about the issues.
4. Attempt the questions in the notes as you work through the course. Write down your answer before you refer to the solution.
5. Attempt other questions and assignments on a similar basis, *ie* write down your answer before looking at the solution provided. Attempting the assignments under exam conditions has some particular benefits:
  - It forces you to think and act in a way that is similar to how you will behave in the exam.
  - When you have your assignments marked it is *much* more useful if the marker's comments can show you how to improve your performance under exam conditions than your performance when you have access to the notes and are under no time pressure.
  - The knowledge that you are going to do an assignment under exam conditions and then submit it (however good or bad) for marking can act as a powerful incentive to make you study each part as well as possible.
  - It is also quicker than trying to write perfect answers.
6. Sit a mock exam four to six weeks before the real exam to identify your weaknesses and work to improve them. You could use a mock exam written by ActEd or a past exam paper.

You can find further information on how to study in the profession's Student Handbook, which you can download from their website at:

[www.actuaries.org.uk/studying](http://www.actuaries.org.uk/studying)

## Revision and exam skills

### *Revision skills*

You will have sat many exams before and will have mastered the exam and revision techniques that suit you. However it is important to note that due to the high volume of work involved in the Core Principles subjects it is not possible to leave all your revision to the last minute. Students who prepare well in advance have a better chance of passing their exams on the first sitting.

Unprepared students find that they are under time pressure in the exam. Therefore it is important to find ways of maximising your score in the shortest possible time. Part of your preparation should be to practise a large number of exam-style questions under timed exam conditions as soon as possible. This will:

- help you to develop the necessary understanding of the techniques required
- highlight the key topics, which crop up regularly in many different contexts and questions
- help you to practise the specific skills that you will need to pass the exam.

There are many sources of exam-style questions. You can use past exam papers, the Practice Questions at the end of each chapter (which include many past exam questions), assignments, mock exams, the Revision Notes and ASET.

### *Exam question skill levels*

Exam questions are not designed to be of similar difficulty. The Institute and Faculty of Actuaries specifies different skill levels that questions may be set with reference to.

Questions may be set at any skill level:

- Knowledge – demonstration of a detailed knowledge and understanding of the topic
- Application – demonstration of an ability to apply the principles underlying the topic within a given context
- Higher Order – demonstration of an ability to perform deeper analysis and assessment of situations, including forming judgements, taking into account different points of view, comparing and contrasting situations, suggesting possible solutions and actions, and making recommendations.

### *Command verbs*

The Institute and Faculty of Actuaries use command verbs (such as 'Define', 'Discuss' and 'Explain') to help students to identify what the question requires. The profession has produced a document, 'Command verbs used in the Associate and Fellowship written examinations', to help students to understand what each command verb is asking them to do.



It also gives the following advice:

- The use of a specific command verb within a syllabus objective does not indicate that this is the only form of question which can be asked on the topic covered by that objective.
- The Examiners may ask a question on any syllabus topic using any of the agreed command verbs, as are defined in the document.

You can find the relevant document on the profession's website at:

<https://www.actuaries.org.uk/studying/prepare-your-exams>

## 1.5 The examination

### What to take to the exam

**IMPORTANT NOTE:** The following information was correct at the time of printing, however it is important to keep up-to-date with any changes. See the profession's website for the latest guidance.

For the written exams the examination room will be equipped with:

- the question paper
- an answer booklet
- rough paper
- a copy of the Yellow Tables.

Remember to take with you:

- black pens
- a permitted scientific calculator – please refer to [www.actuaries.org.uk](http://www.actuaries.org.uk) for the latest advice.

### Past exam papers

You can download some past exam papers and Examiners' Reports from the profession's website at [www.actuaries.org.uk](http://www.actuaries.org.uk). However, please be aware that these exam papers are for the pre-2019 syllabus and not all questions will be relevant.

## 1.6 Queries and feedback

### Questions and queries

From time to time you may come across something in the study material that is unclear to you. The easiest way to solve such problems is often through discussion with friends, colleagues and peers – they will probably have had similar experiences whilst studying. If there's no-one at work to talk to then use our discussion forum at [www.ActEd.co.uk/forums](http://www.ActEd.co.uk/forums) (or use the link from our home page at [www.ActEd.co.uk](http://www.ActEd.co.uk)).

Our online forum is dedicated to actuarial students so that you can get help from fellow students on any aspect of your studies from technical issues to study advice. You could also use it to get ideas for revision or for further reading around the subject that you are studying. ActEd tutors will visit the site from time to time to ensure that you are not being led astray and we also post other frequently asked questions from students on the forum as they arise.

If you are still stuck, then you can send queries by email to the relevant subject email address (see [Section 2.6](#)), but we recommend that you try the forum first. We will endeavour to contact you as soon as possible after receiving your query but you should be aware that it may take some time to reply to queries, particularly when tutors are away from the office running tutorials. At the busiest teaching times of year, it may take us more than a week to get back to you.

If you have many queries on the course material, you should raise them at a tutorial or book a personal tuition session with an ActEd tutor. Information about personal tuition is set out in our current brochure. Please email [ActEd@bpp.com](mailto:ActEd@bpp.com) for more details.

### Feedback

If you find an error in the course, please check the corrections page of our website ([www.ActEd.co.uk/paper\\_corrections.html](http://www.ActEd.co.uk/paper_corrections.html)) to see if the correction has already been dealt with. Otherwise please send details via email to the relevant subject email address (see [Section 2.6](#)).

Each year our tutors work hard to improve the quality of the study material and to ensure that the courses are as clear as possible and free from errors. We are always happy to receive feedback from students, particularly details concerning any errors, contradictions or unclear statements in the courses. If you have any comments on this course please email them to the relevant subject email address (see [Section 2.6](#)).

Our tutors also work with the profession to suggest developments and improvements to the Syllabus and Core Reading. If you have any comments or concerns about the Syllabus or Core Reading, these can be passed on via ActEd. Alternatively, you can send them directly to the Institute and Faculty of Actuaries' Examination Team by email to [education.services@actuaries.org.uk](mailto:education.services@actuaries.org.uk).

## 2.1 Subject CB1 – background

### History

The Business subjects (Subjects CB1, CB2 and CB3) are new subjects in the Institute and Faculty of Actuaries 2019 Curriculum. ActEd is not involved in the delivery of Subject CB3.

Subject CB1 is *Business Finance*.

### Predecessors

The topics covered in the Business subjects (Subjects CB1 and CB2) cover content previously in Subjects CT2 and CT7:

- Subject CB1 replaces Subject CT2.
- Subject CB2 replaces Subject CT7.

### Exemptions

You will need to have passed or been granted an exemption from Subject CT2 to be eligible for a pass in Subject CB1 during the transfer process.

### Links to other subjects

- Subjects CB2 and CB3 – Business Economics and Business Management are the other subjects in the *Business* module.
- Subject CM1 – Actuarial Mathematics 1
- Subject CP1 – Actuarial Practice
- Subject SP5 – Investment and Finance Principles.
- Subject P0 – Generic UK Practice Module.

## 2.2 Subject CB1 – Syllabus and Core Reading

### Syllabus

The Syllabus for Subject CB1 is given here. To the right of each objective are the chapter numbers in which the objective is covered in the ActEd course.

#### Aim

The aim of the Business Finance subject is to:

- provide a basic understanding of corporate finance including a knowledge of the instruments used by companies to raise finance and manage financial risk
- provide the ability to interpret the accounts and financial statements of companies and financial institutions.

#### Competences

On successful completion of this subject, a student will be able to:

1. understand how companies are governed and structured
2. suggest appropriate ways to finance a company
3. analyse published accounts
4. produce management information.

#### Syllabus topics

- |    |  |       |
|----|--|-------|
| 1. | Corporate governance and organisation                              | (10%) |
| 2. | How corporates are financed  | (20%) |
| 3. | Evaluating projects  | (20%) |
| 4. | Constructing and interpreting company accounts                     | (40%) |
| 5. | Constructing management information and evaluating working capital | (10%) |

The weightings are indicative of the approximate balance of the assessment of this subject between the main syllabus topics, averaged over a number of examination sessions.

The weightings also have a correspondence with the amount of learning material underlying each syllabus topic. However, this will also reflect aspects such as:

- the relative complexity of each topic, and hence the amount of explanation and support required for it
- the need to provide thorough foundation understanding on which to build the other objectives
- the extent of prior knowledge which is expected
- the degree to which each topic area is more knowledge or application based.

**Detailed syllabus objectives**

- 1 Corporate governance and organisation (10%)
- 1.1 Explain the purpose and process of regulating the financial reporting information of incorporated entities. [Chapter 1](#)
- 1.2 Describe the key principles of corporate governance and the regulation of companies. [Chapter 1](#)
- 1.3 Demonstrate an awareness of the key principles of finance. [Chapter 1](#)
- 1.3.1 Outline the relationship between finance and the real resources and objectives of an organisation.
- 1.3.2 Outline the relationship between the stakeholders in an organisation (including lenders and investors).
- 1.3.3 Outline the role and effects of the capital markets.
- 1.3.4 Outline the maximisation of shareholder wealth as the main goal of financial management in a company.
- 1.3.5 Outline problems relating to the maximisation of shareholder wealth in practice: social responsibility concerns, agency problems and divergent objectives.
- 1.3.6 Outline the strategies employed by managers to maximise shareholder wealth.
- 1.3.7 Outline the determinants of value and the actions managers can take to influence value.
- 2 How corporates are financed (20%)
- 2.1 Describe the structure of a company and the different methods by which it may be financed.
- 2.1.1 Outline the distinctive characteristics of sole traders, partnerships and limited companies as business entities. [\(Chapter 2\)](#)
- 2.1.2. Describe the different types of loan and share capital. [\(Chapter 4\)](#)
- 2.1.3 Contrast authorised and issued share capital. [\(Chapter 4\)](#)
- 2.1.4 Discuss the economic advantages and disadvantages of a limited company as a business entity. [\(Chapter 2\)](#)
- 2.1.5 Outline the main differences between a private and public company. [\(Chapter 2\)](#)

- 2.1.6 Outline the different types of medium term company finance: (Chapter 6)
- hire purchase
  - credit sale
  - leasing
  - bank loans.
- 2.1.7 Describe the following different types of short term company finance: (Chapter 6)
- bank overdrafts
  - trade credit
  - factoring
  - bills of exchange
  - commercial paper.
- 2.1.8 Describe alternative methods of raising finance outside the regular banking system including 'shadow banking', direct project financing, crowd-funding and micro-finance. (Chapter 7)
- 2.2 Describe the basic principles of personal and corporate taxation. (Chapter 3)
- 2.2.1 Describe the basic principles of personal taxation of income and capital gains.
- 2.2.2 Describe the basic principles of company taxation.
- 2.2.3 Explain the different systems of company taxation from the points of view of an individual shareholder and the company.
- 2.2.4 Outline the basic principles of double taxation relief.
- 2.3 Demonstrate a knowledge and understanding of the characteristics of the principal forms of financial instrument issued or used by companies and the ways in which they may be issued.
- 2.3.1 Outline the reasons a company might have for seeking a quotation on the stock exchange. (Chapter 5)

(Chapter 4)

2.3.2 Describe the characteristics of:

- debenture stocks
- unsecured loan stocks
- Eurobonds
- preference shares
- ordinary shares
- convertible unsecured loan stocks
- convertible preference shares
- warrants
- floating rate notes
- subordinated debt
- options issued by companies.

2.3.3 Describe the characteristics and possible uses by a non-financial company of:

(Chapter 8)

- financial futures
- options
- interest rate and currency swaps.

2.3.4 Outline the following methods of obtaining a quotation for securities: (Chapter 5)

- offer for sale
- offer for sale by tender
- offer for subscription
- placing
- introduction.

2.3.5 Describe the following types of new issues to existing shareholders: (Chapter 5)

- scrip issue
- rights issue.

2.3.6 Describe the role of underwriting in the issue of securities. (Chapter 5)

2.4 Discuss the factors to be considered by a company when deciding on its capital structure and dividend policy. (Chapter 20)

2.4.1 Describe the effect that the capital structure used by a company will have on the market valuation of the company.

2.4.2 Describe the effect of taxation on the capital structure used by a company.

2.4.3 Discuss the principal factors that a company should consider in setting dividend policy.

2.4.4 Discuss alternative ways of distributing profits, such as buybacks.



- 2.4.5 Discuss the effect that the dividend policy will have on the market valuation of a company.
- 2.5 Discuss how companies grow and the different ways of company restructuring. (Chapter 18)
- 2.5.1 Describe why businesses want to grow larger, how companies achieve internal growth and explain the relationship between growth and profitability.
- 2.5.2 Describe the constraints on a firm's growth.
- 2.6 Outline the motives for mergers and acquisitions. (Chapter 18)
- 2.6.1 Describe the characteristics of a merger.
- 2.6.2 Discuss methods of evaluating a target company.
- 2.6.3 Discuss the steps that a buyer will usually take in a leveraged buyout.
- 3 Evaluating projects (20%)
- 3.1 Discuss how a company's cost of capital interacts with the nature of the investment projects it undertakes. (Chapters 19, 21 and 22)
- 3.1.1 Define what is meant by a company's cost of capital.
- 3.1.2 Describe how to calculate a company's weighted average cost of capital.
- 3.1.3 Discuss the principal methods that may be used to determine the viability of a capital project.
- 3.1.4 Carry out cashflow projections and techniques to estimate cashflows.
- 3.1.5 Describe methods commonly used to evaluate risky investments including simulation and certainty equivalents.
- 3.1.6 Discuss the issues in establishing the required rate of return for a capital project.
- 3.1.7 Discuss the factors underlying the choice of discount rate within project assessment, including:
- the assumptions and limitations in the use of the weighted average cost of capital.
  - the allowance for leverage.
  - the allowance for risk.
- 3.1.8 Discuss the methods that may be used for identifying the risks that may be present for different types of project.
- 3.1.9 Discuss suitable techniques for ascertaining the probability of occurrence of different risks over varying timescales and the financial impact of occurrence.

- 3.1.10 Discuss suitable techniques for ascertaining the distribution of the possible financial outcomes of a capital project.
- 4 Constructing and interpreting company accounts (40%)
- 4.1 Describe the basic construction of accounts of different types and the role and principal features of the accounts of a company. (Chapters 9 to 13 and 15)
- 4.1.1 Explain why companies are required to produce annual reports and accounts.
- 4.1.2 Explain the value of financial reporting on environmental, social and economic sustainability.
- 4.1.3 Describe alternatives to traditional financial reporting.
- 4.1.4 Explain the fundamental accounting concepts which should be adopted in the drawing up of company accounts.
- 4.1.5 Explain the purpose of a:
- statement of financial position.
  - statement of comprehensive income.
  - cashflow statement.
  - and of the notes to the accounts.
- 4.1.6 Construct simple statements of financial position and statements of profit or loss.
- 4.1.7 Explain cashflow statements.
- 4.1.8 Describe the structure and content of insurance company accounts.
- 4.1.9 Explain what is meant by the terms subsidiary company and associated company.
- 4.1.10 Explain the purpose of consolidated accounts.
- 4.1.11 Explain how goodwill might arise on the consolidation of group accounts.
- 4.1.12 Explain how depreciation is treated in company accounts.
- 4.1.13 Explain the function of the following accounts – share capital, other reserves and retained earnings.
- 4.2 Assess the accounts of a company or a group of companies, including the limitations of such assessment. (Chapters 14 and 15)
- 4.2.1 Calculate and explain priority percentages and gearing.
- 4.2.2 Calculate and explain interest cover and asset cover for loan capital.
- 4.2.3 Describe the possible effects of interest rate movements on a highly geared company.

- 4.2.4 Calculate and explain price earnings ratio, dividend yield, dividend cover and EBITDA.
- 4.2.5 Explain net earnings per share.
- 4.2.6 Calculate and explain accounting ratios which indicate:
- profitability
  - liquidity
  - efficiency.
- 4.2.7 Discuss the shortcomings of historical cost accounting.
- 4.2.8 Discuss the limitations in the interpretation of company accounts.
- 4.2.9 Discuss the ways that reported figures can be manipulated to create a false impression of a company's financial position.
- 5 Constructing management information and evaluating working capital (10%)
- 5.1 Determine the working capital position of a company. (Chapter 16)
- 5.1.1 Analyse accounts receivables, accounts payables and inventory ratios
- 5.1.2 Evaluate policies for working capital management, including its individual elements.
- 5.1.3 Discuss methods for financing working capital.
- 5.1.4 Analyse the short term cash position of a company.
- 5.1.5 Discuss measures to manage the short term cash position of a company.
- 5.1.6 Discuss dividend sustainability.
- 5.2 Describe the function of forecasts and budgets as sources of management information. (Chapter 17)
- 5.2.1 Explain the purpose of forecasts and budgets.
- 5.2.2 Prepare basic examples of forecasts and budgets.

## Core Reading

The Subject CB1 Course Notes include the Core Reading in full, integrated throughout the course.

### Accreditation

Material from the Audit and Assurance Council (formerly Auditing Practices Board) in this Core Reading is reproduced by kind permission of the Audit and Assurance Council. For further information please visit [www.frc.org.uk](http://www.frc.org.uk).

### Further reading

The exam will be based on the relevant Syllabus and Core Reading and the ActEd course material will be the main source of tuition for students.

### Background references

These background references, provided at the end of the Core Reading, are for further reading, if desired, and are not examinable:

- **Brealey, SC and Myers, RA, 2000, Principles of Corporate Finance, 6th ed, Irwin/McGraw-Hill**
- **Atrill, P and McLaney, E, 2015, Management Accounting for decision makers, 8th ed, Pearson**
- **Berry, A and Jarvis, R, 2011, Accounting in a business context, 5th ed, Cengage**
- **Leiwiy, D and Perks, R, 2013, Accounting Understanding and Practice, 4th ed, McGraw-Hill**
- **Sloman, J, Garratt, D, Guest, J and Jones, E, 2016, Economics for Business, 7th ed, Pearson**
- **FRC: The UK Corporate Governance Code, April 2016**
- **Crowd funding regulation. Available at: <https://www.fca.org.uk>**
- **[www.thetakeoverpanel.org.uk/download-links/the-takeover-code](http://www.thetakeoverpanel.org.uk/download-links/the-takeover-code)**
- **Global Reporting Initiative (GRI), GRI Sustainability Reporting Standards. Available at: <https://www.globalreporting.org>**
- **The Association of Chartered Certified Accountants, London, 2010, 'Sustainability reporting matters. What are national governments doing about it?'. Available at: <http://www.accaglobal.com/content/dam/acca/global/PDF-technical/sustainability-reporting/tech-tp-srm.pdf>**
- **Companies Act, 2006, Contents of the strategic report. Available at: <http://www.legislation.gov.uk/ukpga/2006/46/contents>**
- **The International Integrated Reporting Council, How to prepare an integrated report. Available at: <http://integratedreporting.org/>.**

## 2.3 Subject CB1 – the course structure

There are three parts to the Subject CB1 course. The parts cover related topics. The parts are broken down into chapters.

The following table shows how the parts, the chapters and the syllabus items relate to each other. The end columns show how the chapters relate to the days of the regular tutorials. We have also given you a broad indication of the length of each chapter. This table should help you plan your progress across the study session.

<b>Part</b>	<b>Chapter</b>	<b>Title</b>	<b>No of pages</b>	<b>Syllabus objectives</b>	<b>3 full days</b>
<b>1</b>	1	Key principles of finance and corporate governance	29	1	1
	2	Business ownership	20	2.1	
	3	Taxation	20	2.2	
	4	Long-term finance	38	2.1, 2.3	
	5	Issue of shares	34	2.3	
	6	Short- and medium-term finance	21	2.1	
	7	Alternative sources of finance	17	2.1	
	8	Use of derivatives	21	2.3	
<b>2</b>	9	Introduction to accounts	32	4.1	2
	10	The main accounts	36	4.1	
	11	Depreciation and reserves	20	4.1	
	12	Constructing accounts	32	4.1	
	13	Group accounts and insurance company accounts	23	4.1	
	14	Interpretation of accounts	53	4.2	
	15	Limitations of accounts and alternative reporting	21	4.1, 4.2	
<b>3</b>	16	Evaluation of working capital	29	5.1	3
	17	Constructing management information	21	5.2	
	18	Growth and restructuring of companies	22	2.5, 2.6	
	19	Weighted average cost of capital	36	3.1	
	20	Capital structure and dividend policy	36	2.4	
	21	Capital project appraisal (1)	31	3.1	
	22	Capital project appraisal (2)	39	3.1	

## 2.4 Subject CB1 – summary of ActEd products

The following products are available for Subject CB1:

- Course Notes
- X Assignments – three assignments:
  - X1-X3: 100-mark tests (you are allowed 3¼ hours to complete these) and X Assignment marking (Series Marking and Marking Vouchers)
- Online Classroom – around 60 tutorial units
- Flashcards
- Revision Notes – A5 booklets
- ASET – four years' exam papers, *ie* eight papers, covering the period April 2014 to September 2017
- Mock Exam and marking (Series Marking and Marking Vouchers).

**We will endeavour to release as much material as possible but unfortunately some revision products may not be available until the September 2019 or even April 2020 exam sessions. Please check the ActEd website or email [ActEd@bpp.com](mailto:ActEd@bpp.com) for more information.**

The following tutorials are typically available for Subject CB1:

- regular tutorials (three days)
- block tutorials (three days).

Full details are set out in our *Tuition Bulletin*, which is available on our website at [www.ActEd.co.uk](http://www.ActEd.co.uk).

## 2.5 Subject CB1 – skills and assessment

### Technical skills

The *Business* subjects (Subjects CB1 and CB2) are more ‘wordy’ (and less mathematical) than the other Core Principles subjects.

Subject CB1 is assessed using objective test (multiple choice) questions and ‘free form’ answer questions. Don’t panic if you haven’t written an essay in a while – it is more important to come up with a set of clear, concise points for the ‘free form’ answers than to answer with flowing prose.

### Exam skills

#### *Exam question skill levels*

In the CB subjects, the approximate split of assessment across the three skill types is:

- Knowledge – 25%
- Application – 55%
- Higher Order skills – 20%.

### Assessment

Assessment consists of a 3¼-hour paper-based examination involving objective test questions and ‘free form’ answer questions.

## 2.6 Subject CB1 – frequently asked questions

**Q:** *What knowledge of earlier subjects should I have?*

**A:** No knowledge of earlier subjects is required.

**Q:** *What are the key question answering skills?*

**A:** Part 2 of the course cover the construction and interpretation of accounts. This work can be quite complex and it helps to have a quick numerical brain. A lot of question practice in this area will help.

More generally, questions often ask you to recommend action for a particular firm or individual in a particular situation. You need to know and understand the course content and then be able to think practically to apply the principles to the given situation.

**Q:** *What should I do if I discover an error in the course?*

**A:** If you find an error in the course, please check our website at:

[www.ActEd.co.uk/paper\\_corrections.html](http://www.ActEd.co.uk/paper_corrections.html)

to see if the correction has already been dealt with. Otherwise please send details via email to [CB1@bpp.com](mailto:CB1@bpp.com).

**Q:** *Who should I send feedback to?*

**A:** We are always happy to receive feedback from students, particularly details concerning any errors, contradictions or unclear statements in the courses.

If you have any comments on this course in general, please email to [CB1@bpp.com](mailto:CB1@bpp.com).

If you have any comments or concerns about the Syllabus or Core Reading, these can be passed on to the profession via ActEd. Alternatively, you can send them directly to the Institute and Faculty of Actuaries' Examination Team by email to [education.services@actuaries.org.uk](mailto:education.services@actuaries.org.uk).





# Key principles of finance and corporate governance

## Syllabus objectives

- 1.1 Explain the purpose and process of regulating the financial reporting information of incorporated entities.
- 1.2 Describe the key principles of corporate governance and regulation of companies.
- 1.3 Demonstrate an awareness of the key principles of finance.
  1. Outline the relationship between finance and the real resources and objectives of an organisation.
  2. Outline the relationship between the stakeholders in an organisation (including lenders and investors).
  3. Outline the role and effects of the capital markets.
  4. Outline the maximisation of shareholder wealth as the main goal of financial management in a company.
  5. Outline problems relating to the maximisation of shareholder wealth in practice: social responsibility concerns, agency problems and divergent objectives.
  6. Outline the strategies employed by managers to maximise shareholder wealth.
  7. Outline the determinants of value and the actions managers can take to influence value.

## 0 Introduction

This chapter introduces some fundamental ideas relating to the theory of corporate finance and corporate governance. It provides an overview and the rest of the course explores many of these ideas further.

You might find this chapter quite difficult on first reading, but it does give a very useful introduction to the course. Much of the remainder of the course builds on this and considers the material in more detail. Therefore, don't worry too much about the technical details on your first read of the chapter, as more detailed explanations are often going to be given in later chapters. You might want to re-read this chapter when you have finished the course and are more familiar with some of the details. The aim at this initial stage is to provide an overview and to start setting some of the ideas in their real-world context.

### 0.1 Overview of the course

In the other chapters of Part 1 of the course we study the ways in which businesses are set up and raise finance. In Part 2 of the course we look at financial reporting, *ie* company accounts. Financial reporting provides information on how well a company is doing and this information helps in making decisions. In Part 3 of the course we study in more detail various decisions that companies have to make, in particular the capital budgeting decision (what to invest in) and the financing decision (how to finance that investment) that are introduced in this chapter.

### 0.2 Overview of this chapter

Section 1 discusses the two key decisions relating to the financing of a company's operations, namely the *capital budgeting decision* and the *financing decision*.

Subsequent sections consider business stakeholders and objectives. A company is a complex organisation with many interested parties or *stakeholders*, *eg* shareholders, managers, employees. Each group has its own set of objectives and these objectives might conflict with those of other groups. We look at the objective of the *maximisation of shareholder wealth* in the face of divergent objectives and how financial markets play their role in achieving in this objective.

The final section of the chapter looks at the key principles of corporate governance, *ie* the systems by which companies are directed and controlled.

# 1 Finance and real resources

## 1.1 Finance and the real resources of an organisation

Any business needs a variety of *real* assets, *ie* assets that are used in the normal line of business to generate profits. We use the term real assets to distinguish them from financial assets, such as shares or bonds.

**To carry on business, companies need to employ real assets, both tangible and intangible.**

A company is an important type of business entity. We'll study different types of business in the next chapter, *eg* companies, partnerships. Tangible assets are assets that physically exist (*eg* machinery and buildings) whereas intangible assets are assets that do not (*eg* goodwill, trademarks and brand names).



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### Question

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Describe the possible real assets of an oak furniture manufacturing business.

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### Solution

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The business would have tangible assets. Some of these would be *fixed assets* such as premises, machinery, tools, computers *etc*, which might last for many years. Some would be used up in the production of furniture, *eg* stocks of wood, nails, varnish *etc*. (These are known as current assets.)

The business might also have intangible assets, *eg* valuable brand names.

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**To acquire such assets, a company must raise finance.**

For example, when businesses start, the founders might contribute some of their own savings to the business; they might ask the bank (or other finance providers) for loans. If the business is set up as a company, issuing shares raises finance. Businesses might ask suppliers to give them credit.

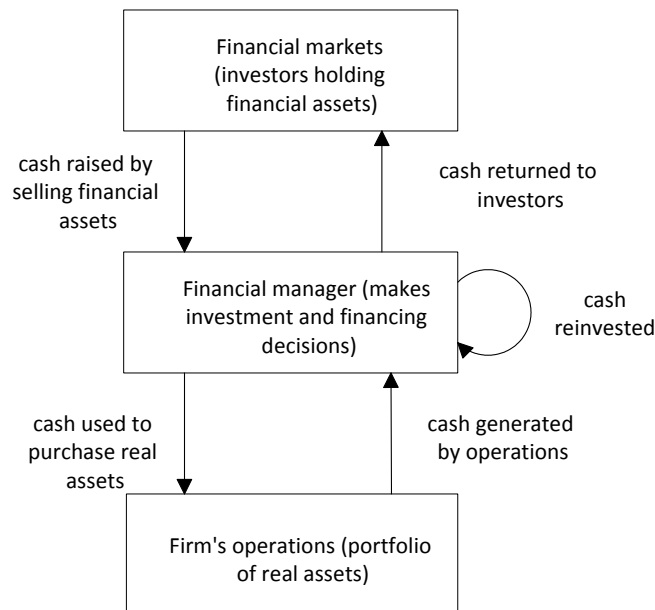
Some of these sources of finance are financial assets, *eg* shares are a financial asset. They are assets of the capital providers (*eg* shares are an asset of the investors who buy them) rather than the company raising the finance.

A company's financial managers are responsible for the major investment and financing decisions.

**The financial manager stands between:**

- **the firm's operations and**
- **the financial markets (where investors hold the financial assets issued by the firm to obtain money).**

The role of the financial manager as the link between the firm's operations and the financial markets is summarised by the following diagram.



## 1.2 Finance and the organisation's objectives

Most companies aim to increase the value of their shares by investing in profitable projects and raising the finance in a cost-effective way.



**Finance involves two basic issues:**

1. **What real assets should the firm invest in? (the *investment or capital budgeting decision*)**
2. **How should the cash for the investment be raised? (the *financing decision*).**

Firms use real assets to undertake projects – a firm can essentially be thought of simply as a collection of projects. These projects generate revenues and incur costs. The aim of the firm should be to undertake those projects for which the revenues exceed the costs in order to generate profits on behalf of the owners of the firm – typically the shareholders. The capital budgeting decision considers the choice of projects, and hence real assets, in which the firms should invest.

In practice, the capital budgeting decision is often complicated by the fact that:

- there may be more than one apparently profitable project between which to choose
- it is very difficult to estimate the future profitability of a project.

The typical project requires a significant expenditure prior to the receipt of the first revenues. A net investment will therefore be required to get the project off the ground. The financing decision considers how best to raise the required finance.

### 1.3 Responsibilities for financial decisions

The first question is normally the remit of a *controller* or, in many instances, the *Chief Financial Officer (CFO)*.

However, capital budgeting decisions will be tied into plans for product development, production and marketing and so will involve managers from these areas (as well as any staff specialising in corporate planning).

The second question is the responsibility of the *treasurer* who:

- looks after the company's cash
- raises new capital and
- maintains relationships with banks, shareholders and other investors.

Typically, the CFO will report directly to the Chief Executive Officer (CEO) whilst the treasurer will report to the CFO. In practice, the controller/CFO and the treasurer are sometimes the same individual.

**Responsibility for financial issues will, ultimately, rest (by law or custom) with the board of directors. In practice, boards usually delegate decisions for small or medium-sized matters.**

### 1.4 The importance of capital budgeting

The importance of capital budgeting is due to the complexity of the analysis involved and the cost of poor decisions.

It is difficult to project the prospective cashflows arising from a particular project with any great confidence. Further complications arise when allowing for different possible scenarios, incorporating options into the analysis and discounting the cashflows.

**Investment in working capital (liquidity) is largely routine and involves few complications or risks.**

Investment in fixed capital, however, often involves complex choices between:

- alternative capital assets
- dates of commencement
- methods of financing.

These choices are both complex and critical, given the scope for (and very high cost of) making the wrong decisions. Moreover, fixed capital outlays often have a serious bearing on the direction and pace of a firm's growth. As such, they determine the opportunities open to a firm and the directions in which it can move.

This is because fixed capital choices can involve the commitment of large sums of money for long periods of time.

### 1.5 Financial analysis

Progress in management depends on applying logic to experiences, to known or assumed facts in order to enhance understanding. Investment decisions are no exception.

**Even where it is impossible for financial analysis to improve the actual fortunes of a project, it may nevertheless be able to:**

- **identify the risks involved in the project**
- **highlight the salient factors**
- **possibly suggest methods by which these risks might be reduced.**

More generally, it may provide greater insight on which to base informed and sensible investment decisions.

**Financial analysis in capital budgeting involves bringing together estimates and ideas from a variety of disciplines – marketing, technology, accounting, tax, law – so as to reveal their financial implications.**

As its name suggests, *financial analysis* in this context simply means analysing the financial implications of different possible courses of action. An in-depth financial analysis of a project may require the input of experts from each of several different disciplines such as those listed above.

**Ultimately, the problems of capital budgeting in any enterprise are both financial and political. Leaving the investment appraisal of a project to be conducted by the very people who are most concerned to see the project accepted – the department primarily interested in the project – is to expect impossible objectivity.**

In other words, all decisions are ultimately made by human beings who are not always impartial and objective.

**The use of a specialist finance function is an attempt to enforce impartiality and realism.**

However, the possible downside of this is that the finance function may lack specialist knowledge of the particular project under consideration.



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### Question

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Explain the role of financial management in an organisation, including both why it is important and why it is difficult.

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### Solution

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Financial management involves making careful choices in the raising of finance (the financing decision) and in the investment of this finance in real assets (the capital budgeting decision). There are many factors to consider and it is important that the financial team gathers all the available information and examines the options objectively and realistically.

It is very important because a wrong decision could have very serious consequences for the business.

It is also very difficult because there are often many options to choose from and the outcomes from any of the options are subject to great uncertainty.

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## 2 Stakeholders

We assume that companies aim to increase the value of their shares. We assume this because most businesses are owned by shareholders, who are interested in maximising the value of their investments in shares. We explore this theory of companies aiming to maximise shareholder wealth further in Section 3.

The extent to which this is truly a company's aim in reality depends on:

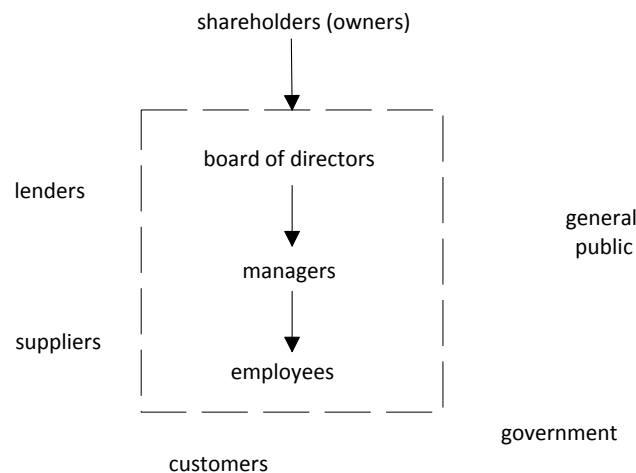
- the extent to which the shareholders control the business
- the extent to which other stakeholders are considered.

### 2.1 The stakeholders

There are many groups involved in running a company, *eg* shareholders, managers, employees, lenders, suppliers, customers, the government. We must consider their interests and their role.

#### Shareholders

Consider a typical company structure:



The shareholders own the company and elect the board of directors to run the company on their behalf. Sometimes the directors run the company themselves, but quite often they hire general managers, who are not shareholders but who are experts in their fields, to run the company.

**Ultimate responsibility for financial decisions within a company will usually lie with the directors. The directors are acting on behalf of the ultimate shareholders (who elected them). In practice, they will often delegate operational decision making to the executives, while retaining control of strategic issues.**

This is sometimes known as 'the divorce of ownership from control'.

**Such separation of ownership and management has advantages – freedom for ownership to change without affecting operational activities, freedom to hire professional managers – but also disadvantages if the interests of the owners and managers diverge.**



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**Question**

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List possible objectives of a company's shareholders.

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**Solution**

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The objectives of the shareholders might be:

- to obtain an income from their investment, *ie* to obtain a regular dividend
  - to make a capital gain, *ie* to sell the shares for more than they cost
  - to maximise the overall return on their investment.
- 

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**Other stakeholders**

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**Question**

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Give examples of possible objectives of:

- (i) managers
- (ii) employees
- (iii) banks and other lenders
- (iv) customers
- (v) government.



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**Solution**

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(i) Managers may aim for:

- job security
- good pay
- good benefits, *eg* perks such as company cars, long holidays
- prestige and power.

They may therefore wish the company to aim for:

- growth (salary and prestige are often related to the size of the firm)
- stability (and not to take unnecessary risks)
- a satisfactory level of profit (rather than a maximum level of profit).

(ii) Employees may wish the company to:

- pay at least a market rate of pay for the work
- stay in business
- provide safe working conditions
- provide training
- provide a variety of benefits such as pensions, holidays *etc.*

(iii) Banks and other lenders may wish the company to:

- remain in business
- to pay a market rate of return on the borrowed funds
- to meet the payment deadlines.

(iv) Customers may wish the company to:

- remain in business (for after-sales service *etc.*)
- provide goods at reasonable prices
- provide goods of good quality
- produce and market goods ethically.

(v) The government may wish the company to:

- perform well so that it pays more corporation tax
  - perform well so that it provides jobs to as many citizens as possible
  - act legally and morally, *eg* in line with consumer law and ethics.
-

## 2.2 Conflicting objectives

### Shareholders and managers

**The scope for conflict between owners and managers is evident – managers may be motivated by objectives which are at variance with the desires (and interests) of the shareholders.**

For example, the main objective of shareholders will normally be to receive a high return on their investment in the company. In contrast, some managers might instead wish to pursue projects of interest over more profitable projects; to take over other companies and so gain control of as large a business empire as possible; to have a more leisurely or luxurious working lifestyle; or to aim for a satisfactory return (and secure job prospects) rather than a maximum return (and a higher risk of the company running into trouble).

### Providers of finance

**Of particular interest is the potential for conflict between providers of finance, notably lenders (such as banks and bondholders) and the providers of equity capital (the shareholders).**

For example, a company's shareholders may be keener to see the company invest in a potentially high risk and high return project than are its lenders. This is because it is the shareholders who stand to benefit should the project prove successful, whereas the lenders have no particular interest in upside profits – they simply wish to ensure that they receive the promised interest and capital payments.

**Fundamentally, this can be characterised as the difference between the lenders' *short-term* desire for security and the shareholders' *long-term* interest in the development of the company.**

This may particularly be the case if the company is in financial difficulty. The shareholders may then be very keen to undertake a risky project as a last-ditch attempt to turn the company around, whereas lenders may not wish to see their capital placed in even more jeopardy. Thus, it is difficult for the management to simultaneously satisfy the preferences of both sets of investors.

**At times, however, the interests of different sub-groups of financiers may diverge.**



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### Question

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Give examples of other conflicts that may arise.

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## Solution

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Other examples of conflicts include:

- The shareholders and managers may wish to invest in labour-saving technology, but workers fear the loss of jobs and consumers fear a reduction in quality.
  - Shareholders, management and employees wish to expand production on a particular site, but the local community and local government may fear greater visual and air pollution and more congestion.
- 

## 2.3 Contractual theory

**Contractual theory views a firm as a network of contracts, actual and implicit, which specify the roles of the various participants in the organisation (workers, managers, owners, lenders, etc) and define their rights, obligations and pay-offs under various conditions.**

For example, workers will expect an employment contract; banks will expect a loan agreement setting out details of the rate of interest and repayments dates.

**Most participants bargain for limited risk and fixed pay-offs, whereas the firm's owners are liable for any residual risk (and thus hold a residual claim on any assets and earnings of the firm that remain after covering costs).**

**There are, however, potential conflicts. One such is between a firm's owners and its creditors. If managers substantially alter the riskiness of a firm's product-market investment activities, this will benefit shareholders greatly (if the investments are successful). However, risky investments that fail will reduce the security of debt holders and reduce debt values. If a firm does not give strong assurances to debt holders that investment policies will not be changed to their disadvantage, it must pay interest rates high enough to compensate debt holders against the possibility of such adverse policy changes. A main source of conflict and the costs it may entail is explained by the agency theory described in Section 3.2.**

In other words, the contracts drawn up must take into account, as far as possible, the various conditions that could face the firm and the reaction of the firm to those conditions. In this way, the stakeholders will be aware, as far as possible, of the risks they are taking.

### 3 Capital markets and the maximisation of shareholder wealth

The capital markets are the markets in long-term finance for companies, such as the shares (or stock) market and the bond market. These markets provide a great deal of important information. This information will be used firstly, to monitor the performance of the financial manager and secondly, to assist the financial manager when making decisions.

**For large, publicly quoted companies, the stock market serves as a performance monitor. While share prices may react to the general economy or industry-wide factors, the basic component of the share price is the market's perception of the particular firm's current and expected future performance.**

**If managers are not performing effectively, relative to the potential of the assets under their control, it will not be long before this is reflected in a lower share price. This may make the firm a bargain for a corporate acquirer and a take-over bid will be made.**

If the shareholders feel that the company is underperforming, they can elect a new board of directors, which, in turn, will probably appoint a new management team. Alternatively, shareholders might express their disapproval by selling their shares. If sufficient shareholders do this, then the share price falls. If the company is underperforming and the share price falls, the company is vulnerable to a take-over bid. The management team is likely to be replaced by one that will do what is necessary to maximise shareholder value.

**Business organisations are, therefore, directly and measurably subject to the disciplines of the financial markets. These markets are continuously determining the valuations of business firms' securities, thereby providing measures of the firms' performance. The presence of the capital markets' continuous assessment therefore stimulates efficiency and provides incentives to business managers to improve their performance.**

In this way the financial markets should serve to align the interests of managers and shareholders. The financial markets also provide useful information for the financial manager when making decisions on sources of finance and investment projects.

**Key effects of the capital markets on a firm's decisions include:**

- **Sound investment decisions require accurate measurement of the cost of capital.**
- **Limitations in the supply of capital focus attention on methods of raising finance.**
- **Mergers and take-overs create threats and opportunities to be exploited.**
- **'Externalities' require managers to determine the appropriate role of organisations.**

An 'externality' is a cost or benefit that is incurred by a party who did not choose to incur it, for example pollution.



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#### Question

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Explain how the capital market provides information to help the financial manager make decisions.

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## Solution

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The financial manager will be able to monitor the market's reaction to various policies (either of its own company or others). For example, if shareholders think a company's proposed investment is likely to increase shareholder wealth, the share price will tend to rise.

Managers can also monitor the policies and performance of other companies. For example, if a company is buying other companies involved in a particular industry, then other such companies will consider themselves possible targets. A company that has been performing less well than the sector average and/or has lots of cash will be more vulnerable to a take-over because the predator will feel that it could make better use of the company's resources.

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### 3.1 The theory of the maximisation of shareholder wealth

**In market-based financial systems, such as the UK and the US, there are large equity and bond markets, shareholders are owners of the company and the company's objective is to maximise shareholder wealth within external constraints. In these countries, company managers are accountable to the shareholders. Managers are duty-bound to act in shareholders' interests, to protect the investors and to enable the financial markets to operate efficiently.**

### 3.2 Practical problems with the maximisation of shareholder wealth

There are however limitations on how well the discipline of the capital markets on a company's managers works in practice. We have already described how different stakeholders are likely to have different objectives. Even different members of the same stakeholder group might have divergent objectives, *eg* one shareholder might prefer a company to pay a high dividend to provide them with income but another shareholder may prefer the company to focus instead on future growth.

#### Agency theory

One theory that tries to explain the complex relationships and conflicting objectives within an organisation is agency theory.



**Agency theory, which considers the relationship between a principal and an agent of that principal, includes issues such as the nature of the agency costs, conflicts of interest (and how to avoid them) and how agents may be motivated and incentivised.**

Consider the relationship between the shareholders and the management. The shareholders are the *principals* who employ the management as the *agents* to run the company on their behalf. Divergence of interests leads to the possibility of conflicts of interest.

**Such conflicts are referred to as *principal-agent* problems, and give rise to *agency costs*. These include the costs associated with monitoring the actions of others, and seeking to influence their actions.**

In practice, the agency costs incurred by the shareholders are usually defined as the sum of three different component costs, namely:

1. those incurred in monitoring the managers
2. those incurred in seeking to influence the actions of managers
3. those incurred because the managers do not act in the owners' best interests.




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### Question

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Suggest how might the interests of a company's management be aligned with those of the shareholders.

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### Solution

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The interests of a company's management can be aligned with those of the shareholders by linking the management's remuneration to the company's earnings or share price. One way of doing this is by giving the managers a stake in the equity of the company, *eg* via a share option scheme. Another way is for managers to receive bonuses based on the company's earnings or on the share price.

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**Conflicts of interest may equally arise between other stakeholders – junior management, other employees, customers, suppliers, pensioners, and the state.**

For example, the company's management may wish to motivate the employees to work hard so that the company's profits are high and the management receive large profit-related bonuses. Conversely, the employees may wish to have an easy time at work.

### The role of information

**Such problems may be easier to resolve if all parties share the same insights into the fortunes of the company. However, *information asymmetries* will often exist between the various classes of stakeholder.**

For example, the decision to increase a dividend payment is likely to lead to an increase in the share price if investors read this new information from managers and conclude that the management is confident of future earnings, whether or not this is in fact so.

Similarly, the employees of a company may demand large salary increases in response to the previous year's high profits. At the same time the financial manager may be reluctant to grant large increases because he knows that the firm is unlikely to sustain the current level of profits in the face of proposed tax and regulatory changes.

In some countries, *eg* Germany and Scandinavia, power-sharing structures exist that allow employees to have a role in the running of the business, *eg* worker directors. These measures make more information available and aim to create a better understanding between stakeholders.

However, keeping all stakeholders informed is difficult. Company decision-making often involves sensitive business information and the need to keep it from commercial rivals also restricts the ability to communicate it to stakeholders.

A possible advantage of private debt and venture capital equity is that the small number of investors involved will often be much better informed about the issuing company than is the case where large numbers of investors hold small volumes of publicly quoted securities.

## The role of agreements

**Written agreements between the various classes of stakeholder may specify key aspects of the relationship between them, but cannot realistically cover all possible future eventualities.**

**Such agreements therefore need to be supplemented by less formal understandings and arrangements.**

## Social responsibility

**Social responsibility must also be considered. Efficient, well-managed operations (relative to consumer demand patterns) lead to new products, new technologies and greater employment. But firms must take into account the effects of their policies and actions on society as a whole. The expectations of workers, consumers and various interest groups create other dimensions of the external environment that firms must respond to. 'Externalities' (such as pollution, product safety and job security) must be considered when formulating policy.**

Some of these expectations are embodied in law, *eg* health and safety at work, employment protection, consumer protection, environmental protection. Beyond these laws, there are unwritten, implicit rules of behaviour. Companies' reputations can be seriously damaged if they are found to be untrustworthy or thought to be unethical, and there can be serious consequences for the share price.



**Industry and government should co-operate in establishing rules for corporate behaviour, so that firms strive to maximise shareholder wealth *within external constraints*.**

## 4 The value of a company

There are many different approaches that may be taken to valuing an asset. For example, one method is to use the current market value (assuming the asset is one that is traded). Another method is to value an asset as the present value of the future cashflows that it provides.

**Generally the value of an asset is the present value of its expected returns. To convert the stream of returns over the life of a security to a value for the security, these must be discounted at the required rate of return for the security.**

The valuation requires:

- the stream of expected returns
- the required rate of return on the investment (the discount rate).

Imagine an asset that pays no income and the only return is a payment of \$100 in one year. An investor with a required rate of return of 0% would value this asset at \$100. However, suppose this investor knew that they could get a return of 2% by putting \$100 in cash in a bank account for one year. They might then require the imaginary asset to also give a rate of return of 2%, in which case they would value the asset as:

$$\frac{100}{(1.02)} = \$98.04$$

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### Question

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Explain whether the investor's required rate of return is likely to be 2%, *ie* the same as the return on a bank account.

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### Solution

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The investor's required rate of return on the asset will be 2% provided the investor considers the riskiness of the asset to be the same as the riskiness of the bank account.

If the investor believes the asset is more risky than the bank account, *ie* that there is a greater chance that the \$100 payment will not happen or may not be made in full, then the investor's required rate of return on the asset will be higher. A higher required rate of return will put a lower value on the asset.

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**To determine the (intrinsic) value of a company, a variety of discounted cashflow (DCF) (also known as present value cashflow (PVCF)) techniques can be used. These techniques use different cashflows and assume different growth rates for cashflows but all use a discount rate very close to the required rate of return; a rate of return that compensates the shareholder for investing in the risky stock.**

**For example, in the dividend discount model (DDM), the present value of future dividends determines share value and since dividends go directly to the shareholder, the cost of equity is used as the discount rate. In other models, stable cashflows to the firm, adjusted appropriately and discounted at the weighted average cost of capital, are used to determine the share value.**



## 4.1 The goal of the financial manager

**Most large organisations will have many thousands, if not millions, of individual shareholders.**

Here we have in mind publicly owned companies. Privately owned companies will typically have a much smaller number of shareholders, whilst a sole trader is the single owner of a business.

**The needs (and objectives) of these shareholders will vary according to factors such as:**

- **attitude towards risk**
- **time preference and consumption needs**

For example, whether investment returns are required now or some time in the future.

- **balance between the need for income and for capital growth**
- **tax position**

For example, allowances before paying tax, marginal rates of tax and how these differ for dividends and capital gains.

**How can managers and directors, acting as agents for the ultimate owners, satisfy the different desires of these owners? Indeed, how can they even know what these desires are?**

Whilst in theory they could ask the shareholders, in practice it would be very costly and time-consuming to do so.

**Luckily, there is a mechanism that enables this conundrum to be solved – the market. Provided that a free, competitive, capital market exists, shareholders can choose their investments to meet their needs for cashflow, risk and so on.**

Each individual shareholder could put a value on a company's shares that reflected their individual circumstances, for example using expected returns that reflected their tax position and a discount rate that reflected their required rate of return given their perception of the riskiness of the shares. If this value differs from the market share price, the individual shareholder can act accordingly. For example if their individual valuation is higher than the market share price they may choose to buy more shares, and vice-versa.

**If we assume that *all* shareholders seek to be as rich as possible (*ie* that they seek to maximise *current* worth) then the goal of the financial manager is simply stated: to increase the market value of each shareholder's stake in the firm.**

A company's financial manager doesn't need to worry about satisfying different needs of different individual shareholders. The financial manager(s) should aim simply to increase the price of the company's shares, by undertaking profitable and appropriately financed investment opportunities. Individual investors can then choose which companies' shares to include within their investment portfolios so as to best meet their own particular objectives.

## 4.2 The opportunity cost of capital

**This goal can be further refined to provide an operational tool for financial management. Any operational decision will be reflected in a pattern of future cashflows (positive and negative).**

Just as a firm can essentially be thought of as a collection of projects, so any project can likewise be thought of in terms of the set of cashflows that it generates. For example, if a company invests in new technology, it will incur negative cashflows from the purchase of the new equipment, the expense of training the staff and the cost of developing and implementing the new technology; and positive cashflows as new revenue is generated from the new investment. There will probably be a net cash outflow in the early years as the equipment is purchased and implemented and revenue is low; and a net cash inflow in later years as revenue is earned and running costs are reduced as a result of the new technology.

When analysing an investment project, the company must estimate all future cashflows. Since cashflows are taking place in the future, the company should take account of the time value of money and discount the future cashflows to the present value.




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### Question

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A project costs £1.5m, and is expected to bring in a net cashflow of £500,000 each year for the next 4 years. Assuming a discount rate of 10%, determine whether this project is worth doing.

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### Solution

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The company will consider the present value of all future cashflows. £100 now is worth more than £100 next year because the £100 now could be invested at 10% and be worth £110 next year. The £100 received next year is therefore worth £90.91 now.

Assuming earnings are received at the end of each year, the net present value of the project (in £000) is:

$$\begin{aligned}
 &= -1,500 + \frac{500}{(1.1)} + \frac{500}{(1.1)^2} + \frac{500}{(1.1)^3} + \frac{500}{(1.1)^4} \\
 &= +84.95
 \end{aligned}$$

Since the net present value is positive, this project is worth doing. The project will earn at least a 10% return.

---

**By discounting the cashflows at an appropriate rate of interest, we can establish the net present value of any opportunity. If we use the (opportunity) cost of capital as the rate at which future cashflows are discounted, then all opportunities that display a positive net present value will add to the current value of shareholders' wealth. Opportunities that display a negative present value are 'value destroying' and should be avoided.**



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## Question

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Explain why projects that display a positive net present value when calculated at the company's (opportunity) cost of capital should add to the current value of shareholders' wealth.

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## Solution

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We can think of any company as consisting of a portfolio of projects, each of which generates an associated stream of (positive and negative) cashflows. If a project yields a rate of return in excess of the cost of capital required to fund it, then the net present value of the associated cashflows must be positive. Undertaking the project will therefore increase the total net present value of the company. This increase in the value of the company should in turn be reflected in the market price of the company's shares and hence the wealth of the shareholders.

**Once again, the market enables us to identify the appropriate cost of capital to use in decision making – it is the rate of return offered by equivalent investment alternatives in the capital market – ie the rate foregone by investing in the project rather than investing in securities.**

This is because the shareholders could easily take their money and invest it elsewhere, eg in the securities issued by other companies.

**Thus, we need to assess opportunities from the point of view of the shareholders (and, hence, the alternative uses that they could put their capital to) rather than simply asking whether the return on a project is greater than the cost of borrowing the funds needed to finance it. The latter approach may enable us to increase the value of the company (in accounting terms) but will not *maximise* its value in the eyes of the shareholders.**

**Note also the stipulation that we need to consider the rate of return offered by *equivalent* investment alternatives. Specifically, we need to consider the risks associated with the project, as well as the returns, to ensure that we are comparing like with like.**

This suggests that in practice we should consider the risk and return characteristics of alternative investment opportunities in closely related industrial sectors.

**Measures such as Economic Value Added (EVA) have been developed to evaluate the ability of managers to add value to the firm. These measures focus on economic profit which is similar to NPV used in evaluating investment opportunities.**

**Broadly, EVA evaluates management performance by comparing net operating profit adjusted for taxes during the year to the firm's total cost of capital including the cost of equity. If the firm's net profit exceeds the firm's cost of capital, it has a positive EVA for the year and means the management of the firm has added value for its shareholders. If it is negative, the firm has not earned enough to cover its total cost of capital and the firm's value has declined.**

## 5 Regulating financial reporting

A substantial part of this subject (all of Part 2) is concerned with financial reporting. Financial reports, also known as 'the accounts', provide information on businesses such as how profitable they are, the values of their assets and liabilities, how much cash they have, what the management's plans are, *etc.*

**The aim of financial reports is to help all parties associated with an organisation make decisions. The reports provide information about the financial position and the performance of an entity.**

There would be no point in producing these financial reports if they were not useful to decision makers.

**Regulatory bodies set the standards for financial reporting so that companies' financial reports are reliable and useful.**

The regulatory framework is complex and a company typically has to comply with regulations from more than one source when producing its financial reports.

**The accounting framework is discussed in detail in [Chapter 9](#).**

Two important bodies in the accounting regulatory framework are:

- the International Accounting Standards Board (IASB)
- the Financial Reporting Council (FRC).

**The International Accounting Standards Board (IASB) sets International Financial Reporting Standards (IFRSs), a set of high quality global standards with an objective of harmonising standards for international accounting.**

**In the UK, the Financial Reporting Council's (FRC) objective is to ensure high standards of reporting and audit to promote investor confidence, enable the capital markets to operate efficiently and therefore to help drive economic growth. More detail on the work of the FRC follows in the next section.**

## 6 Corporate governance and organisation

The Financial Reporting Council (FRC) is responsible for setting the UK Corporate Governance and Stewardship Codes and UK standards for accounting, auditing and actuarial work.

The focus of this section is just the first of these responsibilities.

### 6.1 What is corporate governance



Corporate governance is the system by which companies are directed and controlled.

According to the FRC:

*'the purpose of corporate governance is to facilitate effective, entrepreneurial and prudent management that can deliver the long-term success of the company'.*

The first version of the UK Corporate Governance Code (the Code) produced in 1992 defines corporate governance:

*Corporate governance is the system by which companies are directed and controlled.*

*Boards of directors are responsible for the governance of their companies.*

*The shareholders' role in governance is to appoint the directors and the auditors and to satisfy themselves that an appropriate governance structure is in place.*

*The responsibilities of the board include setting the company's strategic aims, providing the leadership to put them into effect, supervising the management of the business and reporting to shareholders on their stewardship.*

*The board's actions are subject to laws, regulations and the shareholders in general meeting.*

### 6.2 The UK Corporate Governance Code

The Code applies to companies with a full listing on the UK Stock Exchange.

In order to carry out its responsibilities effectively, the board must follow the Code's guidance on the underlying principles of good practice:

- accountability
- transparency
- probity
- focus on the long-term success of the company.

Probity means ethical behaviour.

The Code consists of a set of main and supporting principles and provisions. The principles form the core of the Code. However it allows some flexibility so that companies can adopt their practices to suit their business circumstances.

The Code adopts a principles-based rather than rules-based approach. As a result, there is little detailed prescription of exactly how a board must conduct its business, with the focus instead on high-level outcomes.

**The requirement to ‘comply or explain’ allows the board to determine how it complies with the code in carrying out its duties. Where the board, in its aim to achieve good governance, is able to justify following an alternative to a provision, it must clearly and carefully explain to the shareholders the reasons for doing so.**

### 6.3 The main principles of the Code

The main principles of the UK Corporate Governance Code are set out under five headings:

- leadership
- effectiveness
- accountability
- remuneration
- relations with shareholders.

#### Leadership

The Code’s requirement is that ***‘every company should be governed by an effective board which is collectively responsible for the long-term success of the company’***.

Under this principle the Code separates the responsibility for the running of the board led by the chairman, from the operational responsibility of the executive directors.

In particular, one person should not be both chairman and chief executive of a company.

The supporting principles require the board to set the company’s strategic aims, its values and standards and assess and manage risk. The board needs to put in place the means to achieve these objectives.

#### Effectiveness

This principle requires the board and its committees to ***‘have the appropriate balance of skills, experience, independence and knowledge of the company to enable them to discharge their respective duties and responsibilities effectively’***.

The diversity of board members should be considered (to discourage ‘groupthink’) and succession planning for board roles and executive directors should be in place.

This principle further sets out the requirements for:

- the appointment and training of new directors
- timely provision of information to the board
- directors allocating sufficient time to carry out their duties
- evaluation of the board’s performance
- the procedure for re-election of the board members.

## Accountability

The board **'should present a fair, balanced and understandable assessment of the company's position and prospects'**. In meeting this requirement, the board needs to put in place appropriate formal and transparent arrangements to ensure corporate reporting, risk management and internal control principles are adhered to. The board is also required to assess the risk involved in achieving its aims and maintain sound risk management systems.

Much of the work associated with this principle will be performed by an audit committee established by the board.

## Remuneration

According to this principle: **'Executive directors' remuneration should be designed to promote the long-term success of the company. Performance-related elements should be transparent, stretching and rigorously applied.'**

Furthermore, the principle requires the board to put in place a formal and transparent procedure to determine an appropriate policy for the executive directors' remuneration. It also requires that individual directors must not be involved in deciding their own remuneration.

Much of the work associated with this principle will be performed by a remuneration committee established by the board.

The issue of executive pay is often contentious and changes to the requirements may be proposed by governments or the FRC, eg requiring companies to disclose the ratio between the chief executive (or other highest earner's) pay and the salary of an average employee.

## Relations with shareholders

Under this principle: **'There should be a dialogue with shareholders based on the mutual understanding of objectives.'** The board is responsible for ensuring a satisfactory dialogue with shareholders and must encourage shareholder participation in general meetings.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.



## Chapter 1 Summary

### Finance and real resources

Finance involves two basic decisions:

1. What real assets should the firm invest in? (The *capital budgeting decision*)
2. How should the cash for the investment be raised? (The *financing decision*)

Capital budgeting is important because the costs of mistakes are high. It is very difficult because there are often many options to assess and future cashflows are uncertain.

The main parties involved in financing decisions are the treasurer, the controller, the Chief Financial Officer and the board of directors.

### Stakeholders and conflicts of interest

There are many groups of stakeholders in an organisation, each with its own objectives. These objectives may conflict, *eg* shareholders and managers, shareholders and lenders.

### Capital markets and the maximisation of shareholder wealth

Capital markets are the markets in long-term capital, such as the share (or stock) market and the bond market. The capital market provides information to assess the performance of the financial managers and also to assist the financial managers when making financial decisions.

In practice, this separation of ownership and management can lead to *principal-agent problems* and *agency costs* if the interests of the owners and managers diverge.

*Agency theory* considers issues such as the nature of the agency costs, conflicts of interest (and how to avoid them) and how agents may be motivated and incentivised.

Conflicts of interest may be reinforced by *information asymmetries*.

### The value of a company

The value of a company can be determined by discounting cashflows at an appropriate discount rate, *ie* an investor's required rate of return. As the needs and objectives of individual shareholders vary, their valuations of a company will vary.

### Regulating financial reporting

Regulatory bodies such as the International Accounting Standards Board (IASB) and Financial Reporting Council (FRC) set standards for financial reporting so that companies' financial reports are reliable and useful.

## Corporate governance

Corporate governance is the system by which companies are directed and controlled.

The main principles of the UK Corporate Governance Code are set out under five headings:

- leadership
- effectiveness
- accountability
- remuneration
- relations with shareholders.



## Chapter 1 Practice Questions

Exam style

All of the questions that follow are exam style.

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- 1.1 Which of the following situations is least likely to give rise to agency costs?
- A a car manufacturing business, which employs managers to carry out day-to-day operations
  - B an oil refining business in which the government takes a great interest
  - C wage negotiations in which managers have more information than unions
  - D a retailing business, which has one owner-manager [2]
- 1.2 Which of the following is NOT one of the headings in the UK Corporate Governance Code?
- A leadership
  - B profitability
  - C accountability
  - D remuneration [2]
- 1.3 Describe the role of the financial manager. [5]
- 1.4 Explain how businesses are subject to the disciplines of the capital markets. [5]

The solutions start on the next page so that you can separate the questions and solutions.



## Chapter 1 Solutions

1.1 Answer = D

Agency costs arise when costs are incurred in the monitoring and influencing of others. When the owner is the manager there is no conflict of interest.

1.2 Answer = B

1.3 The financial manager is the link between the firm's operations and the financial markets. [1]

Therefore the financial manager must make two main decisions:

- What real assets should the firm invest in? (This is the *investment or capital budgeting* decision.) [1]
- How should the cash for the investment be raised? (This is the *financing* decision.) [1]

The investment decision is complex, important and risky. There are often alternative investment projects, each with uncertain returns over an uncertain lifespan. A wrong decision could have very serious consequences for the firm's fortunes. [1]

The financial manager must get together with many interested parties, such as project managers, production managers, marketing managers, tax experts and legal experts in order to understand the full implications of the investment decision. [1]

In order to make appropriate financing decisions, the financial manager should have a clear understanding of the options available and the way in which the capital markets work. [1]  
[Maximum 5]

1.4 Capital markets are continuously expressing their view of the current and expected future performance of a particular company through the valuations of a firm's shares and bonds. [1]

If managers are not using the assets of the business effectively, the market will soon know this and its poor perception of the company will be revealed in a lower share price. [1]

One consequence of a falling share price may be a takeover bid as the firm becomes a bargain for a corporate acquirer. [1]

Another consequence might be redundancy for the manager. [1]

So, by providing continuous assessment of the firm's performance, the capital markets stimulate efficiency and provide incentives to business managers to improve their performance. [1]

[Total 5]

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# 2

## Business ownership

### Syllabus objectives

- 2.1 Describe the structure of a company and the different methods by which it may be financed.
1. Outline the distinctive characteristics of sole traders, partnerships and limited companies as business entities.
  4. Discuss the economic advantages and disadvantages of a limited company as a business entity.
  5. Outline the main differences between a private and public company.

## 0 Introduction

In this chapter we look at how businesses are set up. The next few chapters then go on to look at the tax system in which businesses operate and how businesses are financed.

The structure of this chapter is as follows:

Section 1: Types of business entity

Section 2: Pros and cons of limited companies

**The information in this chapter reflects UK examples but similar principles apply in other countries.**

The examination could test, for example, *knowledge* of business structures, as well as the *ability to analyse for a particular business* the advantages and disadvantages of different business structures.



# 1 Types of business entity

We shall look at four types of business entity:

1. the sole trader
2. the partnership
3. the limited company
4. the limited liability partnership.

## 1.1 Sole trader



**A sole trader is a business which is owned by one person and which is not a limited company. Sole traders have unlimited legal liability for their business debts.**

### Description

Many sole traders are one person operations, such as a window cleaner or a freelance journalist, where the owner carries out all the work.

**However, the definition refers only to ownership of the business. There are sole traders who have employees working for them.**

The sole trader can decide what to do with the business (eg run it themselves, hire managers to run it, pass it on to a family member).

The sole trader can draw out money from the business as needed (assuming that there is some money!).

### Liability

The sole trader has unlimited liability. This means that if a customer sues the sole trader (for breach of contract for example), the total personal wealth of the sole trader, including the sole trader's house and bank deposits, would be available to pay off trading liabilities.

### Legal and accounting documentation

**No specific documentation is needed to legally establish this form of business entity.**

However, a sole trader will need to fill in a normal income tax return in respect of the business.

## 1.2 Partnership



**A partnership is a business which is owned by more than one person and is not a limited company.**

## Description

When two or more people go into business together, they may form a partnership. Many professional firms such as accountancy firms and actuarial consultancies are partnerships. Some partnerships are large, and may have hundreds of partners.

**The partnership may be owned in equal or unequal amounts by the partners. Usually all the partners will be involved in the running of the business, but some may just provide capital and take no part in the day to day operation of the business (such partners are sometimes called 'sleeping partners').**

Most partnerships will strictly control who might be allowed to buy an interest in the partnership.

Partners will draw money from the partnership from time to time. This can be more or (often) less than their share of profits. The internal accounts will show any surplus/deficit in each partner's 'capital account' resulting from under or over drawing, and from capital (finance) provided to the partnership.

## Liability

**The owners have unlimited liability. All the partners are jointly liable for any business debts. They will also be 'severally liable', that is, each partner is liable to the full extent of their personal estate for the deficiencies of the partnership.**

This means that each individual partner can be sued separately for the entire debts of the whole business. This explains why businesses which involve a measure of trust between the business and its clients, such as solicitors, are often set up as partnerships. It is a signal that the people running the business are willing to put their own personal wealth behind the firm's obligations.

## Legal and accounting documentation

**Most partnerships will have a 'partnership agreement' which sets out the rights of individual partners.**

The partnership agreement might specify, for example, who can make what decisions and how profits are shared between partners. Strictly however, no specific documentation is needed to form a partnership. The partnership will need to provide accounts so that the tax authorities can work out each partner's liability to tax on their share of the partnership's profits. Partners pay income tax.

### 1.3 Limited companies



**A limited company is a business which has a legal identity separate from the owners of the business.**

## Description

A limited company has its own distinct legal identity. It can own or deal in property in its own right. It can arrange contracts on its own behalf. It can also sue and be sued. A company can be fined by the court (but not imprisoned!). Almost all limited companies are set up by the issue of shares.

**The owners of the company are called shareholders. Most shares give the right to vote at company meetings. The shareholders will appoint *directors* who are responsible for the control of the company on behalf of the shareholders.**

The company is run by *managers* who carry out the directors' policies on a day to day basis. Managers are often elected as directors, in which case they are known as *executive* directors. Directors who are not involved on a daily basis are known as *non-executive* directors.

In most cases, shares in a company may be purchased and sold without the permission of the other shareholders. Shareholders will not generally be actively involved in the running of the company. These statements are more true of *public* limited companies than of *private* limited companies (we discuss these two types of company in a later section).

**Profit will be calculated each year and a dividend declared from this profit which will be paid to each shareholder in proportion to the number of shares that they own.**

It is common for dividends to be paid in two instalments: an interim payment made halfway through the year and a final payment at the end of the year once the accounts have been finalised. The total amount of dividends is often less than the profits for the year, the balance being *retained* in the company on behalf of the shareholders. However, the amount of dividends can be the same or even greater than the year's profits if there are sufficient retained profits from previous years.

## Liability

**The owners' liability is limited to the fully paid value of their shares. If shares have been issued 'partly-paid' then, in the event of a liquidation, shareholders will only be liable to pay the outstanding instalments. If the shares are 'fully paid', the shareholders have no further liability. If shares have been issued at a premium to their par value, the whole of this 'share premium' is payable at the outset, even if the shares are issued on a 'partly-paid' basis.**

If the company becomes insolvent, creditors cannot claim further payment from the shareholders' personal wealth beyond the fully paid value of their shares.

## Legal and accounting documentation

**Limited companies must have a Memorandum of Association and Articles of Association. A company's Memorandum of Association is a short document recording the intention of the people concerned to form a company. The Articles of Association set out in detail the internal rules for running the company. It is no longer necessary for either document to set out the purpose of the company, so (unless it chooses otherwise) there are no restrictions on the company's activities.**

In the past a Memorandum of Association needed to include more detail such as the name and registered office of the company, the company's purpose and objectives and its total share capital.

The Articles of Association cover internal arrangements such as voting rights of different classes of shares, rules for electing directors, payment of dividends and winding-up provisions.

Once the required documents have been submitted to Companies House, a certificate of incorporation will be issued.

**All companies above a certain size (in terms of turnover, assets or number of employees) must produce audited accounts each year.**

Companies pay corporation tax on the profit earned. Employees pay income tax on wages and salaries earned.

## 1.4 Limited liability partnerships

**A new corporate identity, the Limited Liability Partnership (LLP), was introduced in the UK in 2001.**



**This is a business vehicle that gives the benefits of limited liability whilst retaining other characteristics of a traditional business partnership.**

### Description

**Any firm consisting of two or more *members* (note: not *partners*) engaged in a profit-making venture, may become a LLP. Unlike limited companies, there are no directors (or company secretary) and, of course, no shareholders.**

**The LLP, as with a limited company, is a separate legal entity.**

As a separate legal entity, the LLP is able to enter into contracts, hold property and to continue in existence regardless of changes in membership. Any third party dealing with a LLP makes a contract with the LLP rather than with a member.

### Liability

**Whilst the LLP itself is responsible for its assets and liabilities, the liability of its members is limited. (As with companies, however, actions may be taken against individual members who are found to be negligent or fraudulent in their dealings.)**

### Legal and accounting documentation

**Unlike a limited company, a LLP has no Memorandum or Articles of Association. In general terms, a LLP is governed by the partnership agreement that may already be in force within an existing partnership.**

In the absence of any agreement, the mutual rights and duties will be governed by the default provision contained in the regulations.

Like a company, a LLP has to be registered at Companies House. An incorporation document must be submitted and signed by at least two persons, who will become the first members of the LLP.

The accounting and audit requirements for LLPs are similar to those for companies.

**A LLP is taxed in the same way that conventional partnerships are taxed.**

**It was expected that LLPs would prove most attractive to professional firms (such as accountants and solicitors).**

The UK saw a steady flow of partnerships incorporating as LLPs as the LLP model became more widely understood.



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## Question

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Compare the different types of liability which are characteristic of the following forms of business entity:

- sole trader
- partnership
- limited company
- limited liability partnership.

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## Solution

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A *sole trader* has unlimited liability. The whole of the owner's personal wealth is at risk if the business runs into debt and is sued.

In a *partnership* there is unlimited liability. Partners are jointly and severally liable for the debts of the business. Their entire personal wealth is at stake if the partnership is sued successfully.

A *limited company* is owned by shareholders. Shareholders' liability is limited to the fully-paid value of the shares they own. Creditors cannot claim payment from the shareholders' personal wealth.

In a *limited liability partnership*, each member's liability is limited to the amount that they put into the business.

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## Question

Set out the features of a partnership, a limited liability partnership and a limited company in the following table:

	<i>Partnership</i>	<i>LLP</i>	<i>Limited company</i>
<i>Source of finance</i>			
<i>Legal identity</i>			
<i>Liability</i>			
<i>Documentation</i>			
<i>Disclosure</i>			
<i>Tax</i>			

## Solution

	<i>Partnership</i>	<i>LLP</i>	<i>Limited company</i>
<i>Source of finance</i>	Partners	Members	Shareholders
<i>Legal identity</i>	Not separate	Separate	Separate
<i>Liability</i>	Unlimited	Limited	Limited
<i>Documentation</i>	Strictly none is required, but must have a partnership agreement	Partnership agreement; must be registered at Companies House and granted a certificate of incorporation.	Memorandum and Articles of Association; must be registered at Companies House and granted a certificate of incorporation.
<i>Disclosure</i>	None, though the accounts will be needed by tax authorities to calculate each partner's tax liability.	Rules on disclosure; must produce audited accounts if above a certain size. Tax authorities need accounts to calculate tax liability.	Rules on disclosure; all companies above a certain size must produce audited accounts.
<i>Tax</i>	Partners pay income tax on their share of profits.	Members pay income tax on their share of profits.	Companies pay corporation tax.

### 1.5 Private and public limited company

Limited companies come in two forms, public limited companies and private limited companies. The two forms of company are very similar. The difference is largely how they register themselves. It is quite easy for almost any private limited company to re-register as a public limited company.

#### Public limited company

Public limited companies offer shares to the general public and shareholders have limited liability.



**A public limited company is a company whose documentation states that it is a public company and which has an issued share capital of at least £50,000. The name of a public limited company must end with the words 'public limited company' or the abbreviation *PLC* or *plc*.**

A public limited company must be 'correctly registered' with the Registrar of Companies at Companies House. All public companies must produce audited accounts.

Each issued share must be paid up to at least a quarter of its par value plus the whole of any premium on it.

The definition does *not* have anything to do with whether the company is owned by the public sector (*ie* government) or private sector – although most public companies are private sector companies.

## Private limited company



**All other limited companies are classed as private limited companies. A private limited company's name must end with the word 'limited' (or the abbreviation LTD or ltd). A private limited company is not allowed to offer its shares to the public.**

## Listed companies

**It is a requirement of the Stock Exchange that a company that wants to have a full Stock Exchange listing must be a public limited company.**

It is possible to have an unlisted public company, but in practice most companies will 'go public' and obtain a listing on the Stock Exchange, allowing widespread dealing in the company's shares, at the same time. (We will look at how companies obtain a Stock Exchange listing later in the course.)

Consequently, most public companies are large companies whose shares are held by many different shareholders who take no part in the companies' day to day operations. Private companies are more typically small companies with a narrow range of shareholders, often being 'family run' businesses.

## Less common types of company

The following types of company also exist in the UK:

- Companies limited by guarantee. Each member's liability is limited to the amount they have guaranteed, *eg* £100. These are often used to form clubs and associations.
- Companies established by Royal Charter.
- Close company. A company under the control of five or fewer people. Both private and public limited companies could be close.



## 2 Pros and cons of limited companies

### 2.1 Advantages of limited companies

**Limited liability makes it easier to raise capital.**



#### Question

Explain why it is easier for a limited liability company to raise capital than it is for a large partnership.

#### Solution

People may be reluctant to become involved as a part owner of a partnership since they risk their entire personal wealth. With limited liability people should be much more willing to provide capital.

PLCs have to comply with certain rules regarding the standards of accounts, which may give investors more confidence in the company.

Where shares are quoted on an exchange, their value is easily determined. If the company has to raise finance by selling shares, the price can be quickly negotiated. A partnership may have difficulties determining the 'value' of a part ownership.

**This is particularly important in the cases of:**

- **Business ventures involving a risk of incurring substantial debts.**

Insurance companies would be a good example of a company that might not exist without limited liability.

- **Businesses which require large amounts of capital.**

Most industrial businesses need vast amounts of capital. This means that large numbers of people need to provide money. Without limited liability, companies would find it very difficult to raise capital. Few investors would provide capital to a partnership in which they had no day-to-day control.

**Limited liability allows large numbers of people to invest small amounts of money with relatively minimal checking of the company's prospects. In turn, this allows investors to diversify their exposure to sectors and to the risk of failure.**

The company is owned by a number of shareholders, perhaps very many. In small companies, each shareholder might also be an executive director and thus have some control of the company. This is sometimes called a 'tight' shareholding. However, in the case of public limited companies and quite often in private limited companies too, most of the shareholders take little or no role in the management of the company. This is known as the separation of ownership and control (or the divorce of ownership from control).

This has some advantages for the company:

- **Separation of ownership and management allows share ownership to change without interfering with the operation of the business.**
- **It also allows the firm to hire professional managers.**

## 2.2 Disadvantages of limited companies

### To the creditors

**Once the company's assets have been exhausted, the trade creditors have no way of ensuring payment.**

Similarly, customers have no way of ensuring that they receive goods and services for which they have pre-paid. There have been many stories of companies running into problems because some customer companies have been liquidated leaving unpaid bills. Newspapers are particularly keen on stories of travel companies being liquidated leaving customers stranded overseas or with no holiday at all.

### To the company

**Limited liability allows people to invest in shares without taking an active interest in the long-term needs of the company.**

Stock markets are often accused of 'short-termism' – the desire for good short-term share price performance with little interest in the long-term health of the company.

### To the shareholders

**The managers of a company may have aims which are not in the best interests of the shareholders (this is known as the 'agency problem').**

An 'inefficient' corporate attitude may develop since ownership of the business is divorced from day to day control. For example, companies may see survivorship, good employment terms for their staff and expansion as goals in themselves. Managers incentivised by sales targets may pursue sales growth without worrying too much about profit maximisation for shareholders.

**There is also the problem of 'information asymmetries' where different stakeholders (managers, shareholders and lenders) all have different information about the value of a real or financial asset. This reinforces the need for proper accounting standards to be observed.**

The managers control the information available to interested parties and thus might, in the absence of strict standards, be able to present the information in a particular light. For example, a fall in profit might be hidden in order to avert an adverse reaction by the shareholders and the creditors.

## 2.3 Conclusion

There was an increase in numbers of large, efficient industrial enterprises when the concept of limited liability was introduced. Limited liability is usually necessary for a company to grow beyond the size that one family or a small traditional partnership can control. Most of the benefits of economies of scale resulting from modern capital-intensive production line techniques can thus be attributed to the concept of limited liability.



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### Question

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Set out the main factors you would consider when deciding whether to set up as a partnership or a company if you were starting up a new business with a friend.

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### Solution

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The main factors to consider when deciding on the type of business organisation are:

- *the need for finance and the amount of finance you are able to contribute* – the more you need and the less you have, the more likely it is that you will need to set up a company
- *the ease of raising finance in the future* – the greater your plans to expand, the more likely to set up a company
- *liability for debts* – the greater the possibility of running into debt, the more likely you are to consider setting up a company
- *ease of setting up* – the quicker and cheaper you want the set up to be, the more likely you are to set up a partnership
- *disclosure* – the more reluctant you are to disclose information about the business, the more likely you are to set up a partnership
- *control of the business* – the greater the amount of control you want to retain, the more likely you are to set up a partnership. However, you could set up a private limited company with just a few (two) shareholders if you wish to retain tight control
- *roles and responsibilities* – the firmer you wish the roles and responsibilities to be defined, the more likely you are to set up a company. However, you could have a firm partnership agreement. This is linked to the trust you have in your friend
- *the type of business* – the greater the need to display commitment in order to gain trust, eg accountants, solicitors, the greater the tendency to set up as a partnership.

*A Limited Liability Partnership might be a good compromise!*

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The examiners could ask a general question about the relative merits of different forms of business entities (as above) or they could give a specific situation and ask which form of business is most appropriate for that situation, which will require you to tailor your answer to the particular business.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.

## Chapter 2 Summary

### Types of business entity

There are four main types of business entity: the sole trader, the partnership, the limited company, and the limited liability partnership.

A *sole trader* is a business which is owned by one person and which is not a limited company. Sole traders have unlimited liability for their business debts.

A *partnership* is a business which is owned by more than one person and is not a limited company. All the partners are jointly and severally liable for any business debts.

A *limited company* is a business which has a legal identity separate from the owners of the business. A company is owned by its shareholders. Their liability is limited to the fully paid value of their shares.

A *public limited company* sells share to the general public and has an issued share capital of at least £50,000. Public companies can apply for a listing on the Stock Exchange.

A *private limited company* is a company that is not a public limited company. Private companies' shares cannot be listed on the Stock Exchange.

A *limited liability partnership* (LLP) is owned by its members but has a separate legal identity. The members benefit from limited liability. The members are free to agree amongst themselves the relationship between them.

### Pros and cons of limited companies

Limited liability makes it easier for a company to raise capital. This is particularly important for business ventures where there is a risk of incurring substantial debts, or businesses which need to raise large amounts of finance from many people.

The main disadvantage of limited companies is that creditors may not get their money back if the company is wound up. Also, ownership is often divorced from control.

The practice questions start on the next page so that you can keep the chapter summaries together for revision purposes.



## Chapter 2 Practice Questions

Exam style

All of the questions that follow are exam style.

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- 2.1 A limited liability partnership differs from a limited company in that:
- A it is not a separate legal entity.
  - B there must be one member with unlimited liability.
  - C it has no Memorandum or Articles of Association.
  - D action cannot be taken against individual members for fraud and negligence. [2]
- 2.2 Which of the following is NOT true of a public company?
- A The company name must end in 'public limited company' or PLC or plc.
  - B The ordinary shares must be quoted on the Stock Exchange.
  - C Ordinary shareholders have one vote per share held.
  - D The issued share capital must not be less than £50,000. [2]
- 2.3 Investors in the ordinary shares of a company have their liability limited to:
- A the market price of the shares.
  - B the fully paid value of the shares.
  - C the nominal value of their holding.
  - D the capital value of their holding, less any dividends due. [2]
- 2.4 Explain the differences between a sole trader and a company. [5]
- 2.5 Compare a partnership and a limited liability partnership. [5]

The solutions start on the next page so that you can separate the questions and solutions.





## Chapter 2 Solutions

### 2.1 Answer = C

A limited liability partnership is similar to a limited company in that it is a separate legal entity, all its members benefit from limited liability and action can be taken against individual members for fraud and negligence. However, it does not have to produce a Memorandum or Articles of Association.

### 2.2 Answer = B

Being a public company is a requirement for obtaining a quotation, but having a quotation is not a requirement for being a public company.

### 2.3 Answer = B

Shareholders' liability is limited to the fully paid-up value of their shares.

### 2.4 *Ownership*

A sole trader is an organisation owned by one person. A company is owned by its shareholders. [1]

#### *Liability*

A sole trader has unlimited liability. Shareholders of a company have limited liability. [1]

#### *Legal identity*

A sole trader does not have a legal identity distinct from its owners. A company is a legal entity distinct from its owners. [1]

#### *Documentation*

A sole trader needs no documentation. A company must have a Memorandum of Association and Articles of Association and be registered at Companies House. [1]

#### *Disclosure and tax*

A sole trader prepares accounts for the tax authorities and pays income tax. A company (above a certain size) must publish its accounts. It pays corporation tax. [1]

[Total 5]

### 2.5 *Ownership*

A partnership is owned by two or more people. An LLP is owned by its members. [1]

#### *Liability*

Partners have unlimited liability. Individual partners are jointly and severally liable for the debts of the partnership. Members of an LLP have limited liability. [1]

*Legal identity*

A partnership does not have a legal identity distinct from its owners. An LLP is a legal entity distinct from its owners. [1]

*Documentation*

A partnership needs no documentation, though a Partnership Agreement is advisable. An LLP has a Partnership Agreement or else is governed by the default provisions in the regulations. The LLP must be registered at Companies House. [1]

*Disclosure and tax*

A partnership prepares accounts for the tax authorities and the partners pay income tax. An LLP (above a certain size) must publish its accounts. Partners pay income tax. [1]  
[Total 5]

# 3

## Taxation

### Syllabus objectives

- 2.2 Describe the basic principles of personal and corporate taxation.
1. Describe the basic principles of personal taxation of income and capital gains.
  2. Describe the basic principles of company taxation.
  3. Explain the different systems of company taxation from the points of view of an individual shareholder and the company.
  4. Outline the basic principles of double taxation relief.

## 0 Introduction

Chapter 3 looks at the various ways in which individuals and companies are taxed. We discuss:

1. personal taxation
2. capital gains tax
3. company taxation
4. other taxes
5. double taxation relief.

The discussion of taxation in this chapter will help your understanding of a number of other areas that you will study later, for example:

- the characteristics of investments and investors
- the analysis of the structure of company capital.

The examination could test, for example, *knowledge* of the features of personal and corporate taxation systems, and the *ability to analyse the tax implications* of particular choices made by the designers of tax regimes, by investors and by companies. At this stage, concentrate mainly on understanding the basic principles. The tax implications of investors' and companies' choices are discussed more later in the course.

Note that the UK tax rates and allowances mentioned in the notes below are for the tax year in which the Core Reading was written, and so are subject to change. It is entirely possible that the UK government will make alterations to the tax system after the date of the Core Reading, but you are not expected to know the details of any such developments.

# 1 Personal taxation

Personal taxation is typically levied on all of the financial resources of an individual such as:

- **income (whether earned – wages and salaries – or unearned – investment income and rent)**
- **profit from operating as a sole trader or partner**
- **inherited wealth**
- **investment gains**
- **value of assets held.**

Income tax is often one of the main sources of tax revenue for governments. Employed and self-employed people (sole traders and partners) pay income tax.

**In addition, most countries also levy social security contributions on earnings.**

In the UK, national insurance contributions count towards certain social security benefits such as incapacity benefit and retirement pensions.

Governments may also introduce:

- **taxes on capital gains, ie a tax on the gain made from selling an asset for more than it was originally purchased for. We shall look at capital gains tax in Section 2.**
- **wealth taxes, ie a tax on the amount of wealth, such as property, owned. In the UK, the Council Tax is a tax based on the value of property. It is used to raise money for local government.**
- **inheritance taxes, ie a tax on the amount transferred on death. There is usually a generous allowance so that most of the population are not caught by this tax. Wealthy individuals often place their assets in trust in order to avoid such taxes.**

## 1.1 Considerations

The state has to decide what to tax and how much to tax. It also has to consider the practical issues of collecting the tax.

### Taxing cashflows

**In many countries taxation is limited to *cashflows*, since these are indicative of cash being available to finance the tax payable. Where tax is determined on the value of assets, there is the possibility that these assets may have to be realised in order to generate the funds needed to pay the taxes.**

In other words it is easier to tax income than wealth because income is an accessible cashflow. Wealth is often tied up in large indivisible units such as a large property and it may be necessary to sell a large inherited property in order to pay the inheritance tax on it.

## Taxing in arrears

In addition to ability to pay, governments will also seek to ensure that citizens have sufficient retained income and wealth to meet their essential needs. It is common, therefore, to assess tax liabilities *in arrears* taking into account all relevant sources of wealth and/or income, and to exempt some basic levels of income or wealth from the calculations.

However, there may be some arrangement whereby tax is levied at source on income throughout the tax period in order to accelerate tax flows to the government.

In the UK, for example, most employed people pay tax weekly or monthly directly from their salary or wages. This is called a pay as you earn (PAYE) scheme.

In this case, the final assessment for the period will establish the final payment (or credit) needed to generate the correct overall tax payments.

Individuals might receive a tax rebate at the end of the year if they have paid too much in tax or be asked to pay more tax if they have paid too little. The self-employed in the UK pay income tax twice a year, in January and July. An estimate is made of the current year's earnings and, when the actual earnings are known, an amendment is made.

## Taxing once

In general, governments will seek to ensure that revenue flows are taxed only once in the hands of the recipients. However, if taxes are also levied on wealth or the value of specific assets, the revenue may be taxed twice (since the assets may well have been purchased using after-tax funds).

## 1.2 Calculating taxable income

The government may make adjustments to total income to arrive at taxable income, *ie* that part of income subject to tax. The government might exempt some sorts of income and expenditure from tax, so there might be some *tax-free income* and *tax-free expenditure*.

On the other hand they might treat some sorts of benefits as *income in kind* and therefore as taxable income.

If any income has been received from investments and savings this must be added on to total income, even if tax has been *deducted at source*, in order to assess the correct amount of tax to pay. The tax already paid will be taken into account too.

Finally, there is usually an *allowance*, *ie* an amount that a person is allowed to earn before paying any tax. This is deducted from total adjusted income to arrive at taxable income.

## Tax-free income

**Certain items of income are tax-free. For example, in the UK the following are tax-free:**

- **most profits from gambling**
- **most forms of social security benefit**
- **income from certain types of investment, such as an Individual Savings Account (ISA).**

In the UK most forms of means-tested benefits, such as income support, are tax-free and most benefits that are not means-tested, such as pensions, are taxable. Means-tested benefits are those which require a person's income (or means) to be assessed.

As well as investment sheltered in an ISA, from 2016 in the UK, the first portion of bank or building society account interest and dividend income are tax-free. The amounts of these tax-free portions depend on whether a person is a basic- or higher-rate tax payer.

## Tax-free expenditure

**Tax relief may also be available on certain forms of expenditure such as contributions to an approved pension scheme and charitable gifts.**

In general, tax relief works to reduce a person's taxable income.

## Income in kind

**Where an employee receives additional 'fringe' benefits as well as a wage or salary, the value of the benefits is usually included in the definition of taxable income.**

For example:

- company cars available for private use
- medical insurance premiums
- free housing
- subsidised mortgages (*ie* a reduced rate of interest payable on mortgage finance).

## Investment income deducted at source

**Investment income can have income tax deducted at source. For tax purposes, the grossed up equivalent is included as taxable income and the tax deducted at source can be offset against the person's tax liability.**

**Deducting income tax at source will tend not to occur if the investment income is subject to tax-free allowances, as has applied in the UK from April 2016.**

For example, interest from a building society account may be received net of tax, the building society having already paid tax to the tax authorities. In this case, when assessing a person's tax liability, the tax authorities need to add the gross amount of interest received to the total income received from all other sources but will then offset any tax paid by the building society against the person's tax liability.

## Allowances

Consideration must be given to:

- The underlying 'tax-free' level of income or capital which may need to reflect personal or family circumstances. This usually takes the form of a personal allowance which is deducted from income before determining the liability to tax.
- Other additional allowances, for example age-related allowances for older taxpayers.

For example, in the UK, for the tax year 2018-19 the personal allowance is £11,850.

### 1.3 Tax rates

Consideration must be given to whether marginal tax rates should increase, remain constant or decrease as the individual's taxable base varies.

The marginal tax rate is the percentage of an additional unit of income that is taken in tax.

In the UK, for the tax year 2018-19 the marginal tax rates are 20% (the basic rate), 40% (the higher rate) and 45% (the additional rate). The tax rates are applied to bands of taxable income. As income increases and is taken into a higher band, the higher marginal rate applies to the additional income earned.



#### Question

Set out how taxable income is determined.

#### Solution

Taxable income is determined as follows:

	income earned
<i>plus</i>	income in kind
<i>plus</i>	gross investment income
<i>less</i>	tax-free income
<i>less</i>	tax-free expenditure
<i>less</i>	allowance.



#### Question

Assume that the personal allowance is £10,000, and that the marginal tax rates are 20% for the first £30,000, and 40% for taxable income above this. Calculate how much tax a single person earning £50,000 will pay assuming there are no adjustments to total income. State the proportion of total income that is paid in tax.



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**Solution**

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There is a personal allowance of £10,000, so the person is only taxed on £40,000 of income.

Tax rates	Tax bands		Tax due
Taxed @ 20%	£30,000	⇒	£6,000
Taxed @ 40%	£10,000	⇒	£4,000
Total			£10,000

Total tax paid is 20% of total income. This is known as the *average rate of tax*.

---

## 2 Capital gains tax

Individuals are typically subject to capital gains tax on chargeable gains.

Chargeable gains normally fall into the tax year of assessment during which the gain is realised so that, again, the funds to pay the tax should be available.

### 2.1 Calculating chargeable gains

Capital gains on most assets are chargeable. However, there may be exceptions.

#### Exceptions

For example, in the UK the following assets are free from capital gains tax:

- private motor cars
- a main private residence
- foreign currency obtained for personal use
- British Government securities and other qualifying fixed-interest stocks
- small tangible moveable assets (or chattels) worth less than £6,000 (*eg* furniture, jewellery, paintings, antiques *etc*).

Transactions between spouses (or civil partners) do not normally attract capital gains tax.

#### Basic definition

A chargeable gain is typically defined as:

$$\text{sale price} - \text{purchase cost}$$

The sale price can be reduced to reflect any costs associated with the sale. The purchase cost can be increased by any costs associated with the purchase, and any expenditure made to enhance the value of the asset during the period the asset was held. In normal circumstances, the purchase cost would be the original cost of the asset.

#### Indexation allowance

Some countries have allowances to remove the inflationary element of any gain, or to encourage individuals to retain assets.

In the UK, no allowances are made for the effect of inflation on the value of assets. Without such an allowance, the formula above results in increases in *nominal* asset values due to inflation being taxable.

#### Capital losses

The above chargeable gain calculations may result in a negative number. Such an amount is known as a 'capital loss'.

Capital losses can normally be offset against capital gains.

Capital losses cannot, however, be offset against any other form of taxation.

Any 'unused' capital loss may be carried forward to be offset against capital gains in any future year(s).

## Allowances

**In most countries, individuals are given an allowance each year and only pay capital gains tax on chargeable gains in excess of this amount.**

## 2.2 The rates of tax

**For individuals, the amount chargeable to capital gains tax could be added on to the income liable to income tax and charged to CGT at the individual's marginal tax rate.**

**In the UK, a rate of 10% or 20% (from April 2016) has applied to capital gains above the allowance, depending on the level of taxable income. Higher rates can apply to some gains, such as in the UK, for property which is not the individual's main home.**

The taxable gain is effectively treated as additional income; gains that fall in the basic-rate tax band are taxed at 10% and any gains in excess of this are taxed at 20% (except for second homes where rates are 18% and 28%).



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### Question

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Assume that the capital gains allowance is £11,700 and the capital gains tax rate is 10% on any gains that fall within the basic rate tax band and 20% on any further gains.

- (i) After income tax, Mr X has £1,000 of the basic-rate tax band left unused. He makes a single chargeable gain of £5,000. State how much capital gains tax he would pay.
- (ii) Mrs Y has £1,000 of the basic-rate tax band left unused. She makes a single chargeable gain of £15,000. Calculate how much capital gains tax she would pay.

---

## Solution

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- (i) Nothing, because he would only pay CGT on chargeable gains in excess of £11,700.
- (ii) Mrs Y's chargeable gain is in excess of the annual allowance of £11,700. She will therefore pay capital gains tax on £15,000 – £11,700 = £3,300.

She has £1,000 of the basic rate allowance left so:

<i>Tax rates</i>	<i>Amount of gain</i>		<i>Tax due</i>
Taxed @ 10%	£1,000	⇒	£100
Taxed @ 20%	£2,300	⇒	£460
<i>Total</i>			£560

She will pay capital gains tax of £560.




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## Question

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State with reasons which of the following items would be subject to capital gains tax for Mr X, a UK resident and taxpayer.

- The sale of Mr X's house.
- The sale of a house that Mr X bought for his aunt to live in.
- The sale of Mr X's car, a historic (pre-1976) Rolls Royce.
- The sale of Mr X's collection of antique silver snuff boxes (collectively valued at £18,000).

---

## Solution

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- No CGT, assuming it is Mr X's principal UK residence.
  - Liable to CGT, because the house was not Mr X's main residence.
  - No CGT, because CGT does not apply to private motor cars.
  - Liable to CGT, as no exemption for snuff boxes! (This collection is valued at more than the £6,000 chattels allowance).
-

## 3 Company taxation

Companies are liable to corporate income tax (corporation tax) on their taxable profits.

### 3.1 Calculating taxable profit

Taxable profits usually include both income (less allowable expenses) and capital gains.

#### Accounting profit

The starting point for a company's tax assessment is 'profit on ordinary activities before taxation'.

We will look at the *statement of profit or loss* or *income statement* later in the course. The figure in the accounts is called the *accounting profit*. Very briefly, this is calculated as follows:

	Sales revenue
less	<u>Expenses</u>
	Operating profit
plus	<u>Non-trading income</u> (interest, dividends, capital gains)
	Profit before tax and interest
less	<u>Interest paid</u>
	Profit before tax

After tax has been deducted, the company then distributes some of the after-tax profits to the shareholders in the form of a dividend and retains the rest in the business as retained profit.

#### Taxable profit

This accounting profit figure then needs to be adjusted. The main adjustments are:

- **Add back any business expenses or potential expenditure shown in the accounts which are not allowable for tax**  
For example entertainment of customers, fines for illegal acts.
- **Add back any charge for depreciation, and instead subtract the 'capital allowances'.**  
Depreciation is an allowance for the using up of capital equipment during the year. It is treated as a cost in the statement of profit or loss. Companies can choose a number of ways of calculating this depreciation allowance but the tax authorities have to treat all companies consistently and so they use their own capital allowances.
- **deduct any special reliefs, eg research and development costs may be able to be deducted immediately.**

## 3.2 The rates of tax

Corporation tax rates around the world vary considerably. For simplicity, the Core Reading and ActEd notes may use a corporation tax rate of, say, 30% as a proxy for the true rate of a company's corporation tax.

## 3.3 Uses of the corporation tax system

**Since dividends are paid from profit after tax, some countries give relief to shareholders to ensure that dividends are not subject to both personal and corporate income tax.**

Dividend income is known as *franked income*, ie income that has been taxed. Most governments give at least some credit to the shareholder for the tax that has already been paid. In this way the shareholders are *imputed* or ascribed at least part of the tax, ie they are deemed to have paid at least part of the tax due.

**Such an 'imputed' tax system ensures that there is no disadvantage experienced by the shareholder when a company distributes profits.**

Without such a system, the company would pay corporation tax on its profits and the shareholder would, in addition, pay income tax on the dividends. Effectively, tax will be paid twice. This would discourage firms from distributing profit as dividends.

**However, governments sometimes seek to incentivise companies to retain and reinvest earnings.**

The government may wish to pursue a faster rate of economic growth and therefore may try to encourage greater investment by firms. Since a large proportion of funds for new investment comes from retained profit, the government could use the tax system to encourage firms to plough their profit back into the business.

**This may be achieved by levying higher taxes on dividends than on 'retained' profits, or by allowing tax relief for new investment (such as the 'capital allowances' mentioned above). Profits flowing from such investment would then be taxed in the usual way.**

A system that has been used in the past in the UK is one that allows 'accelerated depreciation' of new capital equipment. When a company buys new capital equipment, eg a new machine, it estimates how long the equipment will last and 'writes off' part of its value as depreciation (and therefore as a cost) each year. The cost of the machine is therefore spread over the life of the machine. Accelerated depreciation allows the company to depreciate a large part of the machine in the early years, thus increasing the company's costs, decreasing its profit and therefore decreasing its tax liability in the early years. Profitability and therefore tax liability will increase in the later years.

**An example of this relates to pension provision, where the government may seek to encourage private and institutional pension arrangements by offering tax reliefs (or even subsidies) on contributions and, possibly, investment earnings within the pension scheme. While the final pension benefit will be subject to tax, when paid, the individual recipient will often benefit from a lower personal tax regime when in retirement. In some countries, such tax-advantaged funds are available for other purposes (such as house purchase, medical expenses or education and training finance).**

## 4 Other taxes

**Other categories of tax levied on companies and individuals include:**

- **stamp duty on contract documents**

For example, when an individual buys a house, he/she may pay stamp duty tax based on the value of the house.

- **inheritance taxes**
- **property taxes.**

Inheritance taxes and property taxes were discussed briefly in Section 1.

**There may also be a system for levying tax on *expenditure*, either in respect of general expenditure (eg a sales tax, such as VAT in the UK) or on specific types of expenditure (eg customs duties and excise taxes).**

A *sales tax* (as is used in the US) is collected only at the point of final sale to the consumer. *Value Added Tax* (VAT) is collected at each stage of the production process according to the value added at each stage of the production process. These taxes are levied on most goods though there are usually exceptions.

**Certain classes of 'essential' expenditure, such as basic foodstuffs, may be exempted from sales taxes.**

For example, in the UK the standard rate of VAT is 20%. Domestic fuel and power is taxed at 5% and some items such as food and books are 'zero-rated'. Some items, eg postage stamps, are VAT exempt.

*Customs duties* are taxes on imported goods. Imported goods are taxed in different ways in different countries. Such taxes often involve flat taxes based on the value of the goods imported, weight taxes, taxes based on the physical size of the goods and special taxes for certain industries such as the car industry based on emissions.

*Excise duties* are duties or taxes levied on goods produced and sold within the country, eg duties on petrol, beer, cigarettes.

**Such specific taxes may be designed, additionally, to encourage certain patterns of consumer expenditure or to raise revenues for particular categories of government expenditure.**

For example, by taxing cigarettes the government could discourage smoking and hence improve health; by taxing petrol (and perhaps additionally subsidising public transport), the government could discourage the use of the private motor car and hence reduce congestion and pollution. The government could use all tax revenue from cigarettes for use in the health service.

## 5 Double taxation relief

**Most countries have a double taxation agreement with other countries.**

The UK has 'double taxation' agreements with many countries. These agreements prevent the same income being taxed twice, both in the country of origin as well as in the UK.

**Double taxation relief (DTR) means that the local tax authority will allow companies and individuals with overseas income or capital gains to offset tax paid overseas against their liability to domestic tax on that income or capital gains.**

**The maximum offset is the rate of tax that would have been paid locally.**

Double tax relief cannot result in tax being reclaimed from the tax authorities.

To see how this works, let's consider two examples. Let's assume a 20% rate of corporation tax in the UK.

1. XYZ (a UK company) earns the equivalent of £10,000 in Japan where it has been subject to 38% tax.

In the UK, the remaining £6,200 of after-tax earnings will not be subject to further tax. However if the company has other earnings in the UK, tax will be paid in the usual manner to the UK authorities.

2. XYZ earns the equivalent of £10,000 in Latvia where it is subject to 15% tax.

In the UK the £10,000 (or £8,500 after Latvian tax) will be subject to an additional 5% tax. So, XYZ will end up with £8,000 after UK tax.



## Chapter 3 Summary

### Personal taxation

Personal taxation is levied on all the financial resources of an individual. The main sources are:

- income both earned (wages and salaries) and unearned (investment income and rent)
- profit from operating as a sole-trader or partner
- capital gains
- inheritance
- wealth, *eg* property.

Individuals (including partnerships) are usually subject to *income tax* and may, in addition, pay *social security contributions*.

Income tax is calculated with reference to *taxable income*, which includes income in kind, such as subsidised mortgages, and also investment income.

Income tax liability may be reduced by tax relief on certain forms of income, such as income from an ISA, and on certain forms of expenditure, such as contributions to an approved pension scheme.

A person's taxable income for a certain year will be reduced by any *allowances* to which they are entitled, *eg* personal allowance, age-related allowance.

### Capital gains tax

Individuals are subject to capital gains tax on *chargeable gains*.

$$\text{chargeable gain} = \text{sale price} - \text{purchase cost}$$

Capital losses can normally be offset against capital gains in the same year.

Individuals are usually given a CGT allowance (the *annual exempt amount*).

For an individual in the UK, typical CGT rates are 10% and 20% depending on taxable income. Certain assets are exempt from CGT.

## Company taxation

Companies are liable to *corporation tax* on their taxable profits. Taxable profits include both income (less allowable expenses) and capital gains. A company's *accounting profit* has to be adjusted to *taxable profit* by:

- adding back on any business expenses or potential expenditure that are not allowable
- adding back depreciation and deducting the capital allowance
- deducting any special reliefs, *eg* research and development.

The government can use the corporation tax system to encourage or discourage certain behaviour. For example, the government can encourage investment by taxing retained profit less heavily than distributed profit or it might encourage pension schemes by granting tax relief on pension contributions.

## Double taxation relief

Most countries have a *double taxation agreement* with other countries.

These agreements allow companies and individuals with overseas income or capital gains to offset tax paid overseas against their liability to domestic tax on such income or capital gains.



## Chapter 3 Practice Questions

Exam style

*All of the questions that follow are exam style.*

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- 3.1 Taxable profits for a company are:
- A unadjusted pre-tax accounting profits.
  - B trading profits less capital allowances.
  - C unadjusted income (after expenses) plus capital gains.
  - D none of the above. [2]
- 3.2 What is the most logical explanation for the requirement that investment income often has tax deducted at source?
- A To discourage companies from paying dividends
  - B To ensure that taxpayers who have insufficient income to pay tax are required to pay tax on their investment income
  - C To enable governments to tax investment income at a higher rate than earned income
  - D To simplify the collection of tax [2]
- 3.3 List three sources of personal income that are tax-free in the UK. Outline other adjustments made to total income in order to arrive at taxable income. [5]
- 3.4 Outline the system of capital gains tax as it applies to individuals in the UK. [5]
- 3.5 Explain how corporation tax on the annual profits of a company is calculated. [5]

The solutions start on the next page so that you can separate the questions and solutions.



## Chapter 3 Solutions

3.1 Answer = D

The accounting profits will differ from the taxable profits.

Capital allowances are not the only difference between accounting profits and taxable profits.

C deals with accounting profits again.

3.2 Answer = D

There is no reason to discourage the payment of dividends by companies. If the investor receives the income, there is theoretically sufficient income to pay the tax. Charging tax up front will not raise the rate of tax charged. However, this could lead to simplifications in the collection of taxes as it avoids having to collect tax from many investors.

3.3 Three sources of income that are tax-free in the UK are:

- most gambling profits
- income from certain investments, *eg* ISAs
- most social security benefits.

[1 mark each for any two of these examples]

Other adjustments that have to be made to total income to arrive at taxable income are:

- the addition of benefits-in-kind (fringe benefits) such as cheap mortgages [1]
- the deduction of tax-free expenditure such as contributions to an approved pension scheme and charitable gifts [1]
- the deduction of appropriate allowances, *eg* personal allowance, age-related allowance. [1]

[Total 5]

3.4 A capital gain is the gain made when an asset is sold for more than it cost. [1]

Capital gains on some assets may be exempt. For example, in the UK, private motor cars and a main private residence are free from capital gains tax for UK residents. [1]

The sale price can be reduced by any expenses associated with the sale. [1]

The purchase cost can be increased by any costs associated with the purchase and any expenditure made to enhance the value of the asset during the period the asset was held. [1]

Individuals are usually given an annual allowance, which is transferrable between spouses/partners. [1]

Taxable gains (net of any capital losses) are normally taxed at 10% or 20%, depending on the individual's taxable income and the nature of the asset. [1]

[Maximum 5]

3.5 Companies pay corporation tax on their taxable profits. Taxable profits include both income and capital gains and the starting point for their assessment is the profits shown in a company's profit & loss statement. [1]

Various adjustments are made to these profits from the accounts to arrive at taxable profits. [1]

The adjustments include:

- adding back any expenses or potential expenditure included in the accounts which are not allowable for tax purposes [1]
- deducting any special reliefs (*eg* research & development costs) [1]
- adding back the depreciation charged and instead deducting the 'capital allowances'. [1]

In most countries, the taxable profits are taxed at the corporation tax rate which may vary each year. [1]

If the company has earned income or capital gains and paid tax abroad, and if the country has a double taxation agreement with other countries, the tax authorities will offset tax paid overseas against the company's liability to pay domestic corporation tax. [1]

The maximum offset is the rate of tax that would have been paid locally. [1]

[Maximum 5]



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# Long-term finance

## Syllabus objectives

- 2.1 Describe the structure of a company and the different methods by which it may be financed.
2. Describe the different types of loan and share capital.
3. Contrast authorised and issued share capital.
- 2.3 Demonstrate a knowledge and understanding of the characteristics of the principal forms of financial instrument issued or used by companies and the ways in which they may be issued.
  2. Describe the characteristics of:
    - debenture stocks
    - unsecured loan stocks
    - Eurobonds
    - preference shares
    - ordinary shares
    - convertible unsecured loan stock
    - convertible preference shares
    - warrants
    - floating-rate notes
    - subordinated debt
    - options issued by companies.

## 0 Introduction

This chapter looks at the principal sources of long-term capital available to companies – debt and equity. We will consider the risk and return aspects of each type of finance from the viewpoint of the company raising the money. However, we shall see that the attitudes of investors to different types of finance are also critical in determining whether or not a particular method of finance could or should be used.

In this chapter we concentrate on long-term forms of capital which constitute by far the largest portion of company finance. We'll continue with these in the next chapter where we'll look at the process of raising this finance and issuing shares. We'll then go on to consider some of the medium- and short-term forms of capital available to companies.

The examination could test, for example, *knowledge* of the main forms of long-term finance and the *ability to analyse for both investors and for companies* the relative merits of particular types of long-term finance.



# 1 Loan capital (Debt)

## 1.1 Introduction

**A company issues loan capital to raise money from investors. In return, the company will pay the investor a stream of interest payments plus an eventual return of capital. The amounts of interest and capital payments to be made will be specified at outset.**

This contrasts with shares, where dividends are paid at the discretion of the company's directors.

Long-term loan capital instruments are often referred to as 'bonds' or 'corporate bonds', and short-term instruments as 'bills'.

**Issues of loan capital may be listed on a stock exchange.**

**Holders of loan capital are creditors of the company and, unlike shareholders, they do not have voting rights.**

They receive specified 'interest' payments which are a *cost* to the company, not a distribution of profits. On a winding-up they would rank equally with, or in some cases above, other creditors.

### Features of loan capital

- **It is conventional to refer to loan capital in units of £100 nominal.**  
The nominal amount of a loan is often referred to as its 'par value'.
- **It is usual to express the interest payments as a proportion of the par value.**  
For example, a holder of £100 nominal of a 10% debenture will receive £10 interest per annum. The loan coupon payments are normally made every six months so this debenture would pay £5 every six months per £100 nominal held.
- **It is normal to issue loan capital at a price close to, or just below, par.**  
Unlike shares, there is no legal restriction on the issue price relative to par. So, £98, £99, £100, £101 *etc* are all possible issue prices per £100 nominal.
- **Almost all loan capital is redeemed at par.**
- The market price of £100 nominal of loan capital need not be £100.
- Most loan capital is redeemable on a set date, often after 10 to 20 years.



### Question

What is the total amount of cash you would receive if you purchased £200 nominal of a 6% bond redeeming on 31 December 20XX+10, and purchased on 1 January 20XX?

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## Solution

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In each of the years 20XX to 20XX+10 inclusive, you would receive 6% of £200 = £12. This would normally be paid in two semi-annual payments of £6 for 11 years. This amounts to £132. At the maturity of the bond you would get £200 back in addition to the final coupon payment we have included above. Total cash received = £332.

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Since bonds are tradable, the price of a bond varies with supply and demand for the bonds. One of the main influences on the price of a bond is the interest rate in the economy. There is an inverse relationship between interest rates and the price of a bond.

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## Question

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Suppose interest rates or returns available on long term investments rise in the economy. Explain what would happen to the price of a fixed coupon long-term bond that offers a fixed interest rate of (say) 3% *pa*.

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## Solution

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If the returns available on other investments rise, the 3% *pa* interest rate available on the fixed coupon bond will look poor relative to other investments, and investors will sell the bond, causing the price to fall. As the price falls, the 3% starts to look higher as a proportion of the falling bond price. Also, investors will then be able to buy the bond at a greater discount to par, meaning that they will receive a bigger capital gain if they hold it until maturity. Eventually the bond price reaches a level where the combination of these two factors makes the attractiveness of the bond equivalent to that of other investments.

---

## Variations

Most loan capital is redeemed at par on a set date and coupons in the UK markets are often paid every six months. You may also come across the following variations:

- The capital repayment may be made at a time between two dates (*eg* January 2050 and January 2060) at the company's option.
- Interest payments may be set as a fixed margin (*eg* ¾%) over a benchmark interest rate, (*eg* six month LIBOR) rather than as a fixed absolute amount. These are known as 'variable rate issues'. In this case, even though the absolute amount of interest is not known, at least a formula to calculate the payments is known.
- Interest and redemption proceeds may be linked to an inflation index. These are known as 'index-linked' bonds.
- Interest payments may increase in steps in a similar way to stepped preference shares (see later) *eg* 6% for three years, 8% for the next three years and so on. These are known as 'stepped' bonds.

- The company may be able to repay the loan at *any* time (known as a 'call option' on the bond).
- The loan stock holder may be able to demand repayment at any time (known as a 'put option' on the bond).
- Capital repayments might be made throughout the term of the loan (like a repayment mortgage). Such arrangements are known as 'sinking funds'. They are now rare.

## The rights of bondholders

**The rights of holders of loan capital will be set out in a loan agreement drawn up when the loan is issued. In most cases, a trustee is appointed to act on behalf of the loan stockholders. The trustee is normally a corporate body such as a bank or insurance company. The legal documentation setting out the obligations of the issuing company to the loan stockholders is known as the Trust Deed.**



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### Question

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Suggest issues that the Trust Deed of a bond issued by a company might cover.

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### Solution

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Typical issues covered in a Trust Deed include:

- description of any assets of the company that might be set aside to cover the particular loan in the event that the company winds up
- details of exactly how the assets should be used to repay the bondholders in the event of a winding-up and how surplus cash should be treated
- the rights of the company to issue further bonds that rank above or alongside this particular issue
- covenants that describe how much the company's profit must remain above the amount of the interest payments on the bond. This is a form of protection for bondholders to ensure that their interest payments are easily met by the company in future.
- arrangements for changing the trustees
- a description of circumstances under which bondholders must be consulted, *eg* if covenants are breached or about to be breached.

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**The main characteristics of debt or loan capital were discussed above. We now consider some categories of loan stock.**

## 1.2 Debenture stocks

### Description



**Debentures are loans which are secured on some or all of the assets of the company.**

This means that, if the company fails to make one of the coupon payments or the capital repayment, various actions are available to the stockholders. They may:

- **appoint a receiver to intercept income from the secured asset(s)**  
For example, if the debenture is secured on a property, the receiver may intercept any rent being paid by the property's tenants.
- **take possession of the secured asset to sell it in order to meet their debt.**  
This action is called 'foreclosure'. Any surplus after the debt had been repaid would be returned to the company.

**There are two types of debenture:**

**(i) Mortgage debenture (fixed charge)**

**A fixed charge means that there are specific secured assets mentioned in the legal documentation for the mortgage debenture.**

The company will be able to sell or make major alterations to the secured asset only with the mortgage debenture holders' permission.

**(ii) Floating charge debenture**

**The company can change the secured assets in the normal course of business. For example, it can sell the assets, so long as they are replaced by equally satisfactory assets.**

It will be the trustee's responsibility to give permission for this. The trustee will need to be satisfied that the assets are equally satisfactory from the debenture holders' viewpoint.

**When a company fails to make an interest or capital payment, the debenture holders can apply to the courts to convert the floating charge to a fixed charge.**

This is called 'crystallising'.

Often, a fixed charge will be backed up by a floating charge as well, in case the charged asset under the fixed charge turns out to have insufficient value to meet the money due to the debenture holders.

**Debentures and loan stocks are used to raise large amounts of funds (typical issues in the UK may range from £30m to £100m). They have a fixed redemption date and carry a fixed rate of interest so that the borrower has a known debt servicing commitment.**

Debenture interest is deducted from pre-tax profits before the calculation of the tax liability.

**The interest payments are tax deductible (as an expense of the company) – but the debenture holders are creditors of the company and have no right to interfere in its running.**

**However, the interest payments must be made irrespective of the company's profitability or cashflow position and, if the debentures are secured against the assets of the company, failure to adhere to the agreed terms may place the continuation of the company at risk.**

We will now consider the main investment characteristics of debentures: their risk, return and marketability.

## **Risk**

Payments on debentures, unlike dividend payments to shareholders, are a legal obligation on the company and (if there are sufficient assets) loan capital holders get repaid fully in the event of a winding-up before shareholders can receive anything. Therefore, debentures in a given company are much more secure than ordinary or preference shares in the same company.

There is still an element of risk attaching to debentures. This is because of the risk of default combined with the risk that the asset over which the fixed charge has been placed will turn out to be insufficient to cover the loan.

## **Return**

**Debentures carry the risk that coupon payments or capital repayment may not be made, but the stockholders have security in respect of the secured assets.**

As such, debentures do trade at yields above government securities, although some of this might be accounted for by the lack of marketability (see later).

**The value of all payments – capital and interest – may be eroded by inflation.**

**Debenture stocks may also not be readily marketable.**

**The total return on debentures will reflect all these risks.**

Generally, the total return (referred to as the gross redemption yield, or GRY) of a debenture would be expected to be:

- superior to that of a *government bond*, because a government bond is safer than even the safest corporate bond and more marketable; and
- less than that of an *unsecured loan stock* because an unsecured loan stock is far riskier than a debenture.

## **Marketability**

Marketability of debentures is usually worse than for government bonds: there are bigger spreads between buying and selling prices, and lower volumes traded. This is because the typical issue size is smaller and so trading in a particular debenture can be infrequent. In general, marketability is highest just after a new issue.

## Conclusion

The existence of a fixed and/or floating charge together with the appointment of a trustee is designed to reduce the risk to the debenture holder. However, the security ultimately depends upon the company's continuing profitability in order to meet the required payments, and failing that, on the market value of the charged assets. In practice neither can be guaranteed for the full outstanding term of the debenture. Therefore, debenture stocks are considered more risky than government bonds.

### 1.3 Unsecured loan stocks

#### Description



**With unsecured loan stock there is no specific security for the loan. If the company defaults, the loan stockholders' only remedy is to sue the company.**

In practice this means asking the courts to wind up the company. When this happens, any debenture holders will have a prior claim to the assets of the company on which there is a charge.

**The unsecured loan stockholders rank after the debenture holders.**

**Other creditors of the company rank equally with the unsecured loan stock holders.**

On a winding-up, high-ranking claimants (*eg* debenture holders) may well get all of their capital returned. Low-ranking claimants (*eg* shareholders) may get nothing. At the highest level of ranking at which the total money available is insufficient (*eg* unsecured creditors including unsecured loan stock holders) a proportionate payment will be made. For example, '35p in the £' might be paid to all unsecured creditors.

If the company's assets were more than sufficient to meet all the liabilities to all the creditors, the remaining assets would be distributed to the company's shareholders.

#### Risk

There is no security for the loan, although (as with debentures) payments are a legal obligation on the company.

The rights of unsecured loan stock holders are often set out in a trust deed and looked after by a trustee. If a company fails to make interest or capital repayments when they are due, the loan stock holders can apply to the courts to have the company wound up. When the company is liquidated, unsecured loan stock holders will rank equally with other unsecured creditors of the company (*eg* customers awaiting delivery of goods, suppliers awaiting payment).

In practice, if a company has got to the stage of being wound up, its assets may be of little value so unsecured loan stock holders may get little or nothing back.

#### Return

**Gross redemption yields are higher than on debentures to compensate for poorer marketability and greater risk.**

## Marketability

As was the case for debentures, the marketability of unsecured loan stock is a lot worse than that of government bonds. The standing of the issuer and the size of issue determine marketability. Again, marketability decreases a few months after a new issue.

## Conclusion

The appointment of a trustee and the restrictions on further borrowing which are typically found in a trust deed are designed to reduce the risk to the unsecured loan stock (ULS) holder. However, unsecured loan stock will be less secure than debentures. An unsecured loan stock holder is even more dependent upon the company's continuing profitability in order to meet the required payments. Therefore, unsecured loan stocks are more risky than government bonds and debentures.

As with a debenture, payments are a legal obligation on the company and unsecured loan stock holders are entitled to be repaid fully in the event of a winding-up before shareholders can receive anything. Therefore, unsecured loan stock in a company is more secure than shares in the same company.



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### Question

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Suggest a reason why companies don't always issue unsecured loan stocks rather than debentures.

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### Solution

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Debentures are secured upon the assets of a company. This security means that the company can offer a lower rate of coupon (*ie* interest) to investors. The company will therefore find it cheaper to borrow using debentures than using unsecured loan stock.

Sometimes a company's credit rating may be so poor that issuing a bond that does not have a security attached may be impossible.

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## 1.4 Subordinated debt

**In the event of default, the holder of subordinated debt ranks below the firm's general creditors (but ahead of preference shareholders and the ordinary shareholders). The subordinated lender holds a *junior debt* and is paid after all senior debt holders are satisfied.**



Subordinated debt or junior debt is debt over which senior debt takes priority.

**The rating of the debt and, consequently the terms on which it is issued, will reflect this lower level of security.**

## 1.5 Eurobond loan capital

### Description

**Traditionally a company would issue loan stock within the tax and legal framework of its own country.**

**However, it is also possible to borrow in another country.**

For example, overseas borrowers can issue sterling-denominated bonds in the UK bond market. These are called *bulldogs*. Similarly UK firms can issue dollar-denominated bonds in the US market. These are known as *Yankee bonds*. Foreign bond issues give borrowers access to the investors of another country.

Eurobonds go one stage further: they give borrowers access to international investors. A Eurobond is a bond issued in the 'Euro' market.

**Since the 1950s it has been possible to arrange with investment banks for loan capital to be issued to investors without it coming under the legal or tax jurisdiction of any country. The market for this type of loan capital is known as the 'Euro' market.**

The 'Euro' market is not confined to Europe. The main centres for trading are London and Luxembourg.

**Eurobond issues can be made in almost any currency including the euro.**

**Companies throughout the world raise money by issuing Eurobonds.**

Governments can also issue Eurobonds.

**Most Eurobonds are redeemed at par on a set date with fixed coupon payments during the term of the Eurobond. However, coupon payments on Eurobonds are usually made annually rather than six-monthly.**

For example, a 10% Eurosterling issue would pay £10 every year per £100 nominal held.

**Almost all Eurobonds are unsecured.**

Like holders of unsecured loan stocks, Eurobond investors would rank equally with other unsecured creditors if a company were wound up.

**Eurobonds are 'bearer form' documents which means that, to claim interest payments, holders must cut out coupons from the certificates and send them to the company (or its paying agent).**

This is one reason why payments are made annually rather than six monthly. As Eurobonds are bearer documents, the issuing company does not keep a register of Eurobond holders, unlike share capital and traditional loan capital. So, holding the Eurobond loan certificate is proof of ownership.

**A significant minority of Eurobonds have a variable coupon payment. They are known as 'floating-rate notes' (see Section 1.6 below).**

**Many innovative types of Eurobonds have been issued.**



This is because Eurobonds are issued with freedom from national regulation. For example, on some issues interest payments may be made in more than one currency.

Most Eurobond issues are listed on a stock exchange (often in London) although the stock exchange isn't where most of the actual trading happens.

**Most trading in them occurs through the banks rather than through a stock exchange.**

**Eurobonds are also used to raise large sums – the minimum acceptable issue is \$75m or more.**

Similar to unsecured loan stock, Eurobonds are not secured against the assets of the issuing company.

A key difference between Eurobonds and unsecured loans is that Eurobonds are marketed in a different way. A Eurobond is an issue underwritten by an international syndicate of banks and typically (but not exclusively) sold in countries other than the country of the currency in which it is denominated. Issues are often marketed in several countries simultaneously.

Common currencies of issue include the US Dollar (which accounts for about 50% of the market), the Japanese Yen and Sterling. Issues in these currencies are respectively known as 'Eurodollar', 'Euroyen' and 'Eurosterling' issues.

## Risk

There is no security for the loan. Also, Eurobond issues do not always place restrictions on the issuing company's future borrowing powers and so investors are very dependent upon the profitability and good name of the issuing company. If anything, Eurobond issues are more risky than traditional unsecured loan stock issues made by the *same* company. However, issuers of Eurobonds tend to be large stable firms, institutions or governments.

## Return

**Gross redemption yields depend upon the issuer (and hence risk) and issue size (and hence marketability). Inflation will affect the real return achieved.**

## Marketability

Marketability is better than debentures and unsecured loan stocks, but not usually as good as government bonds.

## Conclusion

Eurobonds are unsecured loans subject to less regulation and are issued with either fixed or floating rates of interest. They normally have a fixed maturity date.

**They represent a convenient method of raising large amounts of foreign currency denominated funds without having to enter overseas financial markets. It may be possible to raise funds at a lower rate of interest than is available on domestic currency funds, but there may be associated exchange rate risks if the funds raised are converted for use in domestic projects.**

## 1.6 Floating-rate notes

Most people are aware of the idea of floating or variable interest rates. Most people's savings earn a variable rate of interest and the interest rates on many mortgages in the UK are variable (though elsewhere fixed-interest mortgages are more common).

Many UK borrowers prefer to issue fixed-interest bonds because they know their costs in advance and can plan their cashflows. However, when interest rates are high, companies are reluctant to borrow.

**Floating-rate notes (FRNs) are medium-term debt securities issued in the Euro market whose interest payments 'float' with short-term interest rates, possibly with a stipulated minimum rate.**

It is common for floating-rate notes to have a minimum interest rate below which the coupons will not fall even if the benchmark interest rate falls lower. This is known as an interest-rate floor.

**Thus, the issuer does not need to estimate the likely levels of future inflation and interest rates when issuing the notes, and the lender does not require an inflation risk premium.**

If inflation increases, then short-term interest rates tend to increase. A company that issues floating-rate stock does not need to worry about future inflation. A company that issues fixed-interest stock has to estimate future inflation in order to give a satisfactory return (after inflation) to the investors. Investors too need to consider the risk of inflation wiping out the return received from an investment. If they are uncertain about inflation they might demand a higher interest rate from a fixed-interest stock as a premium to cover the risk they are taking.

## 2 Share capital

### 2.1 Ordinary shares ('Equities')

#### Description



*Ordinary shares* give rights to a share of the residual profits of the company, and to the residual capital value if the company is wound up, together with voting rights and various other rights.

**Ordinary shares are the main way in which UK companies are financed.**

A company may or may not have loan capital and/or preference shares. However, to exist it must have ordinary share capital (unless it is 'limited by guarantee').

**The shareholders are the owners of the business. Shareholders will have voting rights at meetings in proportion to the number of shares held.**

**They will receive 'dividend' payments made from a company's profits. Dividends are not a legal obligation of the company and are only paid at the discretion of the directors. In practice directors try to pay a steadily increasing stream of dividends.**

**Dividends can be paid net of tax, with an attaching tax credit for the recipient. This is termed 'franked' investment income. For example, in the UK until April 2016, dividends were paid net of a 10% tax credit. This tax credit was used against the taxpayer's tax liability, but it could not be reclaimed and those who were subject to a higher rate of tax on dividend income had to pay additional tax. From April 2016 in the UK, dividends will be paid gross. Each individual will have a tax-free dividend allowance and tax will be levied on dividends above this allowance.**

**They hold the *equity interest* or *residual claim* since they receive whatever assets or earnings are left over in the business after all its debts are paid.**

Ordinary shares are sometimes called 'equities' which, in this context, means 'residual'. Holders of ordinary shares are entitled to whatever profit is left over after other providers of finance have received their interest payments. In most cases the directors will choose to retain some of the profits attributable to ordinary shareholders to invest in projects to enhance ordinary shareholders' profits in future years.

**Ordinary shares are the lowest ranking form of finance issued by companies. On a winding-up they will rank after all creditors of the company.**

So ordinary shares rank after, for example, employees, customers, suppliers, bankers, holders of loan capital and HMRC. If the company is wound up, ordinary shareholders will only receive any residual assets once all other creditors and preference shareholders have been repaid in full.

The upside of this residual nature is that there is no upper limit on the size of residual profits and hence no upper limit on the return which ordinary shareholders could earn.

**Ordinary shares are almost always irredeemable.**

This means that there is no fixed date when the company has to repay the share capital.

**All shares have a 'par' or 'nominal' value, often 25p. The par value has no relevance to the market value of the share. Companies are not allowed to issue shares below the par value.**

However partly paid issues (shares where the investor is committed to make a further payment of capital to the company at a later date) are allowed. Shareholders have a liability up to the fully paid value of the shares. For example, consider a 25p par value share issued at a premium of 15p per share. It may have been issued partly paid, such that 35p was paid by the original investor (designated as 20p of the 25p par value, plus the 15p premium). In this case, a holder of a single share would be liable to pay another 5p into the company if it was wound up with unpaid debts.

**The figure shown in the accounts for issued share capital is the nominal value.**

However, this nominal value (*ie* number of shares  $\times$  par value) has little practical significance.

**The company's documentation will set out the total nominal value of authorised share capital.**

This is the maximum amount that the directors can issue without calling for a vote from the shareholders.

**The issued share capital is the nominal amount actually issued. The issued share capital cannot be greater than the authorised share capital.**

Almost all ordinary shares:

- give an equal right to share in residual profits (after the preference shareholders, if any, have received their full entitlement to dividends). This is the most important feature, and is the main reason for buying shares
- give one vote per share
- give an equal share to any assets left over following a winding-up after all other creditors have been paid
- are fully paid (partly paid issues are discouraged by the Stock Exchange)
- give various other minor rights (*eg* the right to receive the annual report and accounts).

The low ranking of ordinary shares in terms of payment of dividends and on winding up makes them a more risky investment than other types of capital from the investors' point of view. For example, if the company has a bad year for profits, there may be no dividend for that year.

As well as having the right to residual profits and assets, ordinary shareholders have the right to:

- attend and speak at company meetings, or appoint a proxy to attend and vote on their behalf (a proxy is not allowed to speak)
- vote to reduce, but not increase, dividends
- vote to appoint directors
- vote to forego the 'pre-emptive' right to be offered any new shares to be issued
- vote to change the company's borrowing powers.



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## Question

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A friend says: 'Ordinary shares are the most risky form of investment so a prudent investor should avoid investing in them.'

Comment briefly on this statement.

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## Solution

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It is true that ordinary shares are potentially risky in that the return from them may be very volatile (and uncertain). However, an investor would expect, on average, to gain a higher return from shares than from other investments, to compensate for the higher level of risk.

In the long term, dividends and share prices should increase in line with inflation and real economic growth. Therefore shares are a suitable investment for an investor requiring a return linked to inflation.

Also, holding a diversified portfolio of shares will help to reduce risk.

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## Variations

**Occasionally some companies issue variations of the basic ordinary share described above. For example:**

- **'deferred' shares**

These come in two varieties: either no dividends are paid until normal ordinary shareholders' dividends or profits reach a given level, or no dividends are paid until a given date.

- **redeemable ordinary shares**

These will be repaid by the company at a certain date.

- **non-voting shares**

- **shares with multiple voting rights, and**

- **'golden' shares in newly privatised industries.**

Golden shares give certain rights, *eg* voting rights and veto rights on certain issues. For example, they could be held by the government following a privatisation.



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## Question

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Suggest why some companies might have some non-voting shares.

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## Solution

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Non-voting shares may arise when a family-controlled company needs to raise more cash, but does not want the loss of control (and potential take-over) that comes with it. They therefore issue non-voting shares for the general public, and retain the voting shares themselves.

The Stock Exchange discourages the issue of 'non-standard' ordinary shares.

## The theory of risk and expected return

We assume that any rational investor making an investment decision will first decide what return they require from a particular investment.

This required return will be influenced by the investor's perception of how risky the investment is – the more risk, the more return he or she will require. For most rational investors the risk of loss, or the uncertainty attached to the amount and timing of future payments, would lead them to be less inclined to invest in the security. Consequently such securities generally trade in the market at prices which offer the investor a higher return to compensate.

Risk is often defined in terms of the volatility of the expected returns from the investment.

The investor will invest in an asset if it can be bought for a price that gives a return at least as high as the required return.

Considering ordinary shares, the expected return on the investment will be influenced by two things:

- how much income yield (or 'dividend yield' for equities) an investor expects to receive
- how much capital growth an investor expects to obtain from holding the share over a certain period.

The first of these components is linked to the price at which the asset is purchased. If we define the dividend yield as  $\frac{\text{dividend per share}}{\text{market price per share}}$  we can see that the higher the price paid, the lower the dividend yield from the investment (the dividend paid by a company does not alter when the market price of the share changes).

The share price can be considered to be the present value of the future dividend stream. So, the second component is equal in theory to the growth in the dividend.

So an investment in an ordinary share will bring the investor a dividend yield and capital growth. The sum of these should be sufficient to give a return equal to or greater than the required return he or she calculated at the very start of this process. Although the total return from holding an equity share will usually be greater than the return available on loan capital, the dividend yield on its own is usually lower than the gross redemption yield available on loan capital.

## Risk

When companies are wound up, ordinary shareholders often end up with nothing as they rank below creditors and usually rank below preference shareholders (although sometimes preference shareholders and ordinary shareholders rank equally on winding up). So, ordinary shares in most companies are *risky*.

Risk can often be thought of in two components:

- the uncertainty and volatility of the future income stream
- the uncertainty of capital return in the event of a winding-up.

As ordinary shares offer both of these in large quantities, they can be classed as high risk.

## Return

**Ordinary shares offer investors high potential returns for high risk, particularly the risk of capital losses.**

**The initial running yield (that is, the rate of income the share will produce at its current market price) is low but dividends should increase with inflation and real growth in a company's earnings.**

**Historically, equities have given the highest return of any of the main asset classes over the long term. Because of this, investors have been prepared to accept the high variance of return which can lead to poor short-term performance even for a well-diversified portfolio.**

## Marketability

**Marketability of ordinary shares varies according to the size of the company but is usually much better than for the loan capital of the same company.**

There are three main reasons for this:

- For many companies, the bulk of their capital is in the form of ordinary shares. So issues of ordinary shares tend to be large.**
- Most companies only have one type of ordinary share whereas their loan capital is likely to be fragmented into several different issues.**
- Investors tend to buy and sell ordinary shares more frequently than they trade in loan capital because the residual nature of ordinary shares makes them more sensitive to changes in investors' views about a company.**

In other words, if an investor has a view about the likely future profits growth of a company they should express that view by buying or selling the ordinary shares. Any increase or decrease in the profits of the company will flow through directly to the shareholders, whereas increasing profitability will influence only the security of the bond payments, not the amount of the payments.

## Conclusion

Ordinary shares offer investors the potential for high returns but shareholders take a great risk. Dividends can be volatile, as can the market values of the shares. Ordinary shareholders rank last in the event of a winding-up. Shares are usually highly marketable.

## 2.2 Preference shares

### Description

Preference shares are much less common than ordinary shares.

The investment characteristics are more often like those of unsecured loan stocks than ordinary shares. Assuming the company makes sufficient profits, they offer a fixed stream of investment income, which is paid like dividends. Preference shares pay a fixed dividend, and so can be regarded as a form of fixed-interest stock.

The dividend is usually expressed as a fixed percentage of the par value, so when we refer to the 'dividend' from preference share it is more akin to an interest payment on a bond than to a dividend on an ordinary share.

They do not usually carry voting rights.



Preference shareholders have a preferential right to either dividends, or return of capital, or both, compared to ordinary shareholders.

Dividends do not have to be paid. However, if dividends are not paid on preference shares, no ordinary share dividends can be paid. It is usual for the preference shareholders to get voting rights whilst their dividends remain unpaid. Preference shareholders also have the right to vote if the rights attaching to their shares are being varied.

The crucial difference between preference shares and ordinary shares is that preference share dividends (except for participating shares) are limited to a set amount which is almost always paid.

Most preference shares are:

- cumulative
- irredeemable.

Cumulative preference shares require any unpaid arrears of dividends, as well as the current year's dividend, to be paid before any dividend can be paid to ordinary shareholders.

### Variations

However, preference shares may also:

- be non-cumulative
- be redeemable
- be participating
- be convertible
- be stepped
- pay variable dividends.

Participating shares are entitled to a share of the profits, on top of the fixed dividend, once the ordinary share dividend exceeds a certain amount.



**Stepped shares have a dividend that increases in a predetermined way.**

**Occasionally, a preference share may pay variable dividends linked to central bank rates, for example.**

The directors do not have discretion on how much is paid under variable dividend preference shares – the rate is fixed relative to some other rate or index. Hence it is usual to state that preference share dividends are fixed.



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### Question

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Compare a preference share to an unsecured loan stock.

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### Solution

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Both have a fixed coupon, expressed as a percentage of the nominal amount.

Preference shares can be redeemable but are normally irredeemable. Loan stocks can be irredeemable, but are normally redeemable.

Preference shares normally carry the right to vote if dividends have not been paid. Loan stock holders only have the right to wind up the company and try to recover their losses. On wind up, a loan stockholder will rank above a preference shareholder.

The tax treatment is different (both for the issuing company and for the investor).

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### Risk

Preference shares rank below loan capital and above (or equal to) ordinary shares if the company is wound up.

In a given company, the risk of preference shareholders not getting their dividends is greater than the risk of loan stockholders not being paid, but less than the risk of ordinary shareholders not being paid. This is true both for the dividend payments during a difficult period, and for the repayment of capital in the event of a winding-up.

The variability of return will only be a little greater than for loan capital. Preference shares offer a relatively predictable future income stream, but uncertainty about the return of capital in the event of a winding-up. However, the variability of return will be *significantly* less than that of ordinary shares, because a preference share's capital value will fluctuate much less than the capital value of an ordinary share.

### Return

**For all investors, the expected return on preference shares is likely to be less than on ordinary shares because the risk of holding preference shares is less.**

If there were no tax complications then for all investors, the expected return on preference shares would be a little greater than the expected return on loan capital. However, there is a potential tax effect, as different investors may be taxed differently on preference dividend income than on interest payments on the loan stock.

## **Marketability**

**Marketability of preference shares is similar to loan capital marketability.**

## **Conclusion**

Preference shares offer the investor a lower risk than ordinary shares and therefore a lower expected rate of return. Since the risk of holding a preference share is higher than the risk of holding loan stock, the expected return (ignoring any tax differences) is higher than that received on loan stock.

## 3 Other types of long-term finance

There are many other types of finance that straddle the divide between debt and equity finance. We shall look at the main types of these hybrids.

### 3.1 Convertibles

#### Description



**Convertible forms of company securities are, almost invariably, unsecured loan stocks or preference shares that convert into ordinary shares of the issuing company.**

**Convertible preference shares are preference shares which give the right to convert into ordinary shares at a later date. The investor does not pay anything to convert other than surrendering the convertible preference shares.**

**Convertible unsecured loan stocks are unsecured loan stocks which give the right to convert into ordinary shares of the company at a later date.**

For example, £100 nominal of convertible unsecured loan stock might be convertible into, say, 30 ordinary shares on a specified future date.

The only difference between convertible loan stocks and convertible preference shares is the form of the capital before it converts into equity. Convertible loan stocks are loan capital until conversion, whereas convertible preference shares are share capital.

**The convertible loan stock will have a stated annual interest payment (paid in twice-yearly instalments). For convertible preference shares, the stated rate will be in a similar format to dividends.**

**In the UK, in respect of capital gains, all convertibles are non-qualifying and therefore capital gains tax may be payable. Loan stocks provide gross income and preference shares provide income in the same format as dividends.**

Convertible stocks have several advantages over ordinary share capital and ordinary unsecured loan stocks, both from the issuer's and from the investor's point of view.

They are popular in the US as a form of finance for new companies. These companies have no track record and might find it difficult to raise funds in more conventional ways.

Investors have the security of a fixed return in the short term and the possibility of long-term capital gain if they convert to ordinary shares in the future.

**This additional prospective return means that the issuer does not have to offer excessively high rates of interest on the loan stocks in order to attract lenders.**

Following conversion the shareholder will receive an ordinary share certificate to replace the convertible preference share or loan stock certificate. The shareholder then stops receiving preference dividends or interest payments and instead starts receiving whatever ordinary share dividend is declared.

**If the holder chooses not to convert, then the security might continue as a loan stock or preference share for a period of time. Alternatively it might be redeemed on a prescribed basis immediately.**

## Conversion dates and terms

The dates and terms of conversion are specified at the time of issue.

**There will be a specified number of ordinary shares for each convertible. The date of conversion might be a single date or, at the option of the holder, one of a series of specified dates.**

Some examples of possible conversion terms are:

- Fixed date and fixed terms, *eg* each convertible 8% irredeemable preference share may be converted into an ordinary share on 1 July 20XX.
- Variable dates and fixed terms, *eg* each convertible preference share may be convertible into 2 ordinary shares on any 1 January between 20XX and 20XX+5. It is up to the investor to choose when (and whether) to convert between these dates.
- Variable dates and variable terms, *eg* each convertible preference share may convert into 2 shares if conversion takes place on 1 January 20XX, 2.5 shares if conversion takes place on 1 January 20XX+1, 3 shares if conversion takes place on 1 January 20XX+2 *etc.*

The conversion terms are always revised following a capital restructuring such as a scrip issue or a rights issue – these are described later in the course.

**The period prior to the first possible date for conversion is known as the rest period.**

The period during which conversion may take place is, not surprisingly, known as 'the conversion period'.

### ***Conversion premium***

**At any time, the cost of obtaining one ordinary share by purchasing the required number of convertible securities and converting can be compared with the market price of the share. The difference is known as the *conversion premium*.**



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## Question

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*GHI* plc issues £500,000 of convertible loan stock. Holders will have the option to convert each £100 of stock into 80 ordinary shares in 6 months' time. The current share price is 86p, and the loan stock is trading at par.

Calculate the current conversion premium per share.

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## Solution

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First we need to find the effective conversion price. This is the price an investor pays for a share by buying it via the convertible, rather than on the cash market. The stock is trading at par and so £100 of stock costs £100.

$$\text{Effective conversion price} = \frac{10,000p}{80} = 125p.$$

The conversion premium is the effective conversion price *minus* the current share price. So here the conversion premium per share =  $125 - 86 = 39p$ .

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### *Investment characteristics prior to conversion*

**The characteristics of a convertible loan stock in the period prior to conversion are a cross between those of fixed-interest stock and ordinary shares. As the likely date of conversion (or not) gets nearer, it becomes clearer whether the convertible will stay as loan stock or become ordinary shares. As this happens, its behaviour becomes closer to that of the security into which it will convert. This is also the case for convertible preference shares.**

### **Risk**

**There will generally be less volatility in the price of the convertible than in the share price of the underlying equity.**

This is because the dividend payment is fixed and does not depend to the same extent on the short-term profits growth of the company.

The security of dividend payments for a convertible is higher than that of an ordinary share, and the *option* to convert to an ordinary share or leave it as a fixed-interest security allows the investor to be sure of a minimum expected return.

### **Return**

**Convertibles generally provide higher income than ordinary shares and a lower income than conventional loan stock or preference shares.**

This is because prior to conversion convertibles do not benefit from the dividend growth enjoyed by ordinary shareholders, but longer term convertibles do offer the prospect of benefiting from the growth of the dividend.

### **Marketability**

The market in convertible stock is not large in the UK. It is more significant in the US, where convertibles are a more common form of finance, particularly for new businesses.

### **Conclusion**

**From the investor's point of view, convertible securities offer the opportunity to combine the lower risk of a debt security with the potential for large gains of an equity. The price paid for this is a lower running yield than on a normal loan stock or preference share.**

## 3.2 Warrants

**Warrants are call options written by a company on its own stock.**

Options are discussed in [Chapter 8](#). The purchaser of a warrant has the right but not the obligation to buy a fixed number of the company's shares at a fixed price (known as the 'strike price') at a fixed date. Taking up this right is known as 'exercising'.

**When they are exercised, the company issues more of its own shares and sells them to the option holder for the strike price. The exercise of a warrant leads to an increase in the number of shares that are outstanding. This, in turn, leads to some *dilution* in the value of the equity.**

**Warrants are often added to the issue of a fixed-interest bond to make it more attractive to investors – a significant proportion of private placement bonds, are sold with warrants. Warrants are also often given to investment banks as compensation for underwriting services or used to compensate creditors in the case of bankruptcy.**

Private placement bonds are sold directly to a small number of lenders such as banks, insurance companies and pension funds, rather than being offered for sale on the open market. Investment banks issue shares on behalf of companies and agree to buy any shares that are not sold to the general public, *ie* they underwrite the share issue. We look at the process of issuing shares in the next chapter.

**The warrant holders are not entitled to vote or receive dividends. But the exercise price of the warrant is automatically adjusted for any share dividends or share splits.**

For example, if the company doubles the number of shares and distributes two new shares for every one share held, then it will also double the number of warrants and halve the exercise price.

**Typically, a warrant lasts for several years. Once they have been created, they sometimes trade separately from the bonds to which they were originally attached.**

## 3.3 Options issued by companies

**In addition to warrants and convertibles, the main class of option issued by companies are *executive stock options*.**

These are, effectively, warrants issued to senior managers as part of their remuneration package, with strike prices that are intended to represent a performance target for the executive.

**As noted in Section 3.2 above, the effect of issuing such instruments is to dilute the value of the equity already in issue. Increasingly, firms with significant amounts of warrants (or convertibles) outstanding are required to report earnings on a 'fully diluted' basis. This recognises the potential increase in the number of shares.**

Shareholders are interested in the *earnings* of the company, *ie* the profit after tax that is available for distribution to the shareholders or for ploughing back into the business. Total earnings may not mean very much to a shareholder but *earnings per share* shows how much after-tax profit has been generated per share. If the number of shares is likely to rise because of obligations that the company has entered into, such as convertibles, warrants and stock options, then the *diluted earnings per share* can be calculated. This assumes that all options are exercised in full and therefore gives a 'fully-diluted' figure.

## 4 Winding up a company

To help bring together some of the contents of this chapter it is useful to consider the hypothetical winding-up of a company:

Imagine the ABC Company plc. The company makes widgolets, a component required by the widget-making industry. The company has issued both share capital, including ordinary and preference shares, and loan capital: some fixed-charge debentures secured on the company's factory, some floating-charge debentures and an unsecured loan stock.

The company has borrowed money from the bank using a flexible loan facility. It has also pushed its overdraft to the limit. The company has trade credit agreements with its suppliers and is buying some machinery on hire purchase. (We'll see more about all of these arrangements later in the course.)

The company has had a bad year owing to a recession, which has hit the widget industry particularly hard. Its profits are down to such an extent that it is unable to pay the interest on the unsecured loan stock, although the debenture interest payments are made in full.

The unsecured loan stock holders have a meeting and decide to sue the company. Their claim is successful and the court orders the company to be wound up. The assets are sold and the various lenders receive payment as follows:

1. The hire purchase company repossesses its machinery.
2. Mortgage debenture holders receive payment from the proceeds of the assets charged to them, *ie* the factory. This is not necessarily a comfort to them. If the widget industry is in serious decline, the factory and its contents (widgolet-making machinery) may be almost worthless.
3. Floating-charge debenture holders (together with fixed-charge debenture holders should the fixed charge prove to be insufficient) have first claim to the remaining assets. As soon as the court decides that the company should be wound up, the floating charge is crystallised into a fixed charge.
4. Employees receive any arrears in their wages. The employees of a company have first call on the *company's* assets.
5. Other creditors come next. This includes the bank and the trade suppliers and unsecured loan stock holders.
6. If anything is left, preference shareholders are paid next.
7. Ordinary shareholders will receive whatever is left after the rest of the claimants have been paid. As you can imagine, this may not be very much. Often it will be zero.



## Chapter 4 Summary

### Long-term finance

Long-term company finance can be classified as *share capital* and *loan capital*.

*Ordinary shares* are the most common type of share capital. They give rights to a share of the residual profits of the company, and to the residual capital value if the company is wound up, together with voting rights and various other rights.

*Preference shares* give their holders a preferential right to dividends and return of capital, compared to ordinary shareholders. Preference shares usually pay a fixed dividend. They normally give voting rights only when dividends are not declared.

*Convertible preference shares* are one variety of preference shares. They give holders the right to convert their preference shares into ordinary shares on fixed terms on certain dates.

Holders of share capital are *members* of the company. Holders of loan capital are *creditors* of the company. They do not have voting rights. They receive *interest payments* which are a cost to the company, not a distribution of profits. Interest is normally paid twice a year.

*Debentures* are loans which are secured on some or all of the assets of the company. They are regulated by a *Trust Deed* which is overseen by a *trustee*. Debentures may be secured by a *fixed charge* on specified assets, or by a *floating charge* across a class of assets.

With *unsecured loan stock* there is no specific security for the loan. *Convertible unsecured loan stocks* give their holders the right to convert into ordinary shares of the company at a later date.

*Subordinated debt* is junior debt and is paid after all senior debt holders are paid.

A *Eurobond* is a form of unsecured loan capital that is issued outside the legal and tax jurisdiction of any country. It is a *bearer document*, paying interest normally once a year. Interest is paid *gross*. It may pay a variable rate of interest, in which case it is known as a *floating-rate note*.

A *warrant* is a call option written by a company on its own stock. The owner of the warrant has the option to buy a fixed quantity of the company's shares at a fixed price at a fixed date. *Executive stock options* are effectively warrants issued to senior managers, with strike prices that are intended to represent a performance target for the managers.

The various forms of company capital differ in many ways:

### **Risk**

*Debentures* are the most secure form of company capital, being covered by a floating charge over the company's assets or a fixed charge on a specific asset.

*Eurobonds* and *unsecured loans* follow debentures – they have a prior right to profits before *preference share capital* or *ordinary shares*, which are last on the list in that order.

*Convertible shares* or *loan stock* will be as risky as the corresponding preference share or loan stock until it is converted into equity, at which point the riskiness increases.

### **Return**

Investors expect a higher return for accepting higher risk.

As such the expected return from each form of capital is in reverse order to the list for risk, namely (highest to lowest): *ordinary shares*, *preference shares*, *unsecured loans*, *Eurobonds*, and *debentures*.

The actual cost to the company will be equal to the return achieved by the investor (ultimately), however the immediate cost to the company of servicing the capital is higher for debt than for equity.

### **Marketability**

*Equity* is the most common form of company capital, and is as such the most marketable. The marketability of the other forms depends very much on the size of the issue (which usually favours *Eurobonds*) and the credit rating of the borrower, as assessed by an independent agency.

### **Tax**

Most forms of company debt have the advantage that interest payments are deducted from pre-tax profits and so help to reduce the company's tax charge. Ordinary and preference shares pay dividends that are deducted from the company's income statement after tax.



## Chapter 4 Practice Questions

4.1 Describe:

- (i) par value and market value of shares
- (ii) authorised and issued share capital
- (iii) preference shares and ordinary shares
- (iv) loan capital and ordinary share capital
- (v) fixed and floating charges
- (vi) debentures and unsecured loan stocks
- (vii) Eurobonds and traditional forms of UK loan capital.

4.2 Explain whether each statement is true or false:

- (i) Government bonds are more marketable than debenture stock.
- (ii) Eurobonds are more marketable than ordinary shares.
- (iii) Debentures provide a higher return than unsecured loan stock.
- (iv) Convertible loan stock generally provides a lower income yield than conventional loan stock.
- (v) Ordinary shares generally provide a higher income yield than convertible preference shares.
- (vi) Warrants are a form of loan stock.
- (vii) Executive share options are a form of warrant.
- (viii) Eurobonds are less risky than debentures.

Exam style

*All of the questions that follow are exam style.*

4.3 Which of the following statements concerning Eurobonds is false?

- A Eurobonds are often issued outside the country of the currency of issue.
- B Eurobonds are often issued outside the country of the borrower.
- C Eurosterling can be issued in London.
- D Eurobonds are only issued in Europe.

[2]

4.4 Consider the following definition:

'The lender's security is a specified asset which the borrower cannot dispose of (without the lender's permission). The lender can repossess upon default or appoint a receiver to intercept income (eg rent).'

This is a definition of a:

- A Eurobond.
- B warrant.
- C fixed-charge debenture.
- D floating-charge debenture. [2]

4.5 Which of the following is correct?

- A Interest payments are always greater than dividend payments.
- B Interest is paid out of pre-tax profit and dividends are paid out of post-tax profit.
- C Interest is paid on debentures and dividends are paid on unsecured loan stock.
- D Interest is taxable but dividends are not. [2]

4.6 Which of the following ranks lowest if a company is wound up?

- A Eurobonds
- B mortgage debentures
- C floating-charge debentures
- D preference shares [2]

4.7 A highly risk-averse investor should NOT invest in ordinary shares because:

- A ordinary shares offer a low expected return relative to other securities.
- B ordinary shareholders have the last entitlement in the event of a winding-up of the company.
- C they offer a low initial yield.
- D shareholders have pre-emptive rights. [2]

4.8 Under a floating charge:

- A the company may not, in the usual course of business, realise assets which are subject to the charge.
- B a default by the company will make the charge crystallise into a fixed charge.
- C specific assets are available to meet investors' claims if the company defaults on interest or capital payments.
- D security is provided in the event that the borrower defaults on the final capital payment, but not in the event of default on the interest payments. [2]

4.9 Which of the following will NOT dilute the value of the equity in a business?

- A warrants
- B Eurobonds
- C convertible loan stock
- D executive stock options [2]

- 4.10 A convertible bond gives the right to purchase 70 ordinary shares per £100 nominal. The market prices of the convertible bond and ordinary shares are £120 and 90 pence respectively. The conversion premium per share is:
- A 81p  
B 125p  
C 129p  
D 171p [2]
- 4.11 Explain why ordinary shares are popular amongst both issuers and investors. [5]
- 4.12 Loan stock can be issued in many forms. Describe the generic characteristics of loan stock. [5]
- 4.13 Describe the investment characteristics of convertible loan stock. [5]
- 4.14 An investor purchases a convertible loan stock convertible to one ordinary share at any time up to 31 December 20XX. List the possible courses of action open to the investor, and state circumstances in which each might be appropriate. [5]
- 4.15 Explain the reasons why a company might choose to issue a Eurobond rather than issue ordinary shares in order to raise capital. [5]

The solutions start on the next page so that you can separate the questions and solutions.



## Chapter 4 Solutions

### 4.1 (i) **Par value and market value**

The par value of a share has little significance other than the restriction that shares cannot be issued for less than their par value. A company's share capital is found by multiplying the par value of its shares by the number of shares in issue.

The market value of a share is what it would actually sell for in the open market. It usually bears no relation whatever to the par value of the share. The market value can change from minute to minute as trading takes place. The par value, however, is fixed and cannot normally be changed.

### (ii) **Authorised and issued share capital**

The authorised share capital of a company is expressed as a nominal value, *ie*  $x$  shares of  $y$  par value. The value stated is the maximum amount that the directors can issue without the approval of the shareholders of the company.

The issued share capital is the nominal amount that has actually been issued. It cannot be greater than the authorised share capital.

### (iii) **Preference and ordinary shares**

Preference shares normally pay a fixed dividend. Ordinary share dividends vary depending on the level of profits made by the company.

Preference dividends must be paid before an ordinary dividend can be paid. There is no similar obligation for companies to pay ordinary dividends.

Ordinary shares will (normally) carry the right to vote. Preference shares do not normally have this right, unless either:

- a preference dividend is not paid, or
- the company is proposing to alter the rights attaching to preference shares.

### (iv) **Loan capital and share capital**

Holders of loan capital are creditors of the company. They receive interest payments which are a cost to the company, not a distribution of profits. Loan capital is redeemable, often after 10 to 20 years. The interest payments and redemption terms are fixed at the outset of the loan. Loan capital may be secured on the assets of the company. These assets may be sold in the event of default.

Holders of share capital are members of the company, *ie* they own the company. They receive dividends which are variable, and which are paid out of the profits of the company. Shares are not usually redeemable. Share capital is not secured on the assets of the company, although the shareholders do have a right to the residual value of the company on a winding-up – but only after all the creditors have been paid.

**(v) Fixed and floating charges**

A fixed charge means that the loan is secured against specific named assets. If the company defaults on interest or capital payments, the assets can be sold and the proceeds used to reimburse the lenders.

A floating charge means that the loan is secured on the general assets or a class of assets of the company. No specific assets are named in the trust deed. The company can sell or alter its assets, as long as the replacement assets are satisfactory for the lenders (*ie* of a sufficient value to cover the amount of the loan). If the company defaults, a floating charge will 'crystallise' and the assets must be sold to repay the lenders.

**(vi) Debentures and unsecured loan stock**

A debenture is a loan to a company which is secured on the assets of the company. It may be secured by a fixed charge or a floating charge. If the company defaults on its payments, the assets covered by the charge will be sold and the proceeds used to reimburse the debenture holders. The rights of the debenture holders will be set out in a Trust Deed, which is overseen by a trustee.

An unsecured loan stock will not be secured on any of the company's assets. It may be governed by a Trust Deed. If the company defaults, the only remedy available to the loan stockholders is to sue the company.

**(vii) Eurobonds and traditional loan capital**

Eurobonds are issued outside the legal and tax jurisdiction of the country in whose currency they are denominated. They are traded on the international markets. They may have fixed or variable rates of interest. If the interest paid is variable, the issue is known as a 'floating-rate note'. Eurobonds are bearer documents. They are normally unsecured. Coupons are normally payable annually, without deduction of tax.

Traditional UK loan capital is issued in the UK and may be traded on the London Stock Exchange. Fixed interest rates are the norm (although a very small number of issues with variable interest rates have been made). The issuing company will keep a register of loan holders. Traditional UK loan capital is often secured on the issuing company's assets. Coupon payments are typically made twice a year.

- 4.2
- (i) True. Marketability of debentures is lower than the marketability of government bonds because the debenture issues are smaller. Trading in a particular debenture can be infrequent.
  - (ii) False. Ordinary shares are the most common form of company finance and are the most marketable. Eurobonds are usually more marketable than other forms of debt finance because they are issued in larger amounts and are actively marketed by banks.
  - (iii) False. Debentures provide a lower expected return because they are the more secure form of company finance. Holders of unsecured loan stock take a greater risk and thus require a greater reward.



- (iv) True. Convertible loan stock generally provides a lower income than conventional loan stock because convertibles offer the prospect of dividend growth in the future. Investors are attracted by the prospect of dividend growth in the future and are thus willing to accept lower income in the short term.
- (v) False. Convertible preference shares generally provide a higher income than ordinary shares because convertibles do not at present offer the benefit of dividend growth. An ordinary shareholder is willing to accept a lower initial income in return for dividend growth, whereas the holder of a convertible does not benefit from dividend growth at present and would require a higher income.
- (vi) False. Warrants are not a form of loan stock. They are call options written by a company on its own stock. They are often issued in conjunction with a fixed-interest bond to make the bond more attractive to investors.
- (vii) True. Executive share options are options to buy the company's shares. They are issued to senior management as part of an incentive package.
- (viii) False. Debentures are secured on some or all of the assets of the company. Eurobonds are a form of unsecured loan stock and rank after debentures in a wind-up.

#### 4.3 Answer = D

The term 'Euro' is misleading (although the oldest, and still the main, markets are in Europe). The other statements are all correct.

#### 4.4 Answer = C

Debentures can be either fixed-charge (or mortgage) debentures or floating-charge debentures. Fixed-charge debentures are secured against a particular asset.

#### 4.5 Answer = B

Interest is paid on loan stock, whereas dividends are paid on equity. Interest could be greater than, equal to or less than dividend payments (though the overall return to equity is expected to be greater than the return to debt because equity is riskier for the investor). Interest payments are treated as an expense for the company and are therefore paid out of pre-tax profit. Dividends are paid out of post-tax profit. Both interest and dividends are taxable, though in some countries governments give at least some credit to the recipient for the tax that has already been paid by the company.

#### 4.6 Answer = D

Loan stock holders (Options A, B and C) are always paid before preference shareholders.

#### 4.7 Answer = B

A is false, and C and D are wrong because these should not prevent a risk-averse investor from investing in ordinary shares.

4.8 Answer = B

A and C would be true for a fixed charge.

4.9 Answer = B

Eurobonds do not have any effect on the number of shares issued. The other three could all cause an increase in the number of shares and therefore a dilution of the value of the equity in the business.

4.10 Answer = A

The conversion premium is the extra amount that an investor pays for a share by buying it as a convertible, compared with the cost of buying the share directly.

In this case, the calculation is:  $\frac{120}{70} - 0.90 = 81p$ .

4.11 Ordinary shares are attractive to issuers because:

- they are the lowest ranking form of finance issued by companies. Dividends are not a legal obligation of the company and are paid only at the discretion of the directors [1]
- income yields are usually low because of the expected future capital gain. Ordinary shares therefore have lower servicing costs compared to debt in the early years after issued. [1]

Ordinary shares are attractive to investors because:

- they are expected to provide a high rate of return. Dividends and capital values are expected to grow over time. Due to their residual nature, the level of dividends and the capital value will be more volatile than most other forms of investment. As a consequence of this risk, the return can be expected to be high. [1]
- profits are likely to grow due to inflation and therefore shares are likely to offer protection from inflation with a high real rate of return. [1]
- they are often highly marketable because issues of ordinary shares tend to be large and of a standard type. Buying and selling of ordinary shares by investors takes place relatively frequently. [1]

[Total 5]

4.12 Bondholders are creditors of the company. They have no voting rights. [1]

In most cases a trustee is appointed to look after the interests of the bondholders. The Trust Deed sets out the obligations of the company to the bondholders, for example, bondholders may acquire voting rights in certain circumstances. [1]

A bond gives the holder the right to an annual coupon (usually paid in two instalments) and the redemption of the nominal value after a certain fixed amount of time. [1]

The coupon is usually a fixed proportion of the nominal value. For example, a 5% debenture will pay £5 interest per annum for each £100 of stock. [1]

The market price of the bond varies with the demand for and the supply of the bond. One of the main influences on the price of a bond is the interest rate being offered elsewhere. If interest rates rise, the price of bonds tends to fall. [1]

Most stocks are issued close to par and thus there is rarely much in the way of capital gain expected. Therefore they usually provide a higher level of initial income yield than equities. [1]

However, the overall return on a bond is likely to be slightly less than from an equity issued by the same borrower due to the greater security of loan stock. [1]

Marketability of corporate bonds tends to be lower than the marketability of the equivalent equity and lower than Government bonds, which are extremely marketable. [1]  
[Maximum 5]

**4.13** Convertible bonds are issues of loan capital, which give the holder the option to convert into equity. The dates and terms of conversion will be fixed at the outset. [1]

The investment characteristics of convertible bonds may be similar to conventional bonds or to ordinary shares or a combination of both. [1]

It depends on whether or not conversion is likely. If conversion is almost certain, a convertible is effectively the same as the underlying share with a different income stream in the period before conversion. If conversion is unlikely, the convertible is very similar to a normal fixed-interest bond. [1]

In all cases the option to convert will have some positive value. [1]

This uncertainty/option value can be measured by the conversion premium. This is the price paid for an ordinary share by buying a convertible (*ie* the effective conversion price per share) less the market price of an ordinary share. [1]

The 'effective conversion price per share' is given by:

$$\text{price of convertible} \div \text{number of shares it converts into} \quad [1]$$

[Maximum 5]

**4.14** *Convert now*

This could be appropriate if the value to the investor (after tax) of the dividend is bigger than the loan stock coupon. [1]

*Convert later*

If interest income is bigger, the investor could wait until the dividend grows to exceed it. He or she might even wait a bit longer than that if dividends were thought to be volatile. [1]

*Convert at last possible date*

The investor might do this if the interest income remained higher than the dividend throughout the whole life of the loan stock. This would be the correct course of action if the share price was higher than the remaining value of the loan stock. [1]

*Sell*

The investor might do this if he or she wanted the money and the market value of the convertible loan stock was bigger than the market value of the shares it converted to (which it should be). [1]

*Hold to redemption*

Do this if none of the situations described above apply. [1]  
[Total 5]

4.15 Eurobonds are unsecured loans and therefore their owners do not vote, whereas issuing ordinary shares may result in the control of the company being diluted if the existing shareholders do not buy all of the shares. [1]

Eurobonds rank ahead of ordinary shares in the event of a wind up, and therefore are less risky. This means that over the long term they should offer a lower return and be cheaper for the company to service. [1]

Eurobonds are easy to issue in a variety of currencies, whereas shares are normally only issued in the domestic currency. [1]

Eurobonds are cheaper and easier to service because they:

- are bearer and do not require a register of owners to be maintained [1]
- do not entitle owners to be invited to annual general meetings [1]

Eurobonds can be issued on a floating rate basis, which may mean that the interest reduces if short-term interest rates reduce. [1]

Eurobonds mature on some future date, and no longer need to be maintained, whereas equity shares once issued are normally irredeemable. [1]  
[Maximum 5]

# 5

## Issue of shares

### Syllabus objectives

- 2.3 Demonstrate a knowledge and understanding of the characteristics of the principal forms of financial instrument issued or used by companies and the ways in which they may be issued.
1. Outline the reasons a company might have for seeking a quotation on the Stock Exchange.
  4. Outline the following methods of obtaining a quotation for securities:
    - offer for sale
    - offer for sale by tender
    - offer for subscription
    - placing
    - introduction.
  5. Describe the following types of new issues to existing shareholders:
    - scrip issue
    - rights issue.
  6. Describe the role of underwriting in the issue of securities.

## 0 Introduction

The previous chapter introduced the main long-term securities traded in the financial markets. In this chapter we look at some aspects of how the *markets* for these securities actually work. In particular, we look at how companies issue securities.

There are two types of transactions to consider:

- *new issues* (or 'primary' market transactions) where an issuer (*eg* a company) raises money by selling securities to lenders (*eg* institutional investors such as pension funds and insurance companies)
- *secondary market transactions* where one investor sells the security on to another investor.

Secondary market transactions also serve a useful economic purpose. If shareholders could not easily sell their shares, few people would be willing to buy shares in the first place.

The structure of this chapter is as follows:

Section 1: Obtaining a stock exchange quotation

Section 2: Issues made by companies already quoted.

**The information in this chapter reflects the UK context but similar issues apply in other countries.**

# 1 Obtaining a stock exchange quotation

## 1.1 Meaning of the word 'quotation'

**If a company successfully obtains a quotation on a stock exchange, the price of its securities will be included on the exchange's official list. Such quoted securities are called listed securities.**

For example, the UK Stock Exchange runs *two* different markets for UK equities:

1. the 'Alternative Investment Market' (AIM)
2. the main market.

Companies requiring a quotation on either market must fulfil certain minimum requirements. The minimum requirements for a 'full' listing on the Stock Exchange's main market are more onerous than for an AIM quotation. For example:

- a full listing requires 25% of shares to be in public hands (there is no such requirement for an AIM quotation)
- a full listing requires a three-year trading record (there is no minimum trading record required for an AIM quotation).

## 1.2 The reasons for seeking a quotation

**Obtaining a quotation has costs (eg accountants', solicitors' and brokers' fees), as does maintaining a quotation (eg an annual fee paid to the Stock Exchange). So why do companies choose to incur these costs?**

### **To raise capital for the company**

Most businesses start off small and, if they are successful, grow over a period of time. There may come a stage in the life of a company where further expansion requires more capital than the existing shareholders and the company's bankers are willing to provide.

**Getting a quotation allows the company to sell new shares to a wide market and to raise large sums of money as cheaply as possible.**

This is often the prime motivation for obtaining a quotation.

**The majority of companies choose a method of obtaining a quotation which raises new funds at the same time.**

### **To make it easier for the company to raise further capital**

**Once a company has a quotation, it will be easier for it to sell new shares in the future. In addition, providers of debt finance will be happier to lend money to a quoted company because they will feel safer in the knowledge that the company has to meet the Stock Exchange's on-going quotation requirements.**

These requirements cover, for example, the availability of information on the company.

## To give existing shareholders an exit route

This is another common reason for obtaining a quotation. A family run business may have got to the stage where the family members want to retire, or where they feel that the company would do better with professional managers. Alternatively, the family may simply want to realise the value of their investment. Whatever the reason, obtaining a quotation provides an easy way for a family to sell its holdings.

**Similarly, specialist providers of equity capital to small unquoted businesses (known as venture capitalists) usually want to realise their investments after a few years. A quotation provides an exit route for venture capital investment (often referred to as 'private equity').**

## To make the shares more marketable and easy to value

The reasons given in the list below are unlikely to be the main motivation for a quotation. However, the directors may feel that the following advantages for shareholders will reinforce some of the other benefits.

- **The fact that shares can be easily valued helps with inheritance and capital gains tax calculations.**
- **Because the shares are more marketable and more easily valued, shareholders will find the shares more useful as backing for their own borrowing.**
- **Quoted companies often use their own shares to offer to the target company's shareholders in a takeover bid. Quoted shares are much more effective for this purpose.**  
However obtaining a quotation could also make the company more likely to become the *target* of a takeover.
- **Some companies offer employee share schemes to help motivate their staff. Such schemes will be more attractive if the shares are quoted.**




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### Question

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We have just described various reasons why a company might obtain a quotation. List the possible disadvantages of doing so.

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### Solution

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Possible disadvantages:

- Obtaining a quotation is expensive and time-consuming.
  - There may be additional disclosure requirements, regulation and accounting standards to comply with.
  - Original owners have no control over the future owners of the company.
  - A takeover bid is possible.
-



### 1.3 Methods of obtaining a quotation

We will now look at the main methods of obtaining a quotation. These are:

- offer for sale at a fixed price
- offer for sale by tender
- offer for sale by subscription
- placing
- introduction.

### 1.4 Offer for sale (at a fixed price)

#### Description

**The usual method for obtaining a stock exchange quotation while also raising new money is an offer for sale. In an offer for sale at a fixed price, a predetermined number of shares (or other securities) is offered to the general public at a specified price.**

The shares are offered to the general public via an issuing house.

The shares offered could be new shares (if the purpose of the quotation is for the company to raise money). Alternatively, the shares may be old shares (if the purpose of the quotation is for the existing shareholders to sell some or all of their shares).

Offers for sale are the most common method used to obtain a listing. Also, offers for sale are almost exclusively used when a company first obtains a quotation (*ie* an offer for sale is hardly ever used on other occasions). Companies that are already quoted are more likely to use rights issues (see later in this chapter) if they wish to raise further equity capital.

#### The issuing house and underwriting

**Rather than selling shares directly to the public, the company or existing shareholders sell the shares to an issuing house. The issuing house is then responsible for selling shares to the public. In this way the issuing house 'underwrites' the issue.**

If the public does not buy all of the shares that are offered, the issuing house (and those whom the issuing house gets to 'sub-underwrite') will end up holding the shares. The company (or existing shareholders) are certain to raise the required amount of money. Underwriting is covered in more detail later in the chapter.

**Issuing houses are usually part of an investment bank. As well as underwriting an offer for sale, their role is to act as professional advisers to the company, overseeing the whole process and co-ordinating the activities of the other professional advisers.**

Issuing houses may be remunerated in one of two ways:

1. an explicit fee is charged to the company, or
2. the price at which the securities are sold to the issuing house is a little below the price at which the securities are subsequently sold to the public.

Issuing houses are very keen that issues with which they are involved are successful. Consequently, the reputation of the issuing house is sometimes used by investors as an indication that the offer is a good one. This reinforces the issuing houses' desire to maintain their good name.

## **Timetable for an offer for sale**

### ***About one year before the offer***

The directors of a company wishing to obtain a quotation will usually start to talk to an issuing house at least a year before the securities are offered for sale. The issuing house will want to satisfy itself that the company and its directors are suitable before proceeding.

**The issuing house will try to ensure that pre-launch comments appearing in press are favourable. The company will also need to prepare itself eg by changing its documentation to make it a public limited company.**

A sponsoring broker will be appointed to discuss the issue with, and get approval from, the Stock Exchange's Quotation Committee.

### ***The weeks leading up to the issue***

**In this period the issuing house will advise on the price which should be set.**

Setting a price can be quite difficult. Both the issuing house and the company will want to avoid an undersubscribed issue because it is felt that this damages the reputation of both.

**The tradition is to be cautious in pricing new issues.**

As a consequence of conservative pricing (*ie* setting the price on the low side), it is usual for a new issue to be oversubscribed.

**The final price will not be set until the formal prospectus is published.**

### ***Issuing the prospectus – 'Impact day'***

**Once the offer price is set, the prospectus (or listing particulars) is made available to the public. The prospectus, or alternatively an offer notice, will be reproduced in at least one national newspaper, and the prospectus may be made available through other channels.**

These other channels might include, for example, high street banks.

**The prospectus contains a great deal of information about the company, its activities, financial position, reasons for the issue and people involved in the issue. There is a duty on the professional advisers to disclose all relevant information.**

The issuing house will also want to protect its reputation. Therefore, information in a prospectus is generally reliable.

**The prospectus will also include an application form.**

### ***Applications***

**Typically, applications from the public to buy securities can be made for a period of about a week following the issue of the prospectus.**

**Usually, the issue will have been oversubscribed by the time the offer is closed. In these cases the issuing house needs to determine the basis of allocation ie how it will determine which offers to accept in full, which to reject, or scale down.**

Often there are two objectives to be balanced:

1. ensuring that the securities are widely held (so that there is an active market in the shares)
2. reducing administration costs.

A basis of allotment could be to reject all applications for less than, say, 1,000 shares, to fully meet applications for between 1,000 and 20,000, and for applications over 20,000 shares to give only, say, one share for every five applied for.

Another common allocation method is to use a ballot in order to determine which applications are accepted.

### ***Letters of acceptance***

**Letters of acceptance are sent out to successful applicants, and refund cheques sent to those whose applications were rejected, or were scaled down. It takes some time for share certificates to be issued, and in the meantime the letters of acceptance can be used in place of share certificates for trading. In many countries, electronic 'paperless' share registration has replaced the traditional physical certificate, particularly for major listed companies. Official trading on the Stock Exchange starts the day after acceptance letters are posted.**

## **Conclusion**

The need to advertise in a national newspaper and to deal with lots of applications from the public, together with the cost of underwriting, make an offer for sale very expensive. However, the big advantage is that it ensures the widest possible market for the securities. It is the most common method of obtaining a quotation for large issues. Indeed, the Stock Exchange does not normally allow a quotation involving more than £50m of shares to be made without an offer for sale (at a fixed price or by tender).

## **1.5 Offer for sale by tender**

### **Description**

**An offer for sale by tender is similar to an offer for sale at a fixed price. However, instead of inviting applications at a specified price, the issuing house invites members of the public to submit a tender stating the number of shares which they are prepared to buy, and the price which they are prepared to pay.**

The prospectus will give a minimum price, but it is up to investors to determine how much to bid.

**After the offer closes, the issuing house will determine a single strike price. This may be the highest price at which all the stock can be allocated. However, a lower strike price will be chosen if this is necessary to ensure a sufficient spread of shareholders. All applicants who bid at least as much as the strike price will have their applications accepted.**

**All successful applicants will pay the strike price, regardless of how much more they had bid. Applicants who bid less than the strike price will have their applications rejected.**

## Conclusion

A company can raise more capital through using a tender rather than a fixed price, because investors are asked, in effect, to state the maximum amount that they are prepared to pay for the shares.

However, the allocation process for an offer for sale by tender is more complex. The method is also more likely to produce a more concentrated ownership of the shares, which is detrimental to their marketability. This is not only because smaller investors are put-off by the tender process, but also because all investors who bid below the strike price in the event of the offer being over-subscribed receive no shares at all. This contrasts with an offer for sale at a fixed price. Here, if the offer is oversubscribed, applications will often be scaled down. In fact, sometimes the strike price of an offer for sale by tender may be reduced and applications above the strike price scaled down, so as to achieve a wider share ownership.

### 1.6 Concessionary methods of obtaining a listing

The Stock Exchange likes offers for sale because it ensures a wide ownership of securities and because all investors are treated equally. However, in some circumstances the Stock Exchange allows alternative new issue methods to be used.

#### Offer for subscription

**These are similar to offers for sale. They are normally at a fixed price, but can be by tender. However, the whole issue is not underwritten. The company sells shares directly to the public. The issuing company bears (at least part of) the risk of undersubscription. An issuing house will still be employed as an adviser to the issue.**

Sometimes offers for subscription are used for unusual issues (*eg* a hi-tech bio-research company) and launches of investment trusts. In these types of issue it is far from certain whether investors will want to buy shares, and how many can be sold. In these cases the offer for subscription will only go ahead if a minimum number of shares are purchased. If too few applications are received, all applications will be rejected and cheques returned. If an offer for subscription is used, only new shares can be sold.

#### Placings (or 'selective marketings')

Raising money from the public can be an expensive exercise.

**A simpler, cheaper method of making small issues is known as a 'placing' or 'selective marketing'.**

**The issuing house first buys the securities from the company. It will then individually approach institutional investors such as pension funds and life offices directly. The institutions will be offered securities, but no public applications will be invited.**

Smaller investors dislike placings because they are not able to buy the shares. They would have to buy the shares later from one of the lucky institutions, usually at a price in excess of the placing price.

Companies like placings because they are cheaper for two main reasons:

- advertising and administration costs are minimised
- no sub-underwriting is needed (the process of a placing itself is very similar to the process used to obtain sub-underwriters anyway).

## Introductions

Not all of the reasons for wanting a stock exchange listing involve the immediate desire to raise new money or the sale of existing shares. In these cases, a stock exchange may allow the shares to be 'introduced' to a stock exchange listing.

**Introductions do not involve the sale of any shares. They simply mean that the existing shares will in future be quoted on the London Stock Exchange.**

**For a full listing, 25% of shares must be in public hands, that is, the 'free float' of shares available for purchase excluding strategic holdings in subsidiaries or cross-holdings must be at least 25% of the issued shares. The Stock Exchange only allows introductions in cases where this requirement is already met.**

Introductions can be used in several circumstances. For example:

- where an overseas company is already listed in, say, the USA, but wants to have a UK Stock Exchange listing as well
- where an already listed company wants to 'de-merge' into two or more separate companies; the new companies will obtain a quotation by way of an introduction
- where an unquoted company already has shares in wide ownership and sufficient capital but wants to become quoted.

## 1.7 The role of underwriting

We mentioned underwriting earlier in the context of an offer for sale.

**Underwriting is always used for an offer for sale. Underwriting may also be used for other share issues. Underwriting involves the following process:**

1. A company wants to raise equity capital by issuing shares.

**Rather than run the risk of not managing to sell all the shares and raise enough money, the company arranges to sell all the shares at an agreed price to the issuing house. The company will pay the issuing house a fee. Alternatively, in the case of an offer for sale, the fee can be included in the difference between the price at which the shares are sold to the issuing house and the price at which the issuing house sells them to the public.**

Underwriting is really like insurance for the company against the risk that the issue may not be successful.

2. **The issuing house accepts the risk that all the shares may not be bought. However, the issuing house will not want to retain the entire risk. The issuing house will arrange sub-underwriting. In return for a commission the sub-underwriters agree to take a proportion of the shares that are not bought by the public.**

Usually the issuing house will use several institutional investors such as pension funds and life insurance companies as sub-underwriters.

3. **Issues are priced so that they should be successful. Issuing houses take care not to over-price issues. The main risk faced by underwriters is that an unexpected event occurs between agreeing to accept the underwriting and the closing date for the offer for sale.**

The level of underwriting risk varies with the time between agreeing to accept the underwriting and the closing date for the offer for sale. An example of an unexpected event would be a stock market crash.

- 4a. **Fully subscribed issue: the issue goes ahead, and is fully subscribed. The issuing house and the sub-underwriters will have made an underwriting profit equal to their underwriting commission less any administrative expenses.**
- 4b. **Partly subscribed issue: the issue goes ahead, but not all of the shares are purchased. The underwriters and sub-underwriters get their fee/commission, but they also need to pay for all the shares that have not been purchased.**

They can then choose to sell in the market at a price that will almost certainly be well below what they have just paid. Alternatively, they can hold the shares on a longer-term basis, and hope that the price will recover.

**Underwriting is a form of insurance against the risk of an unsuccessful issue.**

It is used to ensure that the issuing company raises the required amount of money.




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### Question

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List the main methods by which a company can obtain a listing on the Stock Exchange.

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### Solution

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The main methods are:

1. offer for sale at a fixed price
  2. offer for sale by tender
  3. offer for subscription
  4. placing
  5. introduction.
-



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**Question**

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In each of the following multiple-choice questions, either one or two of these options is correct:

- I offer for sale
- II offer for subscription
- III introduction

In each case answer the question using the following code:

- A if I and II only are correct
  - B if II and III only are correct
  - C if I only is correct
  - D if III only is correct
- (i) Which may be at either a fixed price, or by tender?
  - (ii) Which raise new money?
  - (iii) Which involve the sale of shares to an issuing house?
  - (iv) Which does not involve the sale of shares?
  - (v) Which is cheapest for the company?
  - (vi) Which is most expensive for the company?

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**Solution**

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- (i) A
  - (ii) A
  - (iii) C
  - (iv) D
  - (v) D
  - (vi) C
-

## 2 Issues made by companies already quoted

### 2.1 Introduction

We now look at how new shares are issued by companies that are already quoted. The choices are set out below and depend on the reasons for the issue.

#### **Company wanting to raise new ordinary share capital**

The UK Stock Exchange's rules require that, in normal circumstances, a company issuing equity capital or convertibles for cash must offer these issues in the first place to the existing shareholders in proportion to their holdings. These are called 'pre-emptive rights'. (This requirement does not cover the case where a company takes over another company by issuing more shares to the target company's shareholders in return for their shares.) So a quoted company *must* make what is known as a 'rights issue' to existing shareholders if it wants to raise new equity capital.

In some countries existing shareholders do not have these pre-emptive rights. Shareholders may also vote to waive their pre-emptive rights. In such cases, a company may use a *placing* to raise additional capital as described in Section 1.6.

#### **Company wanting to increase the number of shares in issue, without raising new money**

This might seem like a strange thing to do, but it happens a lot in the UK. What happens is that new shares are issued to existing shareholders in proportion to their existing shareholdings. No money is raised, no one really gains, and no one really loses. This exercise is known as a 'scrip' issue. As we will see, the reasons for having a scrip issue are mainly psychological.

#### **Company wanting to raise new loan (or preference share) capital**

Here the choice is wider. Most companies will use a placing, although an offer for sale or for subscription could be used.

#### **Existing shareholders wanting to sell a large block of shares**

Occasionally, a large shareholder will want to sell shares in a quoted company. In this case an offer for sale will normally be made, rather than simply trying to sell a large number of shares in the normal way on the market.



## 2.2 Rights issues

### Introduction

**Under Stock Exchange requirements, when companies want to raise more capital through a further issue of shares, they are obliged to offer the new shares to the existing shareholders. This forms part of the rights of a shareholder.**

**A rights issue is where a company offers further shares, at a given price, to existing shareholders in proportion to their existing holdings.**

For example, a one-for-five rights issue allows each shareholder to purchase one new share for every five currently held.

**The price will be at a discount to the current share price.**

Otherwise nobody would want to buy the extra shares. It would be cheaper to buy further shares in the open market.

**The main effects of a successful rights issue are:**

- **new shares are created**
- **new money is raised for the company**
- **the total value of the whole company should be increased by the extra money raised**
- **the price per share will fall depending on the extent of the discount and the number of new shares issued.**

### Purpose of a rights issue

**The company's objective in a rights issue is to raise more money. The reasons for needing more money will vary.**

Possible reasons include:

- **the company has a fundamental problem, and its future survival depends on raising more cash**
- **to reduce the ratio of debt to equity capital**
- **the company has expanded too quickly and needs more cash for day to day needs**
- **to finance an expansionary investment programme**
- **to pay for the purchase of another company.**

**The reaction of the stock market to individual rights issues will depend on the reasons for the issue.**

### Timetable for a rights issue

**A few weeks before the rights issue, the company will discuss the possibility of an issue with its advisers. Companies often like to have a rights issue when the stock market is high because they see this as raising more money for a given cost.**

The company will publish a rights offer document which will explain why the rights issue is being made. Shareholders are then sent provisional allotment letters and the shares start to trade *ex-rights*.

This means that if someone new buys the shares, it is the seller not the new holder who has the rights.

The rights themselves can also be traded. Shareholders will be given three or more weeks in which to accept the offer or to sell their *nil-paid* rights.

As the name *nil-paid* suggests, the shareholder has not paid anything for these rights.

## Impact on share price

Before looking at the impact on the share price we need to define the term market capitalisation:

**Market capitalisation is defined as:**

$$\text{market capitalisation} = P \times \text{number of shares}$$

where  $P$  is the share price.

Before a rights issue, the share price is given by:

$$P = \frac{\text{market capitalisation}}{\text{number of shares}}$$

The price per share after a rights issue is:

$$P^* = \frac{\text{original market capitalisation} + \text{extra value}}{\text{total new number of shares}}$$

To estimate the *ex-rights* share price it is necessary to estimate the extra value component in the above equation. The factors incorporated within the extra value are:

- + the amount of new money raised by the rights issue
- the expenses of the issue
- +/- the change in value based on the market's revised perception of the company and the use to which the money is being put.

*Ignoring expenses and ignoring the market's reaction*

When only the first of the three factors given above is considered when trying to calculate the price of the shares following the rights issue, this is known as calculating the theoretical *ex-rights* price.

Suppose a company with share price  $P$  and  $N$  shares in issue makes a  $n$ -for- $m$  rights issue at a price of  $Q$  (at a discount to  $P$ ).

If we suppose that the extra value to the company is exactly equal to the gross amount raised, the new share price will be given by:

$$P' = \frac{(N \times P) + \left(\frac{n}{m} N \times Q\right)}{\left(\frac{m+n}{m}\right) \times N}$$

so 
$$P' = \frac{mP + nQ}{m+n}$$

**This theoretical price is the weighted average of  $P$ , the share price before the rights issue, and  $Q$ , the price at which the new shares are offered in the rights issue. Because the new shares are offered at a discount, the ex-rights share price will be below the original share price.**

#### ***Allowing for expenses and market reactions***

**Although the expenses item is easy to incorporate into the calculation, it is impossible to calculate explicitly the market's reaction. Often the share price immediately following the rights issue will be depressed below the theoretical weighted average price.**

This is because:

- shareholders don't usually like being asked for more money, so the company loses favour with investors
- if the rights issue is because the company is in trouble, market support for the company falls
- there will be an increased supply of shares in the company on the market (because some shareholders will sell their rights or extra shares), and this will depress the share price, in the short term at least.




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### **Question**

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Estimate the theoretical ex-rights share price in each of the following cases:

1. Current price: 250p  
Offer price: 150p  
Basis: 1-for-1
2. Current price: 250p  
Offer price: 150p  
Basis: 1-for-3
3. Current price: 250p  
Offer price: 150p  
Basis: 1-for-10

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## Solution

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In each case, we equate what the investor starts out with (*ie*  $m$  shares worth  $250p$  plus some money) to what they end up with (*ie*  $m+n$  shares worth the new price).

Let the theoretical ex-rights share price be  $P$ .

$$\begin{aligned} 1. \quad 2P &= 250 + 150 \\ P &= 200 \end{aligned}$$

$$\begin{aligned} 2. \quad 4P &= 250 \times 3 + 150 \\ &= 900 \\ P &= 225 \end{aligned}$$

$$\begin{aligned} 3. \quad 11P &= 250 \times 10 + 150 \\ &= 2650 \\ P &= 241 \end{aligned}$$


---

Issues where lots of new shares are issued (*eg* the first case in the previous question) are known as 'heavy' issues. Issues where only a few shares are issued (*eg* the last case in the previous question) are known as 'light' issues.

## Impact on statement of financial position

We will study the statement of financial position (also known as the balance sheet) in detail later in the course. At this stage, you need to remember that the share capital shown in the accounts is the nominal value of the issued share capital (number of shares  $\times$  par value of the share).

If the company raises more than this because the shares are sold above their par value, this is shown in the share premium account, which is part of the company's reserves.

For example, if a company raises an additional £70m from a rights issue of 100 million shares of par value 25p, then the issued share capital would increase by £25m and the share premium account in the reserves would increase by £45m.




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## Question

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Describe the impact on the statement of financial position of the company making the first rights issue in the previous question. Assume that the cash raised from the issue will be held in cash (which appears in current assets in the statement of financial position). Before the rights issue, its statement of financial position appeared as follows:

	<i>£m</i>
Non-current assets	250
Current assets	<u>100</u>
	350
Reserves	200
25p ordinary shares	<u>150</u>
	350

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## Solution

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Current number of 25p shares = 600m

Number of new shares issued = 600m

Nominal value of new shares = £150m

Cash raised = £900m

Expenses involved in rights issue unspecified.

Effect:

Current assets increase by £900m less expenses

Ordinary share capital increases by £150m

Reserves (*ie* share premium account) increases by £750m less expenses

If we ignore expenses, the new statement of financial position will look like this:

	<i>£m</i>
Non-current assets	250
Current assets	<u>1,000</u>
	1,250
Reserves	950
25p ordinary shares	<u>300</u>
	1,250

## Possible courses of action for shareholders

There may be several reasons why a shareholder chooses not to accept the rights, such as not having available cash, or not wanting to increase their exposure in that company.

In these cases, shareholders can sell their rights. What they would sell is their nil-paid right. The theoretical market value of the nil-paid right is the difference between the ex-rights share price and the rights issue price.

This should compensate the shareholder for the loss of value in the original holding.

### Terminology recap

Let us assume a company's shares are trading at a price of 100p before the company announces a rights issue. Immediately after a company has made an announcement that it intends to have a (say) 1-for-1 rights issue at a subscription price of 50p, we can think of an 'old' share as being equal to a 'new' share plus the right to subscribe for another new share at the subscription price of 50p. The right to buy a new share is called a '*nil-paid*' right and can be sold independently of the share itself.

The theoretical price of the new shares after the issue is:

$$\frac{1 \times 100 + 1 \times 50}{1 + 1} = 75p$$

75p can be thought of as the value of the 'new' share, *ie* the value of a share in the company after the rights issue has been completed. This is referred to as the '*ex-rights price*' of the share. The value of the *nil-paid right* is therefore:

$$\text{ex-rights price} - \text{rights issue price} = 75p - 50p = 25p$$

and these nil-paid rights can be sold separately.

The holder of a share prior to the issue therefore still holds shares with a value of 100p, comprising of a new share (now worth the ex-rights price of 75p) and the nil-paid right (worth 25p). Immediately after the rights announcement the shares are normally traded as a bundle of a new share plus the nil-paid right (*ie* they are not stripped and sold separately). The market price of this bundle is known as the '*cum-rights*' share price.

**Example**

Prior to a rights issue, shares in Growkwik plc were 100p. New shares were offered on a 1-for-1 basis at 50p. The ex-rights price was 75p (ie the theoretical price). Let's consider three different shareholders, each choosing a different courses of action.

*Shareholder 1 (has lots of spare cash and likes Growkwik):*

Original holding of 1,000 shares had market value of £1,000.

Shareholder takes up the rights, so spends £500 buying another 1,000 shares.

Market value of 2,000 shares at 75p is £1,500.

Increase in market value of holding = amount spent.

*Shareholder 2 (has little spare cash but wants to maintain value of holding in Growkwik at £750):*

To do this Shareholder 2 will need to increase the number of shares owned as the price of the existing shares has fallen from 100p to 75p.

Original holding of 750 shares had market value of £750.

Sells 500 nil-paid rights (out of total of 750 nil paid) at 25p each, raising £125.

Uses £125 to buy 250 of the new shares at 50p each.

Market value of 1,000 shares at 75p is £750.

No net expenditure and no change in the value of the holding in Growkwik.

*Shareholder 3 (keen to reduce holding in Growkwik):*

Original holding of 1,000 shares had market value of £1,000.

Sells all 1,000 nil paid rights at 25p each, raising £250 cash.

Market value of 1,000 at 75p is £750.

Decrease in market value of holding = amount raised through selling rights.

The example shows that, in theory, a shareholder should be indifferent to a rights issue, whether or not the shareholder is able to take up the rights. The result holds regardless of the size of the discount.

The example ignores any adverse movement in the share price that may occur through any adverse market sentiment and increased supply of shares on the market (caused, for example, by the actions of Shareholders 2 and 3).

## Are rights issues always at a discount to the market price?

Yes, unless something goes wrong.

When the issue is announced, the price must be at a discount or else no shareholders would take up their rights. However, in exceptional circumstances, there may be a collapse in the share price between the announcement date and the completion of the issue, such that the offer price is no longer at a discount to the market price.

## Underwriting of rights issues

**Rights issues don't have to be underwritten, particularly if the new shares are offered at a large discount. However, most rights issues are underwritten.**

There is a wide range, but a 'typical' discount would be about 10% to 20% of the current share price.

As with an offer for sale, having an issue underwritten means that various institutions agree to buy all the shares that are not taken up in the market. The risk for the underwriters is that the issue is a flop, and they are obliged to buy millions of shares, possibly at a level above their market value.

In return for accepting this risk, the underwriters will receive a fee of the order of 1% of the money to be raised.

## Is underwriting needed?

No.

**The advantage to the issuing company of having an issue underwritten is that it is certain to raise the desired amount of extra money.**

**However, companies could avoid the need to have an issue underwritten by setting an offer price that is very low compared to the market price.**

This is called a 'deep discount'. In this case, unless there was a total disaster, all the rights would be taken up either by shareholders or by other investors who purchase the nil-paid rights from the shareholders.

In order to raise as much money as a less discounted rights issue could raise, a deep discount rights issue needs to be 'heavier', but this poses no real problems.



The only problems with deep discount issues are:

- Selling rights can count as a disposal for capital gains tax purposes. The bigger the discount, the higher the price of the nil-paid rights. A deep discount issue can increase CGT liabilities for those investors who choose to sell their rights
- Companies are not allowed to issue shares below their par value. This places an upper bound on the size of the discount
- Deep discount issues are sometimes used by companies who were unable to get underwriters to accept the risk. Therefore, a deep discount issue can be interpreted by investors as a sign of weakness.

### **What happens if a shareholder does nothing following a rights issue?**

The Stock Exchange usually insists that companies sell shares in respect of all the rights which were not exercised on behalf of shareholders, and then share out the benefit of the premium over the rights subscription price amongst those investors who didn't exercise their rights.

## **2.3 Scrip issues**

### **Introduction**

Scrip issues (also known as 'bonus' or 'capitalisation' issues) may appear rather bizarre.

**A scrip issue (sometimes called a 'capitalisation' or 'bonus' issue) is where the company gives free shares to all ordinary shareholders in proportion to their existing holding. No payment is required from the shareholders.**

For example, a 1-for-2 scrip issue means that for every two shares held, investors are given a free share.

**The basic impact of a scrip issue should be:**

- **new shares are created**
- **no money is raised**
- **the fundamental value of the whole company is unchanged**
- **the price per share should fall in proportion to the increase in the number of shares**
- **the total value of each investor's holding should be unchanged**
- **shareholders' reserves in the statement of financial position are converted to share capital (hence the name capitalisation issue).**

Scrip issues are essentially just a book-keeping exercise.

**Example**

The statement of financial position for Loadsashares plc just before a scrip issue is (in £000s):

Non-current assets	1,381
Current assets	245
Debenture	150
Share capital (25p)	500
Reserves	976

The current price per share is £1.56. As there are two million shares in issue, the market capitalisation of the company is £3.12m.

The directors of Loadsashares decide to have a 1-for-2 scrip issue. Each shareholder gets one new share for each two held. This will have the following effects:

- market capitalisation should stay at £3.12m (there's no new value)
- there will be three million shares
- the price per share will be £1.04 (ie  $2/3 \times £1.56$ )
- an investor who held two shares at £1.56 each now has three at £1.04 each
- some of the reserves in the statement of financial position will have been capitalised.

The new statement of financial position, ignoring the expenses of the issue, will be:

Non-current assets	1,381
Current assets	245
Debenture	150
Share capital (25p)	750
Reserves	726

**Purpose of scrip issues**

Effectively, a scrip issue is a bit like a rights issue at 0p. This is where you should be asking 'what's the point of a scrip issue?' This is a perfectly reasonable question. Scrip issues don't *appear* to achieve very much. This is because they *don't* achieve very much!

**The arguments to support scrip issues are largely psychological.**

**Marketability**

**By having more, lower priced shares, the marketability (ease of selling / buying a share) is improved.**

However unless the price per share had got very big (over £1,000, say), it's hard to see that this argument is really relevant. Even for the very smallest share transactions, investors should be indifferent between 25 £20 shares and 250 £2 shares. However, apparently UK investors prefer share prices in the range 50p to £10. There might be some mysterious psychological factor for UK shareholders so that they think that ten £2 shares are better value than one £20 share.

### ***Something for nothing***

**Shareholders might like the idea of being given extra shares free of charge. Hence the name bonus issue.**

Liking the idea of being given extra shares for free presumably then outweighs the fact that each share should drop in value proportionately.

### ***Past profitability***

From the example on the previous page, we see that the scrip issue has converted some of the reserves into share capital (*ie* some of the reserves have been 'capitalised').

**Scrip issues can take place only if there are sufficient reserves to be capitalised. This means that scrip issues tend to be associated with successful companies which have built up large reserves from retained profits.**

Also, the marketability argument that a share price is getting too high (also described as too 'heavy') will apply only to shares that have been successful and risen in price.

Therefore, scrip issues tend to be associated with successful companies, so this provides a further positive psychological factor.

**Success implies that scrip issues are possible, so scrip issues are taken to imply success.**

### ***Future confidence***

**The minimum price at which a rights issue can occur is the par value of the shares. Yet rights issues must occur at a discount. Therefore, a rights issue is only possible if the current share price is above the par value of the shares.**

**A scrip issue reduces the price of a share. Therefore, having a scrip issue may reduce a company's ability to have a future rights issue if its share price declined following the scrip issue. If the directors decide to have a scrip issue, they must be confident about the company's prospects.**

Investors who read this contorted logic into a scrip issue may view a scrip issue as a sign of good news.

### ***Increased dividends***

**Some companies have a habit of having light scrip issues (eg 1 for 10) and subsequently keeping the same dividend per share. In these cases, a scrip issue may lead to, or be a sign of, higher dividends.**

In other words, a bigger proportion of profits will be paid out as dividends. If shareholders think that they can use the dividends more profitably than the company can, this is another 'good news' aspect of a scrip dividend.

**More reasonable rate of dividend**

This argument depends upon companies *not* maintaining dividends per share!

**If dividends are expressed as a percentage of the nominal value the figure may seem excessive. This could cause public relations problems, or problems with employees who feel that dividends are too high. This could be avoided by a scrip issue.**

**The downside**

While the arguments in favour of scrip issues are largely psychological, the arguments against them seem to have a little more real substance.

**Cost to the company**

**The administrative costs such as issuing new shares and informing shareholders are met by the company.**

**Cost to everyone else**

**Whenever records of dividends or share prices are needed, for example for investment research or CGT calculations, care is needed to eliminate the artificial effect of a scrip issue.**

For example, in tax calculations the reduction in share price caused by a scrip issue is not allowed to reduce a taxable gain.

**Impact on share price**

**On theoretical grounds, an  $n$ -for- $m$  scrip issue should reduce the share price from  $P$  to:**

$$P \times \frac{m}{m+n}$$

**This assumes that the market is totally indifferent to the scrip issue.**

**The actual change in the share price might move slightly one way or the other:**

- **up slightly if the psychological factors win through, or**
- **down slightly if the market decides that the cost of the issue outweighs the benefits.**

In both cases, the word *slightly* should be emphasised. In any event, other events that may coincidentally occur on the day that the scrip issue takes place might cause more significant share price movements than either of these two adjustment factors.

In the long term the share price following a scrip issue might move up more quickly than the rest of the equity market. Some research seems to support this view. However, this is probably not *because* of the scrip issue. It is more probably based on the link between successful companies and scrip issues, and the fact that successful companies tend to carry on being successful.




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## Question

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Calculate the theoretical share price after each of the following scrip issues:

1. Current price: 250p  
Basis: 1-for-1
2. Current price: 250p  
Basis: 1-for-3
3. Current price: 250p  
Basis: 1-for-10

---

## Solution

---

Again we equate what the investor starts out with (*ie*  $m$  shares worth 250p each) to what investors end up with (*ie*  $m+n$  shares worth the new price).

Let the theoretical share price be  $P$ .

1.  $2P = 250$   
 $P = 125$
  2.  $4P = 250 \times 3$   
 $P = 188$
  3.  $11P = 250 \times 10$   
 $P = 227$
- 

## Scrip dividends

A scrip dividend means that a company pays shareholders a dividend by giving them new shares rather than cash.

There are two cases:

- everyone has to accept the scrip dividend: This *is* just like a scrip issue (companies use scrip dividends of this type when they can't afford to pay a cash dividend). Shareholders end up with more shares worth less each.
- there is a *choice* between a scrip dividend and a cash dividend: Unlike a scrip issue, the scrip dividend option is worth as much as the cash dividend. Those investors that accept the scrip dividend have more shares, but the market value of the shares will not have been forced down. They have gained as much as if they had taken the cash. Really it is like a normal dividend being paid followed by a rights issue.

We will study scrip dividends in more detail in Part 3.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.

## Chapter 5 Summary

### Obtaining a stock exchange quotation

A company may decide to obtain a *quotation* on the Stock Exchange:

- in order to raise extra capital
- to make it easier for future issues of capital
- to provide an exit route for its existing shareholders
- to make its shares more easily valued and marketable.

Many new quotations and issues are dealt with by an *offer for sale*. This may be at a *fixed price*, or *by tender*. In an offer for sale by tender, the shares are allocated at a *strike price*, which is paid by all the successful applicants, no matter how much more they had bid. Issues are *underwritten* by an *issuing house*.

Issues can also be arranged by an *offer for subscription* or by a *placing*. If the company does not need to raise any new finance, it may opt for an *introduction* to a stock exchange listing.

### Issues made by companies already quoted

Companies can raise more money from their existing shareholders by offering them a *rights issue*.

A rights issue reduces the share price and increases both the share capital and reserves of the company.

A company can use a *scrip issue* to increase the number of shares in issue without raising any extra finance.

The arguments to support scrip issues are largely psychological.

A scrip issue reduces the share price, and, whilst keeping the total share capital and reserves unchanged, it increases the share capital and reduces the reserves.

The practice questions start on the next page so that you can keep the chapter summaries together for revision purposes.





## Chapter 5 Practice Questions

Exam style

All of the questions that follow are exam style.

- 5.1 Which of the following could NOT result in a company obtaining a stock exchange listing?
- A an introduction  
 B a rights issue  
 C an offer for subscription  
 D a placing [2]
- 5.2 An arrangement whereby a company's shares obtain a quotation on the London Stock Exchange, and the shares that are made available are bought by a small number of institutional investors, is known as:
- A a placing.  
 B an offer for subscription.  
 C an introduction.  
 D an offer for sale. [2]
- 5.3 The main significance of the par value of an ordinary share is that:
- A it is the minimum price at which shares can be traded on the Stock Exchange.  
 B it is the minimum price at which shares can be issued by the company.  
 C it is the amount at which the shares will be redeemed.  
 D at prices above the par value a company must have a scrip issue. [2]

The next two questions relate to Company XYZ. The statement of financial position of XYZ prior to a rights issue is given below (*all figures in £000s*):

Non-current assets	400	Share capital	120
Current assets	100	(Ordinary shares of £1)	
		Other reserves	50
		Retained earnings	330
	<hr/>		<hr/>
	500		500

The market price of the company's shares is currently £7 per share.

- 5.4 If XYZ has a 1-for-3 rights issue at £5, the expected ex-rights price of the shares will be:
- A £7.00  
 B £6.50  
 C £5.50  
 D £5.00 [2]

- 5.5 Following the rights issue, XYZ's other reserves will be:
- |   |          |     |
|---|----------|-----|
| A | £330,000 |     |
| B | £250,000 |     |
| C | £210,000 |     |
| D | £50,000  | [2] |
- 5.6 Explain the role of the underwriters of a share issue. [5]
- 5.7 Piron plc is a large manufacturing company that produces electronic products for the world market and has branches in Europe and Asia. It is financed by a mixture of equity and debt finance. The company now wishes to expand its range of products and needs further funds for investment. The directors are considering the various financial options open to the company.
- (i) One of the options being considered is a rights issue. Discuss the advantages and disadvantages for Piron of undertaking a rights issue. [6]
- (ii) The Finance Director has suggested that the company could issue Eurobonds. Discuss the advantages and disadvantages of Eurobonds for Piron plc relative to other forms of debt. [5]
- (iii) List the other borrowing options available for Piron plc. [3]
- (iv) Describe the factors the directors should consider when making their decision. [6]
- [Total 20]



## Chapter 5 Solutions

5.1 Answer = B

Rights issues are used by companies that already listed in order to raise further capital. The other three methods are used for obtaining a listing.

5.2 Answer = A

All four are methods of obtaining a listing. A subscription and offer for sale are both offers made to the public (directly by the company itself, or via an issuing house respectively). An introduction does not make any shares available.

5.3 Answer = B

A is the market price. C is wrong because shares are usually irredeemable. D is false because companies do not have to have scrip issues.

5.4 Answer = B

The ex-rights price will be given by:

$$\text{Price} = \frac{3 \times 7 + 1 \times 5}{3 + 1} = \text{£}6.50$$

5.5 Answer = C

XYZ will issue 40,000 new shares in a 1-for-3 rights issue (there are 120,000 shares to start with).

The amount that will be transferred to the other reserves will be:

$$\begin{aligned} & (\text{the number of shares issued}) \times (\text{the amount above the par value}) \\ & = 40,000 \times \text{£}4 = \text{£}160,000 \end{aligned}$$

This will be added to the £50,000 that exists already in this account.

5.6 Underwriting is a form of insurance against the risk of an unsuccessful issue. [1]

The company sells all the shares at an agreed price to the issuing house, which as lead underwriter, agrees to take up any shares that are not subscribed for by the public. [1]

The issuing house will not usually want to retain the entire risk, therefore the lead underwriter will often arrange for sub-underwriters (usually big financial institutions) to become involved. [1]

However, the lead underwriter is still responsible if a sub-underwriter defaults. [1]

In return for underwriting the share issue, the company will pay the issuing house a fee. In the case of an offer for sale, the fee can be included in the difference between the price at which the shares are sold to the issuing house and the price at which they are sold to the public. [1]

If the share issue is fully subscribed, the underwriters make a profit equal to the fee less their expenses. [1]

If the issue is undersubscribed, the underwriters are left with the surplus shares. They will sell these in the market at a later date. [1]

[Maximum 5]

### 5.7 (i) **A rights issue**

#### *Advantages*

- The company receives new equity capital to finance its expansion plans. [1]
- Equity finance is less risky for the company than debt finance as, unlike debt interest payments, equity dividends are not a liability. [1]
- Dividends are paid at the discretion of the directors. There is greater opportunity to plough back profits into the business. Debt interest must be paid every year. [1]
- The shares should be attractive to the shareholders since the business has good prospects for the future. They should be able to be sold at only a slight discount to the current share price. [1]

#### *Disadvantages*

- The company will have to check that the total share capital after its proposed new issue does not exceed its authorised share capital. [1]
- The share price will fall. How far it falls depends on the extent of the discount, the number of new shares issued, and the market view of the rights issue. [1]
- The company will have to consider the cost of undertaking a rights issue, including underwriting costs (if they choose to have the issue underwritten). [1]
- Rights issues can take a long time to complete and require a lot of management time. [1]
- There may be adverse shareholder reaction to the issue. Some shareholders may not be able to afford to buy new shares at the time of the issue and will be disappointed to see their control of the company diluted. [1]

[Maximum 6]

(ii) **Eurobonds***Advantages*

- Eurobond issues attract investors from around the world. [1]
- Eurobond issues do not come under the tax or legal jurisdiction of any country. This lack of regulation keeps the cost of borrowing down and it may be lower than borrowing in the debt markets of any one country. [1]
- Eurobonds may be denominated in almost any currency. This would suit Piron plc, which does business in Europe and Asia. [1]
- Eurobonds are a convenient way of borrowing foreign currency without entering overseas financial markets. [1]
- There is no need to maintain a register of bond holders as Eurobonds are bearer. [1]

*Disadvantages*

- The minimum acceptable sum to be raised by Eurobonds is \$75 million. Piron plc may not want to raise as much as this. [1]
  - Issues are arranged by a syndicate of investment banks. Piron plc will have to negotiate the arrangements for the issue and the fee to be paid to the arranging banks. [1]
- [Maximum 5]

(iii) **Other options**

The company could consider:

- debentures
- conventional unsecured loan stock
- preference shares
- convertible loan stock
- convertible preference shares.

[1 mark per bullet point, maximum 3]

(iv) **Factors to consider**

Before making its decision, Piron plc should consider the following:

- the cost of raising the finance. The company should consider the initial issue cost, plus the return that will have to be paid to the investors. [1]
- the tax position. Interest on debt finance is tax deductible, whereas dividend payments are not. [1]
- the risk to the company. Interest on debt has to be paid, whereas dividends are paid at the discretion of the directors. If Piron plc were to hit a bad patch, *eg* political unrest in a country that it deals with, high interest payments could be very difficult to pay. [1]
- the effect on control. Debt holders have no vote, but shareholders do, although if Piron plc has many small shareholders at present this may not be of great concern to them. [1]
- flexibility of finance. Share capital is usually irredeemable whereas debt is redeemable and can be issued at various terms. [1]
- the volatility of the markets at the present time. It is easier to issue shares or bonds into a stable or rising market. [1]
- the effect on the company's statement of financial position. Too much debt can lead shareholders to panic and sell the shares or debt covenants to be breached. [1]
- assets held. If the company has few tangible assets, it is difficult to raise debt finance. This is not likely to be a problem for Piron plc since it is a manufacturing company with a substantial and increasing amount of capital equipment. [1]

[Maximum 6]

*Don't worry too much if you found part (iv) difficult at this stage. These factors will be considered in more detail later in the course. This question is included to give you a sense of the style of longer question that might appear in the examination.*

# 6

## Short- and medium-term finance

### Syllabus objectives

- 2.1 Describe the structure of a company and the different methods by which it may be financed.
6. Outline the different types of medium-term company finance:
- hire purchase
  - credit sale
  - leasing
  - bank loans.
7. Describe the following types of short-term company finance:
- bank overdrafts
  - trade credit
  - factoring
  - bills of exchange
  - commercial paper.

## 0 Introduction

In this chapter we continue looking at how companies are financed.

**All organisations need capital to finance premises, equipment and operations. The main sources of long-term finance – debt and equity – were considered in [Chapter 4](#). Here we will consider the sources of medium- and short-term finance.**

The structure of this chapter is as follows:

Section 1: Types of medium-term company finance

Section 2: Types of short-term company finance

**The information in this chapter reflects UK examples but similar principles apply in other countries.**



# 1 Medium-term company finance

## 1.1 Introduction

Medium-term finance typically has a term of over one year, but less than about five years. Short-term finance typically has a term of less than one year.

The four forms of medium-term finance we look at are:

- hire purchase
- credit sale
- leasing
- bank loans.

## 1.2 Hire purchase

Hire purchase arrangements are used both for consumers (*eg* buying a new car or computer) and for commercial transactions (*eg* buying a new tractor).



**A hire purchase agreement is an agreement to pay regular rental payments for the goods you hire and then to buy them at the end of the agreed period. Legal ownership passes to the buyer only when the final payment is made.**

In most cases, the good is bought by making the last of the regular series of payments. No special payment is needed.

The payments can be thought of as being partly payment for the good, and partly interest.

**If the buyer fails to make the payments due under the hire purchase agreement, the seller can take back the goods.**



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### Question

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Mrs Grass is buying a lawnmower. She uses a hire purchase agreement with the local garden centre to take the lawnmower home and cut her lawn today. However, she subsequently fails to make the payments under the hire purchase agreement. State the action that the garden centre would take.

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### Solution

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The garden centre would reclaim the lawnmower and have a second-hand lawn mower for sale.

---

Companies will often use hire purchase agreements to buy machines and computer equipment. It is important from the seller's point of view that the term of the hire purchase agreement is a lot less than the useful life of the good. If this is not the case, the buyer might decide not to make the final payments when the good is worthless.

### 1.3 Credit sale

Credit sales are similar to hire purchase agreements, with the crucial difference that legal ownership passes from the seller to the buyer *at the start* of the agreement.



**A credit sale is a normal sale of a good together with an agreement that payment will be made by a series of regular instalments over a set period of time. Legal ownership passes to the buyer at outset.**

Again, the payments under a credit sale can be thought of as part interest and part payment for the good being bought.

**The seller cannot reclaim the goods even if the buyer defaults. All that the seller can do is to sue for payment through the courts.**

This is the same as with any other debt. The seller has no more legal right over the good sold than over any of the defaulting customer's other possessions. Not surprisingly, hire purchase agreements are more popular with sellers, particularly when dealing with consumers of dubious creditworthiness.



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#### Question

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Mrs Grass wants to buy another lawnmower. The garden centre has a hardly used second-hand lawn mower on sale available under a credit sale agreement. Mrs Grass uses the credit sale agreement, but once again Mrs Grass fails to keep up the repayments. State the action that the garden centre would take.

---

#### Solution

---

The garden centre would most likely first send Mrs Grass letters threatening to take her to court. If she fails to pay, she would be taken to court and ordered to pay the money owing.

If she still fails to pay, bailiffs would likely be sent to Mrs Grass' home to seize possessions equal in value to the amount owed.

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## Question

Compare the features of a credit sale agreement with a hire purchase agreement.

## Solution

*Ownership of asset* – Under a hire purchase agreement, ownership of the asset does not pass to the buyer until the last payment is made. Under a credit sale agreement the ownership passes immediately.

*Structure of payments* – Both involve a series of (usually fixed) payments over a period of years.

*Event of default* – Under a hire purchase agreement the owner can reclaim the asset. Under a credit sale, the recipient of the payments must sue to reclaim the outstanding amounts.

## 1.4 Leasing

Leasing is used by companies to obtain the use of machines, property and vehicles. The key distinction between leasing and credit sales or hire purchase agreements is that legal ownership does not change hands at all. There is no sale and no purchase. A lease is simply an agreement for the 'lessee' to rent from the 'lessor'.



**A lease is an agreement where the owner of an asset gives the lessee the right to use the asset over a period of time, in return for a regular series of payments. Legal ownership does not change hands.**

Sometimes, lease agreements do give the lessee the option to buy the asset at the end of the lease period. This then blurs the distinction between a lease and a hire purchase agreement, although under a lease the payment made to exercise an option to buy will reflect the remaining value of the asset. Also, the lessee does not *have* to buy the goods at the end.

**There are two types of lease: operating leases and finance leases.**

The difference hinges on the length of the lease in relation to the expected economic life of the asset.

### Operating leases

**Under an operating lease, the owner of the asset will retain most of the risks associated with owning the asset. The lease will be for a period substantially shorter than the likely life of the asset.**

### Finance leases

**Under a finance lease, the lessee takes on most of the risks associated with owning the asset. The lease will be for a period similar to the likely life of the asset.**

In effect, in using a finance lease the lessee is in a similar position to buying the asset outright, but financing this by paying rent rather than by paying a lump sum up front.

**The present value of the payments under the agreement is shown in the lessee's balance sheet twice: as an asset and as a corresponding liability.**

The reason for this treatment is explained when we look at accounting concepts and the workings of company balance sheets later in the course.

## Example

The owner of a gold mine with an expected working life of 15 years leases the mine to a mining company for 3 years. In this case the owner of the gold mine still experiences the joy of seeing gold prices rise, and the misery of seeing them fall, because the asset is heavily dependent upon the price of gold. This lease would be classified as an 'operating lease'.

If, on the other hand, the mine had been leased for 14½ years, this is similar to selling it. The lease is being used only as a finance arrangement. The owner has little interest in what happens to the price of gold. Such a lease is known as a 'finance lease'.

## 1.5 Bank loans



**A bank loan is a form of medium-term borrowing from a bank where the full amount of the loan is paid into the borrower's current account and the borrower undertakes to make interest payments and capital repayments on the full amount of the loan.**

**Bank loans are usually secured on the borrower's assets using a floating charge, that is, all the assets of the company (or the individual) are assigned as security for the loan.**

For a small business, the owner of the company may even provide a fixed charge on his house as security.

Bank loans can be used to buy non-current assets such as machinery and vehicles. Although loans are usually secured, banks do sometimes grant unsecured loans.

**The interest rate is usually variable.**

It might be set at a margin above the bank's own base rate, or as a margin over a benchmark interest rate such as LIBOR. (LIBOR stands for the London Interbank Offered Rate – it is the rate at which the banks will lend to each other). If LIBOR is used, the rate is re-calculated at discrete points in time in line with the particular term of LIBOR which is being used.

For example, a company arranges a £2,000,000 bank loan to buy a piece of machinery. The interest rate is set as being 3% above 3-month LIBOR. At outset, 3-month LIBOR is 1.2% (it is customary to quote as an annual rate of interest), so the company pays interest at a rate of 4.2% for the first 3 months. After the first 3 months, 3-month LIBOR is 1.9% *pa*, so the company pays 4.9% for the next 3 months, and so on.

Although variable rate loans are usual, fixed rate bank loans do also exist.

**Most bank loans in the UK are for a period of 7 years or less, although the terms offered vary.**

In general, UK banks have been reluctant to lend for longer terms, preferring companies to use loan capital and share capital for longer terms. In the EU, banks are more willing to lend longer term, and loan capital is less important.

### **Loan 'facilities'**

Over the last decade the range of types of bank loans that are available has widened.

**Loans are available where the borrower can take out the loan in instalments, giving the bank a few days' notice before each new bit is taken out. Such arrangements are called 'loan facilities'.**

Such loan facilities are a cross between a traditional bank *loan* and an overdraft *facility* (discussed in Section 2.1). Interest is only charged on the amount outstanding and repayment schedules are more flexible.

### **Other variations**

**Complex loans are available for large scale borrowing. For example:**

- **multi-currency loans**

In these the bank acts as a middle man and arranges to borrow money in whichever currency looks the best value to borrow in. The bank then swaps the loan into sterling or whatever currency is required.

- **syndicated loans: where the loan facility is provided by a group of banks.**

This would be used where the sums to be borrowed are larger than any one bank would happily lend on a single project.

## 2 Short-term company finance

In this section we consider the following types of short-term finance:

- bank overdrafts
- trade credit
- factoring
- bills of exchange
- commercial paper.

The last two are 'securities' which means that they can be sold from one investor to another. All other types cannot be traded.

### 2.1 Bank overdrafts

**An overdraft is a form of short-term borrowing from a bank where the borrower is granted a facility to draw money out of a current account such that it becomes negative, down to an agreed limit. The borrower pays interest only on the amount by which they are actually overdrawn. No explicit capital repayments are made.**

**Overdrafts made to companies are usually secured by a floating charge.**

Interest rates are almost always variable, often on a daily basis.

**The interest charged on an overdraft will usually be higher than on a loan of equivalent amount.**

However, an overdraft is more flexible and the borrower pays interest only on the amount of the facility that is actually used. The borrower does not have to use the facility.

Banks like the use of overdrafts to be restricted to short-term working capital needs, for example to cover seasonal variations in a company's need for finance, *eg* for buying stock ahead of the peak selling period. In practice, many businesses seem to have overdrafts that have been in existence for long periods of time. Overdraft facilities usually need to be re-negotiated annually.

**A bank can demand immediate repayment of an overdraft with no notice.**

This makes a company that borrows on overdraft for long-term purposes (*eg* to build a factory) vulnerable to a bank's continuing support. It is often lack of liquidity (*ie* shortage of cash) with an overdraft being called in that causes business bankruptcy, not fundamental lack of profitability.



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### Question

---

State with reasons whether a bank loan or a bank overdraft is likely to be more expensive.

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## Solution

---

A bank overdraft is likely to be more expensive. The reasons include:

- Overdrafts are more flexible for the borrower, so are less predictable for the lender.
  - Loans are normally secured on assets of the company. Overdrafts are usually unsecured and therefore more risky for the lender.
- 

## 2.2 Trade credit

**Trade credit is an agreement between a company and one of its suppliers to pay for goods or services after they have been supplied.**

Trade credit is available from almost all suppliers of goods and services to their business customers. Typically, after goods are delivered, the business customer will be sent an invoice demanding payment within a set period, *eg* 28 days or 91 days. This usually forms part of a supplier's normal terms of business.

**In most cases no explicit interest is charged. In many industries, late payment is so common that explicit discounts can be negotiated for not using trade credit.**

In effect this is giving discounts for 'cash on delivery'.

In practice, businesses often try to pay later than the date stated on the invoice. Suppliers often have to devote considerable resources to chasing up late payers. Many owners of small businesses complain that they are pushed to the point of bankruptcy by business customers who fail to pay up on time.

Using trade credit is a way for businesses to obtain 'free' finance. The problem with using (or more likely abusing) trade credit is that it can damage a company's relationship with its suppliers.

## 2.3 Factoring

Trade credit can cause problems for the suppliers of goods. Often they will have a higher overdraft than they would otherwise need. An alternative way of financing the trade credit that they have to give is to use factoring.

**There are two types of factoring: 'non-recourse factoring' and 'recourse factoring' (or 'invoice discounting').**

## Non-recourse factoring



**Non-recourse factoring is where the supplier sells on its trade debts to a factor in order to obtain cash payment of the accounts before their actual due date. The factor takes over all responsibility for credit analysis of new accounts, payment collection and credit losses.**

As well as sending invoices to its customers, the supplying company sends an invoice to its factoring house. The factoring house then immediately pays over a fixed amount, for example 85%, of the value of the invoices to the supplying company. The 15% discount will reflect:

- interest on the money advanced: the customer who has been invoiced will not pay the factoring house for some time whereas the factor has paid the supplying company immediately
- the administrative costs of the factoring house: they will have to spend time chasing up unpaid invoices
- credit risk: if the customer never pays up, it is the factoring house that loses out.

Using a factor gives the supplying company money earlier than if it had to wait to be paid, protection against bad debts, and an administrative service. However, the factor will want to get the customers to pay up as soon as possible, so may put excessive pressure on the supplying company's customers. This could have a negative effect on the supplier's future business with these customers.

## Recourse factoring

A copy of the invoice is sent to the factor who then gives the supplying company the money up front equal to, say, 85% of the invoices it sends out. However, the supplying company is still responsible for collecting its debts (so its customers are not contacted by the factor). When the supplying company eventually gets paid by a customer, it passes the money on to the factor.

The factor has no control over the debt collection process, so it charges the supplying company interest on the 85% of the invoice that it has paid from the date the advance was made to the date that the supplying company gives the factor the money.

The factor and the supplying company then settle up by the amount:

$$\text{amount advanced} + \text{interest accrued} - \text{amount of invoice}$$

being paid by the supplying company to the factor (or *vice versa* if this amount is negative as will usually be the case).



### Question

Company R sends out an invoice for £100 to one of its customers. At the same time, it sends a copy of the invoice to its factors, Eezeekash Ltd, in return for the sum of £85. Six months later, Company R's customer pays the invoice, and Company R sends the £100 to Eezeekash. During that six-month period, interest of £8.50 has been incurred on the loan. Calculate the amount Eezeekash owes Company R.



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## Solution

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Eezeekash settles up the transaction by sending  $\pounds(100 - 85 - 8.50) = \pounds6.50$  to Company R.

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**Recourse factoring only provides early payment of invoices.**

**It is a loan which is secured against the invoices, and has a value which automatically fluctuates with the amount that the company sells.**

**Credit risk remains with the original supplier.**

In other words, the more invoices the company sends out, the more finance it receives from the factor.

## 2.4 Bills of exchange

Suppose that company *S* supplies some good or service to company *C* on three month credit terms (*ie C* does not need to pay immediately, but agrees to pay *S* in three months' time).

Rather than just invoicing *C*, *S* can draw up a formal bill and ask *C* to sign it. (*S* is known as the 'drawer' of the bill and *C* is known as the 'drawee' or, once *C* signs, the 'acceptor'.)

The bill that *S* draws up for *C* to sign might look like this

	Payee:	Company S
		Side Street
		Sutton
		Surrey
		SM6 6SS
		Issue date
Three months hence, pay to me or my order the sum of four thousand three hundred pounds sterling only (£4,300).		
To:	Company C	
	Coal Close	
	Chester	
	Cheshire	
	CH3 3CH	
Signed	_____	(Mr C Collins, director of Company C)

Such a bill is known as a 'trade bill' or an 'acceptance'.

The reasoning for getting *C* to accept a bill, rather than just using a normal invoice, is that *S* will subsequently be able to sell the bill if it needs cash. Suppose that *S* needs the cash quickly. It might be able to immediately sell the bill to a discount house (a financial institution that specialises in dealing with bills) or a bank which would then be able to present the bill to *C* in three months time and so receive the stated payment from *C*.

However, in most cases a discount house or a bank will not know company *C* and will not want to take on the unknown credit risk. So, before the bill is bought, most trade bills have to be guaranteed by someone. An investment bank will guarantee the bill, so that if company *C* (the 'first name') defaults, the investment bank (the 'second name') will pay up instead. Once an investment bank has endorsed the trade bill, it becomes known as a 'bill of exchange' or a 'bank bill'. The cost of getting an investment bank to endorse a bill of exchange depends upon the creditworthiness of *C*.

**Bills of exchange are known as 'two name' papers because they carry both the name of the company which owes the money and the name of the accepting bank.**

**Where the endorser is an 'eligible' bank, the bill is known as an 'eligible bill of exchange' which is a very secure investment.**

In the UK, an eligible bank is an investment bank whose endorsed bills of exchange are eligible to be sold to the Bank of England.

An eligible bill of exchange can then be sold on to a discount house or a bank which will pay a price below the face value of the bill. The discount rate used for this calculation will be very close to the then current rate of discount on Treasury bills (a type of risk-free government security).



**A bill of exchange is effectively a claim to the amount owed by a purchaser of goods on credit and may be 'accepted' by a bank (for a fee). This means that the bank guarantees payment against the bill to whomsoever holds the bill at maturity. The bill can then be sold to raise short-term finance.**

## 2.5 Commercial paper

Commercial paper is a form of short-term borrowing by large companies. From the companies' perspective, issuing commercial paper is an alternative to overdrafts or short-term bank loans. A piece of commercial paper might appear as follows:

On surrender of this note to the registered office of Company D plc on or after <date>, the holder will be entitled to receive payment of five hundred thousand pounds sterling (£500,000).

Company D  
Dittisham  
Dartmouth  
Devon  
DD1 1DD

Valid only if the seal of Company D appears here:

Commercial paper is a type of bearer document, *ie* there is no register of holders. Payment is made to whoever presents the piece of paper at the end of the term. Commercial paper is issued at a discount and later redeemed at its face value. For example, the piece of commercial paper shown above might have been issued at a price of about £490,000 one year before.

By buying a new issue of commercial paper, investors are effectively lending money to companies for an agreed period (ranging from one week to one year). The effective rate of interest paid by the borrowing company will be slightly higher than the equivalent rate on a risk-free investment (such as a Treasury bill). The size of the 'margin' over the risk-free rate of interest will depend on the company's credit rating.

### **Commercial paper is not listed on the Stock Exchange**

However, commercial paper can still be bought and sold quite easily. There is a large market for commercial paper in the US. Euro-commercial paper also exists, and is traded internationally over the telephone in a similar way to Eurobonds. In the UK, there is sterling commercial paper. Other countries also have their own domestic markets for this type of borrowing.

These instruments may be described as 'single-name'. The security is provided only by the company issuing the paper (*ie* borrowing the money). This contrasts with bank bills described above which have two names: the issuer and the bank that endorses the bill.

**Companies that wish to raise finance by issuing sterling commercial paper have to meet certain minimum standards.**

**Issuing companies must:**

- **be listed on the London Stock Exchange**
- **issue a statement to confirm that they comply with the requirements of the Stock Exchange and that there have been no adverse changes in the company's circumstances since they last published accounts in accordance with Stock Exchange rules.**

The total size of an issue is typically about £50m (*eg* 100 lots of £500,000). Given that this is only for *short-term* finance, we are talking about *big* companies borrowing *large* amounts of money.



**Commercial paper is a single name form of short-term borrowing used by large companies. It comes in the form of bearer documents for large denominations which are issued at a discount and redeemed at par.**




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## Question

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- (i) State the advantages and disadvantages of hire purchase agreements and credit sale agreements from the point of view of the supplier.
- (ii) State the main distinction between an operating lease and a finance lease.
- (iii) State the main distinction between a bank loan and a loan facility.
- (iv) State the main distinction between a loan facility and an overdraft.
- (v) State the main distinction between a credit sale agreement and trade credit.
- 

## Solution

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(i) ***Hire purchase and credit sale agreements***

*Hire purchase*

- Advantage to supplier: the supplier retains ownership of the goods until the end of the term of the agreement and can reclaim them if the buyer does not keep up the repayments. Seller receives interest on top of the price of the goods.
- Disadvantage to supplier: not as good as getting the cash up-front.

*Credit sale agreement*

- Advantage to supplier: seller receives interest in addition to the price of the goods.
- Disadvantage to supplier: legal ownership of the goods passes to the buyer at the start of the agreement. If the buyer defaults on the repayments, the seller has to sue the buyer through the courts.

(ii) ***Operating and finance leases***

*Operating lease*

The owner of the asset retains most of the risks associated with ownership of the asset. The term of the lease will be substantially shorter than the expected useful life of the asset.

*Finance lease*

The lessee takes on most of the risks and rewards of ownership. The term of the lease will be close to the expected useful life of the asset.

(iii) **Bank loan and loan facility**

*Bank loan*

Here, a fixed sum is lent to the borrower on a fixed date for a specified term.

*Loan facility*

A sum is made available to the borrower. The borrower may draw the sum in instalments, giving the bank a few days' notice of each instalment. In addition, there may be flexible repayment arrangements. Interest is only charged on the amount outstanding.

(iv) **Loan facility and overdraft**

*Loan facility*

A sum of money is available for borrowing. This sum can be drawn in instalments and added to the borrower's bank account. The bank will need a few days' notice before each instalment is made. There may be flexible repayment terms.

*Overdraft*

The borrower is granted a facility to draw money out of a current account so that its balance becomes negative, subject to an agreed maximum limit. The borrower does not have to give any notice to be able to use the overdraft. There are no set repayment terms. However, the bank has the option to demand immediate repayment of the overdraft at any time with no notice.

(v) **Credit sale and trade credit**

*Credit sale*

This will be repaid by regular instalments over a period of time. The instalments will include an element of interest.

*Trade credit*

This means that a company can pay its supplier for goods and services after they have been received. Typically, business customers will settle their bills 30 to 60 days after they have been invoiced. The bills are then settled in full, in one payment. No explicit interest is charged, although suppliers may give discounts for 'cash on delivery'.

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The Examiners may ask for descriptions of the main forms of finance and comparisons between them. They may also ask which form of finance may be most appropriate in a particular situation.

This page has been left blank so that you can keep the chapter summaries together for revision purposes.

## Chapter 6 Summary

### Medium- and short-term company finance

A *hire purchase* agreement is an agreement firstly to hire a good for a period of time making regular rental payments, and then to buy the good at the end of the rental period. Legal ownership passes to the buyer only when the final payment is made.

A *credit sale* is a normal sale of a good together with an agreement that payment will be made by a series of regular instalments over a set period of time. Legal ownership passes to the buyer at outset.

A *lease* is an agreement where the owner of an asset gives the lessee the right to use the asset over a period of time, in return for a regular series of payments. Legal ownership does not change hands.

A *bank loan* is a form of medium-term borrowing from a bank where the full amount of the loan is paid into the borrower's current account, and the borrower undertakes to make interest payments and capital repayments on the full amount of the loan. A *loan facility* is a more flexible form of borrowing from banks.

An *overdraft* is a form of short-term borrowing from a bank where the borrower is granted a facility to draw money out of a current account such that it becomes negative, up to an agreed maximum limit. The borrower pays interest only on the amount overdrawn. No explicit capital repayments are made, although the bank can call in the overdraft at any time.

*Trade credit* is an agreement between a company and one of its suppliers to pay for goods or services after they have been supplied.

*Non-recourse factoring* occurs when a supplier sells on its trade debts to a factor. The factor takes over responsibility for the collection of the debts. Under *recourse factoring*, the supplier keeps responsibility for collecting its own debts.

A *bill of exchange* is a negotiable instrument. It is issued by a company, accepted by the receiver of a good, and guaranteed by an investment bank. Bills of exchange may be referred to as two-name instruments. The supplier may sell the bill to a discount house for cash rather than waiting for the acceptor to pay the bill at the end of the stated time period.

*Commercial paper* is a type of bearer document for short-term borrowing. It is suitable for large companies who wish to raise a lot of short-term cash. Commercial paper is a single-name instrument, *ie* it is not guaranteed by a bank, so the issuing companies have to meet certain minimum requirements.

The practice questions start on the next page so that you can keep the chapter summaries together for revision purposes.





## Chapter 6 Practice Questions

Exam style

*All of the questions that follow are exam style.*

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- 6.1 Which of the following is most often used by companies that are suffering from cashflow problems arising from late-paying customers? [2]
- A hire purchase
  - B bills of exchange
  - C invoice discounting
  - D trade credit
- 6.2 List the features of commercial paper. Explain how it differs from a bill of exchange. [5]
- 6.3 State the advantages and disadvantages of recourse factoring and non-recourse factoring from the point of view of the supplier. [5]

The solutions start on the next page so that you can separate the questions and solutions.



## Chapter 6 Solutions

### 6.1 Answer = C

Invoice discounting is another name for recourse factoring. This provides early payment of a percentage of the value of the invoices by a factor. The supplier retains contact with the customers and when the customers eventually pay their bills, the loan is repaid to the factor, with interest.

### 6.2 Commercial paper is

- a short-term bearer document issued at a discount and redeemed at par [1]
- issued by large companies who have to meet certain minimum requirements, for example, be listed on the London Stock Exchange [1]
- a single-name paper, *ie* the name of the company that owes the money. [1]

A bills of exchange is also issued at a discount and redeemed at par ... [1]

... but differs in that it is:

- potentially much smaller in size, as issues of commercial paper require to be at least £50m in size. [1]
  - two-name paper, *ie* the name of the company that owes the money and the name of the bank or issuing house that is guaranteeing payment. [1]
- [Maximum 5]

### 6.3 Recourse factoring:

- Advantage to supplier: supplier receives a certain proportion of the amount it bills immediately from the factor. [1]
- Disadvantage to supplier: the supplier still has to provide its own credit administration and collect its debts. It bears the credit risk [1]
- Disadvantage to supplier: the supplier has to pay interest to the factor, based on the amount of time between the date the advance was made and the date that payment was received from the customer. [1]

Non-recourse factoring:

- Advantage to supplier: supplier receives a certain proportion of the amount it bills immediately from the factor. [1]
  - Advantage to supplier: the factor gives a full administration service and will take on the credit risk associated with the invoices. [1]
  - Disadvantage to supplier: the main disadvantage is that the factor wants only to get paid as soon as possible. It has no particular interest in maintaining good relationships with the supplier's customers so may apply too much pressure. [1]
- [Maximum 5]

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# Alternative sources of finance

## Syllabus objectives

- 2.1 Describe the structure of a company and the different methods by which it may be financed.
- 8. Describe alternative methods of raising finance outside the regular banking system including 'shadow banking', direct project financing, crowdfunding and microfinance.

## 0 Introduction

So far we have looked at the traditional sources of finance available to businesses. However, this range of possible sources isn't static as new types of finance are developed over time.

**In recent years, alternative sources of finance for businesses have emerged and, with the growth of the internet, the opportunities for a company to finance its growth have become more diverse. Some of these methods are discussed in this chapter.**

By their very nature, these 'alternative' sources are not standardised and they are often tailored to suit particular situations. Therefore rather than have prescriptive definitions and setting out how a particular type must always operate, we consider the typical, common features of each.

# 1 Shadow banking

Traditionally companies have raised finance within the regular banking system. The main function of the banks within the regulated system is to borrow on a short-term basis from depositors to lend long-term to borrowers. Converting short-term liabilities to long-term assets is called maturity transformation.

Shadow banks are non-bank financial institutions that carry out this banking activity outside the regulated system. There has been a growth in the number of shadow banks since 1980, with the US having the largest shadow banking system.

A defining characteristic of *regular* banks is that they accept deposits. That is to say, customers deposit money in a bank account and have the right to subsequently make withdrawals. Because they perform this critical function within an economy, traditional banks are subject to regulatory scrutiny.

This regulatory system involves, for example:

- reserving requirements – which specify a minimum proportion of customers' deposits that the bank needs to hold as reserves (broadly this means the bank holding that proportion as cash, so that liquid funds are available to make payouts, rather than lending it to other customers)
- capital requirements – which specify minimum requirements relating to the bank's assets in excess of its liabilities
- disclosure of prescribed information.

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## Question

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Complying with regulatory requirements involves costs for banks. State the benefits associated with regulation of banks.

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## Solution

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The main benefit is access to the protections of the regulatory system. For example, central banks provide liquid funds to regulated banks in an emergency and provide protection of customers' deposits (possibly up to a maximum amount).

These protections provide an economy with confidence in the banking system and have reputational benefits for the banks, *eg* increasing their ability to attract customers.

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**Shadow banks do not take deposits but borrow short-term funds in the money market and lend or invest these funds over the longer term.**

**Since shadow banks are outside the banking regulatory system, they are not subject to capital requirements and reserve requirements imposed on the commercial banks and so they can offer their lenders higher returns. However, since they operate outside the regulated banking system, shadow banks are not able to borrow from the central banks and are more exposed in an emergency.**

In the case of a shadow bank, the lenders are the investors from whom the bank has borrowed money in the money market. For a traditional bank, the lenders are the customers who have deposited money with the bank. These bank accounts are a liability for the bank. Both traditional and shadow banks lend this money out to borrowers as loans, eg mortgage loans. These loans are assets for the bank.

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### Question

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A company wishes to take out a loan. Explain the possible advantages the shadow banking sector might have over the traditional banking sector for a company looking to borrow money.

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### Solution

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The loan may be *cheaper* as shadow banks avoid the costs of complying with banking regulation. The existence of the shadow banking sector also potentially increases the level of competition in the sector by increasing the number of players in the market to more than just traditional banks.

The *availability* may also be better, for example a shadow bank may be prepared to lend in circumstances where traditional banks wouldn't or finance might be available in countries where there isn't a developed banking sector, or in developed markets where the traditional banking sector is being constrained by other regulatory or political issues.

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We could conclude that there would be no problem with the shadow banking system provided that everyone understands the risks involved and provided that the shadow system does not pose a risk to the financial system as a whole.

The majority of a bank's assets are long-term loans. These can be either loans the bank has made directly or they can be 'packages' or 'books' of loans, which were originally made by another lender and have been sold on. (We don't need to worry about the details of how this packaging of loans into assets can be achieved, but you may have come across terms such as mortgage-backed securities or collateralised debt obligations which are names for assets of this type.)

Putting a value on loan assets of this type is not easy. We can't just observe a market price, as we can with shares on a stock exchange for example. The value of these loan assets will fall in a recession, when borrowers are more likely to default on their loan repayments, but it is difficult to quantify this changing value of the loan assets in changing economic conditions.

**During the 2008 global financial crisis, investors became uncertain about the value of the shadow banks' longer-term assets and decided to withdraw their funds. Shadow banks had to sell assets immediately to repay the investors. The forced sales reduced the value of those assets forcing down the market price of similar assets held by other shadow banks and some regulated banks, causing more banks to run into serious difficulty.**

Difficulties within the shadow sector crossed over to the traditional banking sector and so had implications for economies as a whole. The extent to which this risk existed wasn't clear beforehand, in part because of the lack of information about the size of the shadow sector and the assets shadow banks held.



**To reduce the exposure of the traditional banks to shadow banks and the effect on the economy as a whole, in future shadow banks are likely to be subject to the same banking regulation imposed by the supervisory authorities as regular banks.**

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## 2 Project financing

### 2.1 Introduction

The key characteristic of project financing is that the finance is raised by and for a particular project. This separates the project from the business carrying it out and is quite different from a business raising finance with the intention of using it to undertake a project.

**Project financing is used in financing large infrastructure projects, often involving public-private partnerships (PPP) where the size of the capital required for the project is very large, often amounting to hundreds of millions of pounds. The projects are often high-risk and long-term and the capital needed is raised from a consortium of lenders from the host country (where the project is carried out) as well as foreign lenders.**

In many countries, it has been usual for the public sector (*ie* government) to finance large infrastructure projects and for private sector companies to be engaged as contractors on these projects. However, there has been a shift towards more of a partnership approach, with both sectors providing finance towards the project and sharing the project's risks and rewards in some way. Any such arrangement can be called a PPP and the precise form may vary between the many countries where these arrangements are used.

**Project financing is often used in projects relating to the development or exploitation of natural resources. In the UK, the method was used in the 1970s to fund the development of the North Sea oil project and grew substantially in the following two decades.**

The substantial growth of this method of finance in the UK has seen it used to finance infrastructure projects including many schools, hospitals, roads and prisons.

**The UK government's National Infrastructure Plan 2014 highlighted financing opportunities for many projects in greenfield energy schemes such as nuclear and offshore wind.**

**The global financial crisis of 2008 has seen a decline in project financing in countries most affected by the crisis but it has seen growth in some emerging economies.**

### 2.2 Features

The main features of project finance are:

- formation of a new legal entity as a Special Purpose Vehicle (SPV)
- non-recourse method of financing
- off-balance-sheet financing.

#### Special Purpose Vehicle (SPV)

In order to achieve the characteristic ring-fencing of a project needed for this approach to finance, a separate legal entity needs to be created for the project.

**Project financing involves formation of a project company. This company is a Special Purpose Vehicle (SPV), the financing vehicle of the project. It is set up for the specific project and is the borrower, subcontracting the construction and operation contracts.**

For example, rather than the government finding the capital to build a new hospital, an SPV might be set up. The SPV would take on the raising of finance, construction of the new hospital and operation of the hospital for an agreed term, *eg* 30 years. The government agreement with the SPV may be to lease the hospital during the term and takes ownership of the hospital at the end of 30 years.

**The shareholders of the company are equity investors who own the company and are called the sponsors. Governments' participation varies depending on the project. For example, in granting permits or approval for large infrastructure projects they could be a shareholder.**

## Non-recourse financing

Recourse and non-recourse financing differ in whether the lender has any entitlement to (or *recourse* to) the assets of the borrower beyond those on which the loan is secured.

**Project financing generally involves non-recourse financing. In corporate financing, lenders can be paid from the assets or cash flows of the shareholders in case of default. Unlike recourse financing where the lenders expect the loan to be repaid, in project financing lenders rely for repayment of the loan on the revenues from the project with the project's assets held as collateral.**

Non-recourse project finance is secured on the *project's assets* and the lender is paid only from the *profits of the project* and therefore bears the risk that these profits and assets might be insufficient to repay the outstanding loan. This is different from more normal corporate loans where the lender has recourse to the assets and profits of the borrower as a whole and the full amount of the outstanding loan is a liability of the borrower.

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### Question

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Explain which of recourse or non-recourse finance would be expected to be cheaper.

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### Solution

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All else being equal, recourse finance would be expected to be cheaper. Recourse finance is less risky to the lender as the wider profits and assets of the company may be called on if necessary, not just those of the particular project.

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## Off-balance-sheet financing

As the project company (the SPV) is legally separate, it has its own accounts which are separate from the accounts of the borrowing company or companies involved.

**The main advantage of this method of financing is that since the project company is the borrower, the liabilities of the project are kept off-balance-sheet for the shareholders of the company.**

Later in the course, we will come across the idea of consolidating (essentially to add together) accounts in certain situation, *eg* if one company completely own another then it gives a fuller picture to require them to produce consolidated accounts. However, project finance SPVs are deliberately set up so that they don't have to do this consolidation.

Keeping a project and its finance off the balance sheet (or 'statement of financial position') of the companies involved means that it does not have as much impact on the ability of those companies to borrow money for other reasons.

**Project debt is not consolidated onto the balance sheet of the shareholders, so that the effect of the project on shareholders' cost of existing debt and the ability to borrow is reduced.**

**For governments, keeping project debt off-balance-sheet will reduce the impact of the project on the host government's capacity to borrow.**

Not unlike companies, there may be a limit on the total amount a government is able to borrow per year. If project finance results in the funding of infrastructure projects *not* being included in the government borrowing, it enables governments to use their borrowing capacity on other spending.

## 2.3 Overall

**Compared to corporate financing, lenders in project financing receive a higher return to compensate them for taking on additional risk.**

**Since the project company is newly formed, lenders are repaid from the cashflows generated by the project although there will be no revenues during the construction period. As a result, parties involved in the project take significant risk during the construction period which makes assessment of the project's risk important for the participants.**

**Banks are usually involved in assessing risk and underwriting the loans. For example, in the North Sea Oil exploration project, banks were taking a great risk by lending against offshore gas and oil assets, so expected a higher return (compared to a corporate finance project) from the oil revenue stream when these started to flow.**

**Compared to the traditional financing methods, project financing costs more. The process of acquiring and managing the loan and the financial structures can be complex and would involve higher costs.**

### 3 Crowdfunding

**Crowdfunding enables a large number of participants, individuals or businesses to support a business, project, campaign or an individual. Often the profile of a project is set up on a dedicated crowdfunding website, and social media as well as other communication networks are used to raise funds. The aim is to attract as many participants to fund the business or project as possible. Individuals decide the amount they wish to contribute to fund a venture.**

There is far less of a formal process here than with other sources of finance, *eg* compared with the offer for sale and other methods of raising equity finance or with going through the process of setting up a new legal entity for project finance. The attractions of the lower associated issue costs and lower expertise barrier may make crowdfunding particularly attractive to small businesses and entrepreneurs.

A crowdfunding website will typically charge a fee, *eg* a percentage of the money raised, to the party raising the finance. The website may or may not vet the ventures that are promoted on it.

**This method of raising finance has recently gained in popularity although it has been used by charities for some time. The system pools the funds belonging to individuals and lends the pooled funds to companies. Crowdfunding is often used for start-up projects or new products where traditional loans are not available.**

The hurdles to obtaining a traditional loan, *eg* assets as security, a good credit history, a reliable business plan and sufficient certainty about future cashflows, are more likely to be a problem for start-ups than for established business.

**The motivation to participate in funding a project would depend on the type of crowdfunding. Some of the types are discussed below:**

- **Donation-based crowdfunding:** In donating to a charity there are no financial rewards and donors derive satisfaction from helping the charitable cause.
- **Pre-payment or reward-based crowdfunding:** In return for giving money, participants are rewarded by receiving a service or a product such as concert tickets or a new computer game.
- **Loan-based crowdfunding also known as 'peer-to-peer lending':** Investors receive interest on the money they lend and their capital is repaid over time.
- **Investment-based crowdfunding:** Investors buy shares and benefit if the business succeeds.

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#### Question

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Suggest how the four types of crowdfunding above might rank in terms of the rate of return an investor might expect to receive on their investment.

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## Solution

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The expected rate of return on donation-based funding is a loss of the amount 'invested'.

Pre-payment or reward-based ranks next highest, returning whatever is the financial value of the reward. (An investor in this type of project presumably also derives some non-financial reward, *eg* from the satisfaction of supporting a particular artist, author or film producer in producing new work.)

As usual, debt finance would have a lower expected rate of return than equity-type finance in the same business, and so loan-based funding ranks next and finally investment-based funding.

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The different types of crowdfunding will have other relative advantages and disadvantages to a business considering which to use to raise finance. For example:

- Rewards-based funding might have lower cost, but it might also appeal to a smaller number of potential investors, *ie* those who would value the particular reward.
- Investment-based funding would potentially offer the longest delay before any return had to be paid to investors, but at the cost of dilution of ownership and having to share future profits if the venture ultimately succeeds.
- Loan-based funding avoids this giving away of equity but a company might struggle to find investors with a risk appetite to find it appealing, *ie* investors who want the relative security of a loan in a potentially high-risk venture.

**Some types of crowdfunding are subject to regulation by supervisory authorities. For example in the UK, loan-based crowdfunding and investment-based crowdfunding are regulated by the Financial Conduct Authority. The return for the investors could be high compared to some other alternatives but the risks could also be higher.**

In addition to the risks we have already seen for loan and equity investment, the crowdfunding approach brings additional risks, for example the lack of a secondary market (so risk of being unable to cash in the investment), the risk that the project may not go ahead if insufficient investors are found and uncertainty about how long the call for funds will be open.

## 4 Microfinance

**Microloans are small loans that are usually easier and faster to secure than the traditional loans.**

These are the two key characteristics of microloans:

- small amounts (typically smaller than the smallest traditional business loan that a bank might offer)
- available to borrowers who may not have access to traditional loans, for example because of a lack of lenders in their location or because of their poor credit-worthiness or lack of assets as security.

Microloans therefore broaden financial inclusion.

**No interest is paid on the loan and the investor has the benefit of being involved in initiating a venture. Microloans are used for start-ups and small businesses and often have generous repayment periods. Charities involved in reducing poverty and promoting small scale start-ups in the developing countries use microfinance to encourage investors to fund small scale businesses.**

In these circumstances, the reasons to invest are non-financial.

However, although there may be no interest payable, the costs of providing microloans have to be borne by the parties involved (in some proportions). These costs are likely to be high compared to the relatively small loan amounts involved.

The model has attractions to both charities and donors when compared to charitable donations. In particular, microloans aim to be a sustainable model for benefiting a neighbourhood or community. For example, a charity may lend to a family to enable them to start a small scale business, *eg* selling clothes or food products. This may have wider benefits such as the family's children staying in education longer rather than having to work to provide for the family. The business may provide jobs for other members of the community. The charity may provide support in setting up and running the business venture. When the loan is repaid, the money may be returned to the original investor or they may make it available to help someone else in the same community.

If a charity is involved in the provision of the loan, the charity may provide expertise and support on the ground, as well as the money. This may be costly, but should also increase the chances of success.

It can also be argued that microloans have disadvantages for the recipients compared to charitable donations. For example, there is the risk of failed business ventures and increased indebtedness of the loan recipients.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.



## Chapter 7 Summary

### Shadow banking

Shadow banks are non-bank financial institutions that convert short-term liabilities to long-term assets outside the regulated banking system.

Unlike banks, shadow banks do not take deposits but instead borrow short term funds in the money market.

Since shadow banks are outside the banking regulatory system, they are not subject to capital requirements and reserve requirements imposed on the commercial banks. However, they are not able to borrow from the central banks and are thus more exposed in an emergency.

To reduce the exposure of the traditional banks to shadow banks and the effect on the economy as a whole, in future shadow banks are likely to be increasingly subject to the same banking regulation as regular banks.

### Direct project finance

Project financing is used in financing large infrastructure projects, often involving public-private partnerships (PPP). The projects are often very large, high-risk and long-term.

The main features of project finance are:

- It involves the formation of a new legal entity as a Special Purpose Vehicle (SPV).
- It is a non-recourse method of financing.
- It offers off-balance-sheet financing.

### Crowdfunding

Crowdfunding enables a large number of participants support a business, project, campaign or an individual. Often the profile of a project is set up on a dedicated crowdfunding website. Participants decide the amount they wish to contribute to fund a particular venture.

There are different types of crowdfunding:

- donation-based crowdfunding : there are no financial rewards and donors derive satisfaction from helping the charitable cause
- pre-payment or reward-based crowdfunding: participants are rewarded by receiving a service or a product such as concert tickets or a new computer game
- loan-based crowdfunding (also known as 'peer-to-peer lending'): investors receive interest on the money they lend and their capital is repaid over time
- investment-based crowdfunding: investors buy shares and benefit if the business succeeds.

Some types of crowdfunding are subject to regulation by supervisory authorities.

## Microfinance

Microloans are small loans that are usually easier and faster to secure than traditional loans.

No interest is paid on the loan and the investor has the benefit of being involved in initiating a venture.

Charities involved in reducing poverty and promoting small scale start-ups in the developing countries use microfinance to encourage investors to fund small scale businesses.



## Chapter 7 Practice Questions

Exam style

*All of the questions that follow are exam style.*

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- 7.1 Which of the following is NOT a type of crowdfunding?
- A donation-based
  - B pre-payment
  - C loan-based
  - D non-recourse. [2]
- 7.2 Which of the following statements about project finance is true?
- A It entails the formation of a new legal entity.
  - B It is a recourse method of financing.
  - C It provides on-balance-sheet financing.
  - D It always involves the public sector. [2]
- 7.3 Outline the similarities and differences between shadow banking and regular banking. [5]

The solutions start on the next page so that you can separate the questions and solutions.



## Chapter 7 Solutions

7.1 Answer = D

The fourth type of crowdfunding mentioned is investment-based.

7.2 Answer = A

Project finance is a non-recourse, off-balance sheet method of obtaining finance. It often involves public-private partnerships, but does not have to involve the public sector.

7.3 *Similarities*

Both perform 'maturity transformation' ie the conversion of short-term liabilities to long-term assets. [1]

Both face the risk of investors losing confidence which can create a liquidity risk. [1]

*Differences*

In regular banking, the liabilities are cash deposits from banking customers. Shadow banks do not take deposits. Instead they borrow money in the money markets. [1]

Customers in regular banks may demand the return of their deposits. The bank will not hold enough in cash to meet this demand if a large number of customers want their money at the same time. [1]

Shadow banks may struggle to roll over their short-term borrowings, for example if investors are concerned about the value of the shadow banks assets. [1]

Shadow banks are outside the banking regulatory system and so are not subject to the reserve and capital requirements imposed on regular banks. [1]

Shadow banks are not able to borrow from the central bank and so are more exposed in an emergency. [1]

[Maximum 5]

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A large, bold, dark blue number '8' is positioned in the upper right quadrant of the page. A diagonal watermark 'www.masomomosingi.com' is overlaid across the top right corner of the page.

# Use of derivatives

## Syllabus objectives

- 2.3 Demonstrate a knowledge and understanding of the characteristics of the principal forms of financial instrument issued or used by companies and the ways in which they may be issued.
3. Describe the characteristics and possible uses by a non-financial company of:
- financial futures
  - options
  - interest rate and currency swaps.

## 0 Introduction

A derivative is a financial instrument with a value dependent on (or *derived* from) the value of some other asset(s). After defining various derivatives, this chapter concentrates on their use by non-financial companies, which is mainly to manage financial risk. The aim is to show how derivatives serve a real purpose in the commercial world, rather than being abstract financial products of use only to the financial world.

The chapter is divided into three sections. We look at *financial futures* in Section 1, *options* in Section 2 and *swaps* in Section 3.

The examination could test, for example, *knowledge* of the features of derivative products and the *ability to apply* an appropriate derivative product to a particular situation.



# 1 Financial futures

## 1.1 Introduction

### Definition



**A futures contract is a standardised, exchange tradable contract between two parties to trade a specified asset on a set date in the future at a specified price.**

Futures were originally developed for agricultural and other commodities. Chicago developed an important market in the trading of wheat, pork belly and coffee futures. Gold, silver and copper soon developed their own futures markets.

**Financial futures are based on an underlying *financial instrument*, rather than a physical commodity.**

We distinguish between futures and forwards. A *forward* is an agreement between two parties to trade a specified asset at a set date in the future at a set price. For example, Company Z could enter into a forward contract to buy a certain type of bond at a set price at a set date in the future. This is a two-party deal, tailor-made to suit Company Z and the seller, and Company Z cannot sell this contract on to anyone else.

Futures differ from forwards in that futures are *standardised* and *exchange-tradeable*. If Company Z had bought a future, it would be a standardised contract (*ie* not tailor-made) that could be sold on.

### Categories

**Financial futures exist in four main categories:**

- **bond futures**
- **short interest rate futures**
- **stock index futures**
- **currency futures.**

**Individual stock futures are also available in some markets.**

## Margins

When you enter into a futures contract to buy or sell an asset, the price is fixed today but payment is not made until later. For example, you might agree to buy a bond future at £94,000 in three months' time. You pay just a deposit now.

**Each party to a futures contract must deposit a sum of money known as *margin* with the clearing house. Margin payments act as a cushion against potential losses which the parties may suffer from future adverse price movements.**

**When the contract is first struck, *initial margin* is deposited with the clearing house.**

For example, you (and the other party to the future) might be asked to pay initial margin of £500.

**Additional payments of *variation margin* are made daily to ensure that the clearing house's exposure to credit risk is controlled. This exposure can increase after the contract is struck through subsequent adverse price movements.**

For example, if the price of bond futures fell to £93,000 the following day, then you as the buyer would have made a loss of £1,000, whereas the seller would have made a profit of £1,000. You as the buyer would have £1,000 deducted from your margin account, and may have to top it up by paying the clearing house £1,000, and the seller's margin account with the clearing house would increase by £1,000, which could be removed by the seller from the account.

In this way, the clearing house protects itself by settling up profits and losses each day.

Shortly before the contract is due to expire, the buyer and the seller normally 'close out' the futures position, *ie* neutralise existing contracts by entering into equal but opposite contracts, and the clearing house returns the money in each margin account. For example, having entered into a futures contract to buy a bond in three months' time, the position could be closed out the day before expiry by entering into a futures contract to sell the same bond in one day's time.




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### Question

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Explain why it is necessary for the exchange to require that companies trading futures contracts deposit margin when they trade.

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### Solution

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The exchange assumes responsibility for the settlement of all contracts. Therefore it assumes substantial credit risk itself, in that if any trader fails to settle, then the exchange must settle the deal on their behalf and suffer any loss. For this reason the exchange insists that traders deposit sufficient funds to cover:

- the current negative value of any outstanding contracts
  - an extra amount to cover any likely future volatility in the contract over a short period.
- 

The exact rules for determining margin amounts are complex, and vary from contract to contract.

In financial futures, 'delivery' rarely takes place – most deals are 'cash settled'. In the example above, the bond is unlikely to be delivered – profits or losses are made by the movements in the price of the bond future and are realised through the variation margin payments.

## 1.2 Types of financial futures

### Bond futures

**For delivery, the contract requires physical delivery of a bond. If the contract were specified in terms of a particular bond then it would be possible simply to deliver the required amount of that stock. If the contract is specified in terms of a notional stock then there needs to be a linkage between it and the cash market. The bonds which are eligible for delivery are listed by the exchange. The party delivering the bond will choose the stock from the list which is *cheapest to deliver*. The price paid by the receiving party is adjusted to allow for the fact that the coupon may not be equal to that of the notional bond which underlies the contract settlement price.**

For example, a bond future might have the following features:

#### *Long bond future*

Unit of trading: £100,000 nominal value government bond with 4% coupon

Delivery month: March, June, September, December

Quotation: per £100 nominal

The settlement of such a future involves buying or selling a prescribed nominal amount of an actual government bond (from a list maintained by the exchange) on the exercise date.

### Short interest rate futures

For example, a short interest rate future might have the following features:

#### *3-month interest rate future*

This is based on an artificial index which is defined as:

$$\text{Index} = 100 - (4 \times \text{the implied 3-month interest rate expressed as a percentage})$$

For example, if the implied (*ie* the rate that investors expect at the expiry of the contract) interbank 3-month rate were 0.5% (or 2% *pa*), then the index would stand at 98. An investor can buy or sell this index as if it were a normal asset. Indeed, being an exchange traded contract, the investor can sell it before buying it (known as going 'short' on the index). Provided the investor buys it back before expiry they need never deliver it. This is very common.

**The way that the quotation is structured means that as interest rates fall the price rises, and vice versa.**

**The price is stated as 100 minus the 3-month interest rate. For example, with an interest rate of 6.25% the future is priced as 93.75.**

If interest rates fall from 6.25% *pa* to 5% *pa*, the price of the interest rate future rises from 93.75 to 95. This means that the inverse relationship between price and interest rates applies to interest rate futures as well as bonds.

**The contract is based on the interest paid on a notional deposit for a specified period from the expiry of the future.**

**However no principal or interest changes hands. The contract is cash settled. On expiry the purchaser will have made a profit (or loss) related to the difference between the final settlement price and the original dealing price. The party delivering the contract will have made a corresponding loss (or profit).**

Remember that futures contracts are effectively settled up every day by the use of variation margin. Profits and losses are calculated daily. At expiry, the final day's profit or loss is calculated, variation margin is paid to or received from the clearing house and the margin account balance is returned to both parties. The notional deposit on which the contract is based is not exchanged.

## Stock index futures

**The contract provides for a notional transfer of assets underlying a stock index at a specified price on a specified date.**

## Currency futures

**The contract requires the delivery of a set amount of a given currency on the specified date.**

### 1.3 Uses of financial futures



**A company can use financial futures to 'lock in' the value of assets or liabilities, or to guarantee the value of receipts and payments.**

There are many circumstances that can lead a company to use the financial futures market, some are more obvious than others. Some examples for each of the above contract types are described below.

## Bond futures

### *When issuing bonds*

If a company intends to issue bonds in the future but wishes to lock in the current level of yields, it could *sell some bond futures contracts* at the current price, thereby locking in current yields. This futures position would be unwound when the actual bond is issued.

For example, suppose the company agrees to sell bonds at the current price of (say) 110 in 3 months' time (the time of the proposed issue of the new bonds). If the price subsequently increases to 120, then the company will lose on the future (it has to sell bonds worth 120 for only 110) but gain from higher bond prices by being able to obtain a higher price for the issue of its bonds. On the other hand, if the price falls to 100, the company's gain on the future will be offset by the lower bond issue price.

### ***When it has a fixed-rate loan***

A company could agree to *buy bond futures contracts* to hedge the risk of interest rates falling if it has a fixed-interest rate loan.

If interest rates fell, bond prices would rise, and therefore the company would offset the 'loss' from being unable to benefit from the fall in interest rates on its loan with a 'gain' on its bond futures. Similarly, if interest rates rose, bond prices would fall and therefore the company would gain from its fixed interest rate loan but lose on its bond futures.

## **Short interest rate future**

### ***When it has a floating-rate loan***

A company could use interest rate futures to protect it from the risk of rising interest rates.

**For example, if a company has raised capital by borrowing at floating interest rates, but wishes to fix its future interest payments, it can use interest rate futures to fund any increase in the interest rate payable (but will have to pay over any interest saved if market rates fall).**

Suppose a company has to borrow in three months' time and is worried that interest rates will rise from the current rate of, let's say, 4% *pa*. It could lock in the current interest rate by selling short interest rate futures. It could agree to *sell sufficient contracts* at the current price of 96 to hedge its borrowing costs in three months' time.

If interest rates rose to 6% *pa* over the next three months, the price of the interest rate future would fall to 94. The profit the company would have made on the sale of this future (which was sold at 96 and could be bought back at 94) would offset the company's higher borrowing costs.

If interest rates fell to 2% *pa* over the next three months, the company could borrow at a lower cost than it expected. However any profit from the lower borrowing costs would be offset by the loss on the interest rate future contracts.

## **Stock index futures**

### ***During a takeover***

During a takeover, a rise in the target company's share price can cause an increase in the amount the predator company has to pay (assuming that part of the offer is 'for cash' and that the cash needed to pay for the target company will increase if its share price goes up). The predator company can *buy stock index futures* to hedge this risk.




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## Question

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Outline how stock index futures could help hedge the risk that share prices rise during a takeover bid.

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## Solution

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The predator company could purchase sufficient stock index futures to hedge the amount of its cash offer. If the stockmarket rises sharply and the company is forced to raise the amount of its bid, it should make sufficient profit on its futures contracts to offset this higher cost.

There are limitations of such a hedging strategy. For example, the share price of the target company might not move in line with the market index.

## Currency futures

### *To fix the value of receipts*

**In the same way, currency futures could be used to fix the value of foreign receipts or payments. In practice, forward currency markets would be used.**

Imagine Company XYZ is expecting a payment of \$100 million at the end of a year and those dollars will then be converted back into the domestic currency (*eg* sterling).

Company XYZ might choose to *sell the dollars forward*, thereby fixing the value of the receipts in the domestic currency. For example suppose Company XYZ sells \$100 million for £70 million for settlement in one year's time.

This can be done either as a forward contract or through the exchange in the form of futures contracts. In either case, the amount of dollars sold is sufficient to hedge the full anticipated \$100 million foreign earnings.

However, suppose the amount of the \$100 million US dollar payment is subject to some uncertainty, *eg* a large part of the work is cancelled leading to a reduced payment of only \$50 million at the end of the year. Company XYZ is now 'over-hedged' because it has a contract to sell \$100 million at the end of the year but now only expects to receive \$50 million. It has two options:

- If it bought futures contracts then it can close out half of the contracts it bought in the market. It will reduce the futures exposure until it has a liability to sell only \$50 million dollars in a year's time.
- If it bought a forward contract then it must settle that contract. Company XYZ would therefore need to take out a fresh forward contract to buy \$50 million for £35 million for settlement in one year's time. This contract will cancel out half of the existing hedge.

It can be seen that the futures contract gives the company additional flexibility in these circumstances.



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## Question

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Explain how futures contracts may be useful to bidding companies during pricing negotiations, when various companies are presenting bids for a large construction project.

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## Solution

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When companies submit bids for construction projects they are exposed to currency and interest rate movements during the period that the bids are being considered.

Using futures contracts the current market rates can be used to price the bids, and then the company can hedge its exposure through futures contracts. Even if market rates move during the bidding process, the company can still be confident that its bid price is sufficient to undertake the project profitably.

Of course if the bid fails, the company has been exposed to the markets to the extent of the hedge.

---

## 1.4 Forwards

**Like futures contracts, forwards are contracts to buy or sell an asset on an agreed basis in the future. The difference is that futures contracts are standardised contracts that can be traded in a recognised exchange.**

So:

- a *forward* contract is a non-standardised and privately negotiated contract between two parties to trade a specified asset on a set date in the future at a specified price.
- a *futures* contract is a *standardised, exchange-tradeable* contract between two parties to trade a specified asset on a set date in the future at a specified price.

Some forwards behave a little like futures in that the forward contract might move to a clearing house immediately after it has been arranged. This is known as 'central clearing' and reduces the credit risk of the forward for both parties.

## 2 Options

### 2.1 Introduction

#### Definition



**An option gives an investor the right, but not the obligation, to buy or sell a specified asset on a specified future date.**

The *buyer* of an option has the *right* but not the obligation to take up the option at the specified exercise price. The *seller (writer)* of an option has the *obligation* to honour the option given to the buyer.

#### Margins and premiums

The writer of the option pays a *margin* to the clearing house. The buyer pays a *premium* to the writer.

#### Types of options



**A call option gives the right, but not the obligation, to buy a specified asset on a set date in the future for a specified price.**

**A put option gives the right, but not the obligation, to sell a specified asset on a set date in the future for a specified price.**

**An American style option is an option that can be exercised on any date before its expiry.**

**A European style option is an option that can be exercised only at expiry.**

**Traded options are available on individual equities and also on financial futures contracts.**

### 2.2 Uses of options

We have seen examples of how futures and forwards allow companies to protect themselves against adverse movements in the financial environment (eg interest rate or exchange rate changes) by effectively 'locking in' current market rates. However, although futures and forwards do protect companies from adverse market movements, they also prevent companies from profiting from favourable movements.

**Options allow a company to protect itself against adverse movements in the financial environment while retaining the ability to profit from favourable movements.**

Since an option is a right to buy (or sell) an asset rather than an obligation to do so, the company that holds the option can choose to exercise it or not, depending on whether events move in its favour or move against it. Therefore the option never becomes a liability to the company.

**For example, a company that has borrowed at variable interest rates could purchase options to protect itself against increases in market interest rates. If rates fall the company will only suffer the loss of the premium paid to purchase the options.**





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**Question**

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Describe which options would be used in these circumstances.

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**Solution**

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The company would *buy put options* on interest rate futures. These would give it the right to sell interest rate futures at a fixed price at a fixed date in the future.

If interest rates rise, then the price of the interest rate future would fall, so the company would exercise its options to sell, thereby making a gain on the future to offset the higher interest rates it has to pay on its loan.

On the other hand, if interest rates fall (and the price of the future rises) the company will not exercise its right to sell, and will just benefit from the fall in interest rates on its loan.

---

## 3 Interest rate and currency swaps

### 3.1 Introduction

#### Definition



**A swap is a contract between two parties under which they agree to exchange a series of payments according to a prearranged formula.**

Usually one party to a swap agreement will be a bank (often referred to as the market maker) and the other will be a company. The bank will enter into many such swaps. The parties involved in a swap are often called counterparties.

#### Pricing

The swap will be priced so that the present value of the cashflows is slightly negative for the investor and positive for the issuing organisation. The difference represents the price that the investor is prepared to pay for the advantages brought by the swap on the one hand, and the issuer's expected profit margin on the other.

#### Risks

Each counterparty to a swap faces two kinds of risk:

##### *Market risk*



**The risk that market conditions will change so that the present value of the net outgo under the agreement increases.**

The market maker will often attempt to hedge market risk by entering into an offsetting agreement.

In other words the market maker would enter into a second agreement, which worked in the opposite direction, so that the potential loss is cancelled out.

##### *Credit risk*



**The risk that the other counterparty will default on its payments.**

This will only occur if the swap has a negative value to the defaulting party so the risk is not the same as the risk that the counterparty would default on a loan of comparable maturity.

### 3.2 Types of swaps

#### Interest rate swaps

In the most common form of interest rate swap one party agrees to pay to the other a regular series of fixed amounts for a certain term. In exchange, the second party agrees to pay a series of variable amounts based on the level of a short-term interest rate. Both sets of payments are in the same currency.

**The fixed payments can be thought of as interest payments on a deposit at a fixed rate, while the variable payments are the interest on the same deposit at a floating rate. The deposit is purely a notional one; no exchange of principal takes place.**

For example, a company might agree to a swap where it pays a bank 6% *pa* fixed for 10 years based on a nominal amount of £100 million.

- This would involve making payments of £6 million each year for 10 years to the bank.
- In return the company would receive interest based on the 6-month money-market interest rate over the same 10-year period and based on £100 million nominal.

The money-market interest rate will be determined by supply and demand from institutions wishing to lend and borrow for 6 months and will fluctuate on a daily basis. It will also be affected by base rates.




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### Question

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Suggest why the company may choose to enter into this swap agreement.

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### Solution

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Possible reasons include:

- It expects the money-market rate to rise over the period such that at the end of the 10-year period the company will receive more interest than it is paying.
  - It has fixed rate income and variable rate finance outgo over the 10-year period. It can reduce this investment mismatch risk by making this swap.
- 

## 3.3 Currency swaps

**A currency swap is an agreement to exchange a fixed series of interest payments and a capital sum in one currency for a fixed series of interest payments and a capital sum in another.**

A company might agree to pay the current US dollar fixed rate for 10 years based on a nominal amount of \$100 million and receive the current UK fixed rate for 10 years based on a nominal amount of £60 million. Alternatively it could agree to receive UK floating rate interest on the basis of the 6-month UK interest rate, re-fixing every 6 months for 10 years. Both of these would be classed as currency swaps.

The nominal amounts used to calculate the interest payments are different in the two currencies. One important aspect of currency swaps is that the nominal amount of each position is exchanged at the end of the contract.

For example, at the expiry of the currency swap described above, the party receiving the US dollar coupons would receive a payment of \$100 million, exactly as if they had bought a 10-year US bond. They would simultaneously have to pay an amount of £60 million, exactly as if they had issued a UK sterling bond.

## 3.4 Uses of swaps

### Risk management

**A company can use swaps to reduce risk by matching its assets and liabilities. For example a company which has short-term liabilities linked to floating interest rates but long-term fixed rate assets can use interest rates swaps to achieve a more matched position.**

**Currency swaps could be used by a company with liabilities in one currency and assets in another.**



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#### Question

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A US company is involved in a large overseas project, where an overseas asset will earn profits in yen for 10 years and then be sold at the end of the 10-year period.

Outline how a currency swap could be used by this company to manage its risk.

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#### Solution

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A currency swap would essentially switch all of the yen payments into US dollars at a known exchange rate. Even if the amounts of the yen profits fluctuate, a swap based on the expected profits would go a long way to hedge the overall currency risk involved.

At the end of the period the asset will be sold for yen. The exchange of nominal at the end of the currency swap hedges this final payment as well (albeit in an approximate manner).

---

### Reducing the cost of debt

**If one company has a comparative advantage in borrowing at a floating rate while another company has a comparative advantage in borrowing at a fixed rate, they can use an interest rate swap to reduce the total cost of financing and both benefit from a lower cost of debt.**

**Note that comparative advantage here implies that the companies' relative credit ratings are different in the long- and short-term debt markets.**

Swaps enable companies to borrow at the lowest yield margin (or financial cost) to them. If the cheapest form of borrowing is not what the company wants, it can swap the payments into the desired form (*ie* floating or fixed) using an interest rate swap. Similarly, if the cheapest form of borrowing is not in the currency the company wants, it can use a currency swap to swap the payments into the desired currency.

## Chapter 8 Summary

### Definitions

A *forward* contract is a contract to trade an asset at a fixed price at a fixed date in the future.

A *future* contract is a standardised, tradable contract to trade an asset at a fixed price at a fixed date in the future.

A *financial future* contract is based on an underlying financial instrument rather than a physical commodity.

An *option* gives an investor the right, but not the obligation, to buy or sell a specified asset on a specified future date.

A *swap* is a contract between two parties under which they agree to exchange a series of payments according to a prearranged formula.

### Uses of derivatives

The uses of derivatives vary widely and can involve:

- risk management, *eg* of interest rates, exchange rates, stock market indices or prices
- borrowing cost reduction.

Companies traditionally use *forward* contracts for delivery of the raw materials required for their business. Forward contracts will normally result in deliveries of raw materials to the buyer of the contract.

*Futures* contracts on the other hand are used to hedge price movements in commodity prices or finance costs. These are normally closed before reaching the exercise date.

*Options* offer companies the ability to hedge downside risk while leaving open the possibility of upside risk. The cost of this opportunity is the insurance cost of the option premium.

Both interest rate and currency *swaps* are used by companies primarily to manage their debt. Companies can reduce risk by structuring their debt to be consistent with their assets. This can mean swapping fixed into floating rates or vice versa, or indeed swapping a liability in one currency into one in another currency. Swaps can also enable companies to reduce the cost of debt.

The practice questions start on the next page so that you can keep the chapter summaries together for revision purposes.



## Chapter 8 Practice Questions

Exam style

*All of the questions that follow are exam style.*

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- 8.1 The most likely explanation for an investor buying a call option is that they expect:
- A the value of the underlying security to increase.
  - B the value of the underlying security to fall.
  - C interest rates to rise.
  - D a stock market crash. [2]
- 8.2 Margin is:
- A the cost of buying an option.
  - B the cost of buying a future.
  - C a deposit paid to the seller of a future or writer of an option by the purchaser.
  - D a deposit paid to the clearing house by the buyer and seller of a future and the writer of an option. [2]
- 8.3 Which of the following strategies would NOT help a company to reduce its exposure to rising interest rates?
- A the negotiation of an interest rate swap
  - B the purchase of a put option on an interest rate future
  - C the purchase of a bond future
  - D the sale of an interest rate future [2]
- 8.4 Outline the nature of interest rate swaps and outline how currency swaps differ from interest rate swaps. [5]
- 8.5 Compare futures and exchange-traded options. [5]

The solutions start on the next page so that you can separate the questions and solutions.





## Chapter 8 Solutions

8.1 Answer = A

A call option gives the buyer the right to buy the underlying security at a set price. This will be worth doing if the market price on the expiry date is *higher* than the exercise price.

If interest rates rise, we might expect the value of shares to fall, so it would not be worth buying a call option. (It might be worth buying a put option, though.)

8.2 Answer = D

The margin exists to protect the clearing house against credit loss.

8.3 Answer = C

The company could swap a floating interest rate for a fixed interest rate to protect it from rising interest rates.

It could sell an interest rate future. If interest rates rise, the price of the interest rate future falls and thus a profit could be made on the future to offset the rise in interest rates.

By buying a put option on an interest rate future, it is buying the option to sell. It will exercise this right if interest rates rise.

It would not buy a bond future. If interest rates rise, the price of the bond future will fall. It would make a loss on the future as well as suffering from higher interest rates.

8.4 **Interest rate swaps**

Interest rate swaps are deals arranged with banks as the main market makers in an 'over-the-counter' market, *ie* the arrangements are made on an individual basis: there is no set format or contract for interest rate swaps. [1]

In a swap the two parties agree to swap a series of payments with each other. They are agreements to exchange streams of cashflow. [1]

In an interest rate swap, there is no exchange of capital amounts. [1]

In the most common form of interest rate swap one party agrees to pay to the other a regular series of fixed interest payments on the nominal capital for a certain term. In exchange, the second party agrees to pay a series of variable interest payments on the nominal capital. [1]

### **Currency swaps**

Currency swaps are agreements to exchange a series of interest payments and a capital sum in one currency for a series of interest payments and a capital sum in another. [1]

This contrasts with interest rate swaps, where there is no exchange of capital sums. [1]

[Maximum 5]

- 8.5 Both futures and options are derivative instruments: their value depends on the performance of an underlying asset. [1]
- Both are standardised contracts, traded on derivative exchanges. [1]
- A future gives the obligation to trade in a specified quantity of a specified asset at a specified price on a specified date. [1]
- An option gives the right but not the obligation to trade in a specified quantity of a specified asset at a specified price on or before a specified date. [1]
- Options come in two varieties: call options being the right to buy, and put options being the right to sell the underlying. [1]
- The buyer of an option will have to pay a premium to the seller, whereas buyers and sellers of futures do not pay one another at outset. Only the clearing house deposit or margin is required, which is subsequently returned. [1]
- The buyer and the seller of a future must both deposit margin with the clearing house. With an options contract, only the seller (writer) has to deposit margin. [1]
- [Maximum 5]

## End of Part 1

### What next?

1. Briefly **review** the key areas of Part 1 and/or re-read the **summaries** at the end of Chapters **1** to **8**
2. Ensure you have attempted some of the **Practice Questions** at the end of each chapter in Part 1. If you don't have time to do them all, you could save the remainder for use as part of your revision.
3. Attempt **Assignment X1**.

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# 9

## Introduction to accounts

### Syllabus objectives

- 4.1 Describe the basic construction of accounts of different types and the role and principal features of the accounts of a company.
1. Explain why companies are required to produce annual reports and accounts.
  4. Explain the fundamental accounting concepts which should be adopted in the drawing up of company accounts.

## 0 Introduction

In Part 2 of the course, we introduce the main accounts (the statement of financial position, the statement of profit or loss, the cashflow statement and the statement of changes in equity), and learn how to construct the accounts from the trial balance. We will also learn how to analyse accounts to assess the performance of a company.

In this introductory chapter, we consider the need for accounts, the regulation of accounts, accounting standards, the auditors' report and accounting concepts.

The examination is likely to test *knowledge* of accounting standards and key definitions and *understanding* of the need for accounting information, the key accounting concepts and the subjectivity inherent in accounts.

# 1 The accounting framework

Each year a company will publish four main types of accounting statement:

1. a *statement of profit or loss* (part of a *statement of comprehensive income*), showing the income, expenses and hence shareholders' profits for the year
2. a *statement of financial position* (also known as a *balance sheet*), showing the assets, liabilities and shareholders' funds at the end of the year
3. a *cashflow statement* to show where cash has come from and how it has been spent
4. a *statement of changes in equity* to show how the composition of equity has changed over the year.

We look at each of these in the next chapter. The statements go by a variety of different names. As mentioned above, the term *balance sheet* is used as an alternative name for the *statement of financial position*. Also, the *statement of profit or loss* may sometimes be referred to as the *income statement* or *profit and loss account* (P&L).

Companies are required to produce a set of annual reports and accounts in an attempt to fulfil the needs of the various users of accounting information.

## 1.1 Users

**It has been suggested that financial statements have four groups of users:**

- **equity investors (ie both actual and potential shareholders)**
- **loan creditors (both long-term and short-term)**
- **employees**
- **business contacts (ie customers and suppliers).**

The accounts have many other uses, and will be used by:

- a stock exchange to ensure that certain requirements are met
- the management themselves as a source of information
- the tax authorities as a starting point in the calculation of the tax liability
- stock analysts as a source of financial information
- credit rating agencies in order to assess the creditworthiness of the company.

The members of each of these groups have a legitimate interest in the financial statements as follows:

- equity investors** Investment decisions require information about profits (including dividend policy) cashflows.
- Analysts are constantly preparing and updating forecasts of performance. The annual report provides an opportunity to 'fine tune' these forecasts.
- Existing shareholders also require information about the transactions authorised by the directors for stewardship purposes.
- loan creditors** Lending decisions involve the measurement of the risk of default. A lender wants to know whether a business can generate sufficient cash to repay any loan.
- The lender will also wish to ensure that the business has an adequate asset base to meet its obligations in the event of failure. To this end, loan agreements often contain restrictive covenants which are based on figures from the accounts.
- Covenants specify a minimum or maximum value for accounting ratios, such as the gearing ratio (which measures debt as a proportion of long-term finance).
- employees** Employees are interested in the enterprise's ability to pay salaries and offer job security. Accounting information is, however, of limited value for such decisions.
- The cashflow statement will be useful, as will indicators of profitability.
- business contacts** Business contacts are interested in continuity of sales (to customers) and of materials and services (from the suppliers). Their interest is, therefore, similar to that of the shareholders.
- They may also use accounting information to try to gain some insight into the company's pricing and trading policies.




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### Question

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Explain why the holder of a loan stock issued by a company might wish to have a restrictive covenant, based on some accounting ratios.

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### Solution

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The value of the loan to the holder depends on the company's ability to pay the interest on the loan and to repay the capital at maturity. If there were no restrictions, the company could borrow more money after the loan issue, thereby increasing the amount of debt interest to service and the amount of capital to be repaid. This increases the risk of non-payment.

By restricting the company with a covenant to a certain amount of debt, or a certain minimum interest cover on the loan, the lender is ensuring the future security of the investment.

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The annual report of a large company will, therefore, have a wide readership. In addition to the 'legitimate' users described above, the financial statements will also be read by:

- government agencies (including the tax authorities)
- competitors
- potential predators.

The relationship between the management of a company and the various users listed above can be complex. At best there is likely to be a degree of mistrust. For example, shareholders might be concerned that the directors will act in their own best interests even when this would be to the detriment of the company.

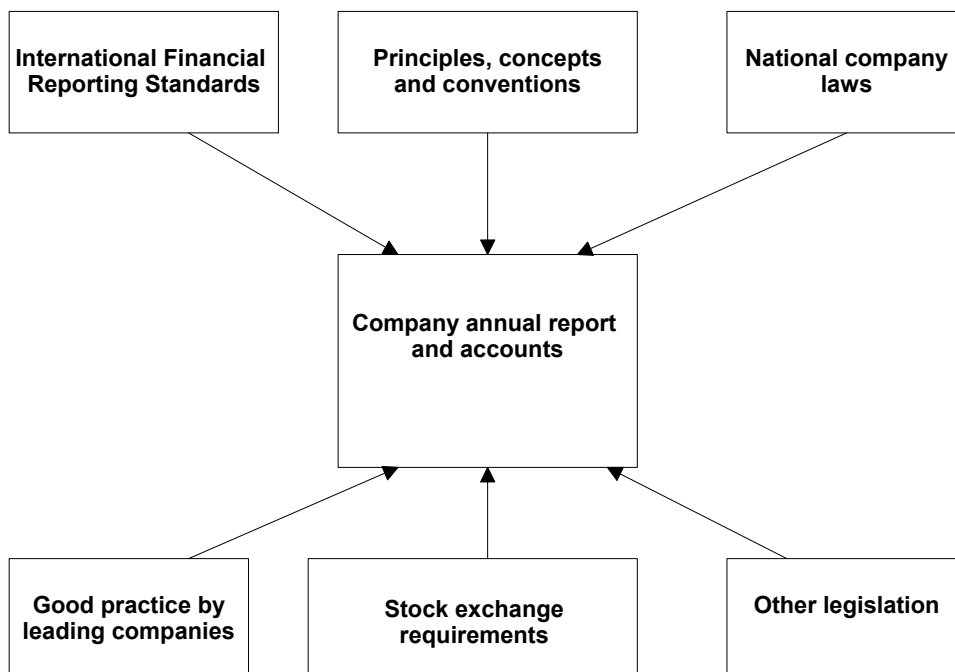
For example, a director may wish to defer reporting 'bad news' (such as disclosing or providing for a contingent liability such as a bad debt) to be able to exercise some share options first. However, a single director does not determine accounting policies alone as there are independent non-executive directors and accounts are audited. Nevertheless, suspicion does exist.

At worst there will be outright hostility. For example, the directors are unlikely to volunteer information about the company's performance if that could be used by a potential competitor. Management might, therefore, be tempted to withhold information or to distort any figures which they do publish.

## 1.2 Sources of regulation

The credibility of published financial statements is protected by regulations from a number of sources.

The diagram below (which is part of Core Reading) illustrates how regulation affects a limited company which is listed on a stock exchange.



Broadly, the rules can be broken down into those which require specific accounting treatment or disclosures, because of national laws or a stock exchange's listing rules, and those which deal with the manner in which these numbers could be calculated – mainly the professional accounting standards and the concepts and conventions.

For example, in the UK, the Companies Act 2006 requires that companies should state the amount charged for depreciation, but the rules concerning the calculation of depreciation are to be found in International Accounting Standard 16 *Property, plant and equipment*.

The fact that there is such a network of sources of regulations and regulators can make the preparation of financial statements a rather complicated undertaking. Fortunately, there is a reasonable amount of concordance between the various rulebooks.

### 1.3 Statutory requirements

In many countries, national legislation may be in place to dictate what kind of information should be published in financial statements. For example, in the UK, the Companies Act explicitly requires companies to produce:

- a statement of financial position showing the financial position on the last day of the company's financial year (International Financial Reporting Standards require that this be entitled the 'statement of financial position')
- a statement of profit or loss for the financial year (International Financial Reporting Standards require that an extended form of this statement be entitled the 'statement of comprehensive income')
- detailed disclosures which are normally presented as a series of notes to the accounts
- a directors' report
- an auditors' report.

For simplicity, in these notes we will often refer to the 'statement of financial position' by its more common and user-friendly name, the 'balance sheet'. Likewise, 'income statement' will sometimes be used rather than 'statement of profit or loss'.

**Small companies have much less onerous requirements and do not submit audited accounts.**




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#### Question

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Explain the purpose of requiring that the accounts of a company to be inspected and signed off by a professional accountancy firm.

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#### Solution

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Published accounts are only useful if their content can be relied upon to be a true and fair view of the company's trading position and prospects. As such it is important to have the numbers signed off by an 'independent' professional.

The auditors are appointed by the shareholders and report to them, so the auditors are completely independent of the directors.

Should the auditor have doubts about the quality of the information, or about the manner in which it has been presented, then a comment must be given on any deficiencies. This helps motivate the directors of the company to behave in a manner that will be favourably viewed by shareholders.

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**The form and content of the statement of profit or loss and the statement of financial position will be discussed in the next chapter.**

## **Directors' report**

The main items that a directors' report must contain are:

- certain detail about the company's activities over the previous year, and likely events in the coming twelve months. Opinions are expressed by the directors.
- a brief summary of the financial decisions that the directors have made, including the proposed dividend, the amount of shareholders' profits retained by the company, charitable donations made by the company and details of any of the company's own shares that have been purchased during the year.
- details of persons who were directors during the year, their shareholdings and their other interests in the company.

In the UK, listed companies also have to include in their directors' report additional information required by the Stock Exchange such as a geographical analysis of turnover and average time to pay creditors.

**The Companies Act's accounting requirements run to dozens of pages of detailed rules. There is, however, one overriding requirement. That is that the financial statements must give a 'true and fair view'.**

**The Act does not define truth and fairness and so the phrase must be interpreted in terms of normal English usage. There is, however, a growing body of evidence that this is a term of art and that it has a technical meaning for accountants.**

**To a large extent, the truth and fairness of the statements can be determined by whether they comply with the rules and regulations outlined above.**

**It is, however, necessary to exceed the formal disclosure requirements or to deviate from the rules governing calculation if doing so would enable the company to give a true and fair view. This requirement to look beyond the codified rules appears to give the concept of truth and fairness an independent existence.**

**Directors must consider whether, taken in the round, the financial statements that they approve are appropriate. Similarly, auditors are required to exercise professional judgement before expressing an audit opinion. As a result, it will not be sufficient for either directors or auditors to reach such conclusions solely because the financial statements were prepared in accordance with applicable accounting standards.**



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## Question

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The sole director of a company is considering how to state the holding of a \$1 million loan to his brother's company. If his brother's company continues to service the loan, his own company is solvent, however if his brother defaults, his own company is bankrupt.

Discuss whether a 'true and fair view' would value the loan at book cost, at market value, or at zero in the accounts.

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## Solution

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The concept of a 'true and fair view' is not simple to apply. Running a business involves a large human element, which cannot be mathematically or scientifically prescribed. The director must make his own assessment of the likelihood of default and take all possible steps to ensure that his decision is based on all the available information. For example, it is possible to:

- value the loan in a manner consistent with the rest of the accounts and make a disclosure about the likelihood of default and the consequences in the notes
- value as above, but make a provision to reflect his opinion on the likelihood of default
- write the loan off as a prudent measure – this would occur in the situation that his brother's company is on the verge of bankruptcy. However in these circumstances his own company would no longer be a going concern and the concept of true and fair would have to be reinterpreted.

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**Some companies will be subject to other legislation specific to their type of industry. For example, in many countries there are specific rules relating to specialised businesses such as insurance companies, banks, pension funds and charities.**

## 2 The International Accounting Standards Board (IASB)

### 2.1 The role of the IASB

The International Accounting Standards Board (IASB) is a body that develops, issues and withdraws accounting standards. The standards that are issued by the IASB are called International Financial Reporting Standards (IFRSs).

International standards relate to companies and other kinds of entities which prepare accounts intended to provide a true and fair view.

The IASB has no authority to require compliance with its accounting standards. However, many countries require the financial statements of publicly traded enterprises to be prepared in accordance with IFRSs, and (where necessary) to give details of any material departure from those standards and the reasons for it.

For example, from 1 January 2005, all listed UK limited companies have been obliged to use International Accounting Standards for consolidated accounts. Many UK companies are electing to use the international standards in place of the UK ones and so these are the ones likely to be met in practice. The rest of this chapter reflects the terminology and format from the international standards.

The IASB collaborates with national accounting standard setters in many countries in order to ensure that its standards are developed with due regard to international and national developments. International accounting standards have helped both to improve and harmonise financial reporting around the world.

IFRSs are used in many countries in the world including Singapore, Hong Kong, Russia, most European countries under the jurisdiction of the European Union, and Australia.



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#### Question

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Explain why national accounting standard committees may be driven in a particular direction by international committees.

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#### Solution

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More and more of the world's largest companies are multinational in terms of their spread of business, trade partners, shareholders, regulators, and the actual markets on which their shares trade. When a company wishes its shares to trade on a particular stock market, its accounts must first comply with the local accounting standards. Likewise, if its accounts are to be used by its trading partners abroad, they have to be in a form which allows comparison with other similar companies in the market.

Rather than produce accounts in every local standard, most multinational companies would choose to have a global standard that applies in all countries. The support for such a standard has given IASs and IFRSs enormous power over the last decade. For national standard-setters to depart from these global standards is futile, because companies will choose to report on the global standard (which guarantees access to all markets) rather than the national one (which guarantees access to only one market).

## 2.2 The case for and against international standards

The system for producing standards and keeping them up to date is complex, and expensive to operate. Some of the arguments which are made for and against accounting standards include the following:

Arguments FOR	Arguments AGAINST
They eliminate, or at least reduce, variations between companies in the way they prepare accounts.	The sets of rules contained in the standards may not be appropriate to all companies in all circumstances.
The discussion process leading up to a standard being issued focuses attention on particular areas for debate about accounting practice.	Standard-setting may not be entirely objective (some standards in the past have been the subject of government pressure or industry lobbying).
They oblige companies to disclose more information than that required by national laws.	Standards often allow more than one alternative treatment, which negates the attempt to ensure conformity between companies.
They allow some degree of flexibility in a way that legislation often does not.	Some standards are so general as to be meaningless, while others are far too detailed

The arguments above relate on the whole to international accounting standards, but they could be modified to discuss the case for and against accounting standards generally.

**Whatever the arguments for and against accounting standards, there is no doubt that they have greatly improved accounting practice. Before their introduction, different companies in similar circumstances were following completely different accounting policies, leading to different and incompatible results.**

**In the 1960s, there was a series of financial scandals that drew the public's attention to the flexibility of the accounting rules at that time. In several cases where takeovers occurred, different accountants produced radically different results for the same company. The accountancy profession was publicly criticised and this led to the formation of the UK's first accounting standard-setting body.**

### 3 Typical contents of an annual report

**As an example, the annual report of a company listed on the UK Stock Exchange can easily run to 60 or 70 pages. Much of this is 'promotional' material which is published on a voluntary basis. The core of the report is, however, subject to the stringent rules imposed by the Companies Act 2006 and the detailed regulations imposed by the accountancy profession, as discussed above.**

**There is no need to learn the detailed content of a typical annual report.**

Indeed the content varies widely from company to company and from industry to industry.

In many financial industries, much of the content explains various financial ratios such as capitalisation and margin. The notes often have intricate information on risk and risk management which can only be understood by industry specialists.

**It is, however, almost impossible to make any sense of the rules governing the construction of accounts in a vacuum. The best way to obtain some understanding of the contents of the financial statements is to obtain one or two sets. Most large companies will have financial statements available on their websites.**

The table on the following page gives details of the content found in one company's annual report.

The annual report of a particular UK-based multinational ran to 96 pages. This comprised:

Page	
1	<b>Contents</b>
2–3	<b>The directors' biographical details.</b>
4	<b>A page of 'highlights' of financial statements including the profit and dividend figures and some key trends.</b>
5	<b>An analysis of turnover &amp; profit by product area and geographical area.</b>
6–9	<b>The chairman's statement to members, including a personal review of the year gone past and the company's future.</b>
10–11	<b>A map showing the company's world-wide operations.</b>
12–13	<b>Statistics showing a thirty-year financial record.</b>
14–48	<b>A review of operations comprising a series of descriptive analyses of each of the company's main business segments.</b>
49–52	<b>Disclosure of matters relating to corporate governance issues such as directors' remuneration.</b>
53–59	<b>The directors' report, which is a list of miscellaneous disclosures required by the Companies Act 2006.</b>
60–61	<b>A statement of the accounting policies which were used in compiling the statement of comprehensive income and statement of financial position.</b>  This might typically detail how the company values its assets, translates its foreign earnings, recognises its income and depreciates its stock.
62–66	<b>The accounting statements themselves: statement of comprehensive income, statement of financial position, cashflow statement, statement of changes in equity, etc.</b>
67	<b>A statement of the directors' responsibilities for the financial statements and the auditors' report.</b>
68–90	<b>Notes to the accounts.</b>  These might typically show further detail on certain items, like the capital gains realised, the costs and expenses of the business, and management salaries, etc. A long-term (eg 5-year) summary of results is also included.
91–96	<b>A list of the company's principal UK and overseas subsidiaries.</b>



## 4 The auditors' report

**In the UK, every company above a certain size (in terms of turnover, assets or number of employees) is required by the Companies Act 2006 to appoint auditors to hold office from one annual general meeting to the next. The auditors must report to the shareholders on the published accounts.**

Auditors are elected by the shareholders and shareholders approve the auditors' fee.

**The auditors must comment on whether, in their opinion, the statement of financial position and statement of profit or loss have been properly prepared in accordance with the Companies Acts and relevant accounting standards, and whether, in their opinion, the accounts give a true and fair view.**

**The fundamental purpose of the audit report is to add credibility to the financial statements.**

### 4.1 The contents of an auditors' report

The auditors' report must contain:

1. a title, identifying the person or persons to whom the report is addressed
2. an introductory paragraph identifying the financial statements audited
3. separate sections, appropriately headed, dealing with:
  - (a) respective responsibilities of directors and auditors
  - (b) the basis of the auditors' opinion
  - (c) the auditors' opinion on the financial statements
4. the manuscript or printed signature of the auditors, with the address
5. the date of the auditors' report.

The section described under 3(a) above clarifies the directors' responsibility to ensure that financial records are properly kept, and that financial statements are prepared in accordance with suitable accounting policies. The auditors' responsibilities will be to form an independent opinion based on those records and statements.

The section described under 3(b) makes it clear how the auditors arrive at an opinion.

**A typical audit report for a UK listed company reads as follows.**

#### **INDEPENDENT AUDITORS' REPORT TO THE SHAREHOLDERS OF XYZ PLC**

**We have audited the group and parent company financial statements (the 'financial statements') of (name of entity) for the year ended ... which comprise [state the primary financial statements such as the Group and Parent Company Statements of Profit or Loss, the Group and Parent Company Statements of Financial Position, the Group and Parent Company Cashflow Statements, the Group and Parent Company Statements of Change in Shareholders' Equity] and the related notes. These financial statements have been prepared under the accounting policies set out therein. We have also audited the information in the Directors' Remuneration Report that is described as having been audited.**

### ***Respective responsibilities of directors and auditors***

The directors' responsibilities for preparing the Annual Report, the Directors' Remuneration Report and the financial statements in accordance with applicable law and International Financial Report Standards (IFRSs) as adopted by the EU are set out in the Statement of Directors' Responsibilities.

Our responsibility is to audit the financial statements and the part of the Directors' Remuneration Report to be audited in accordance with relevant legal and regulatory requirements and International Standards on Auditing (UK and Ireland).

We report to you our opinion as to whether the financial statements give a true and fair view and whether the financial statements and the part of the Directors' Remuneration Report to be audited have been properly prepared in accordance with the Companies Act 2006 and Article 4 of the IAS Regulation. We also report to you if, in our opinion, the Directors' Report is not consistent with the financial statements, if the company has not kept proper accounting records, if we have not received all the information and explanations we require for our audit, or if information specified by law regarding directors' remuneration and other transactions is not disclosed.

We review whether the Corporate Governance Statement reflects the company's compliance with the nine provisions of the FRC Combined Code specified for our review by the Listing Rules of the Financial Services Authority, and we report if it does not. We are not required to consider whether the board's statements on internal control cover all risks and controls, or form an opinion on the effectiveness of the group's corporate governance procedures or its risk and control procedures.

We read other information contained in the Annual Report and consider whether it is consistent with the audited financial statements. The other information comprises only [the Directors' Report, the unaudited part of the Directors' Remuneration Report, the Chairman's Statement, the Operating and Financial Review and the Corporate Governance Statement]. We consider the implications for our report if we become aware of any apparent misstatements or material inconsistencies with the financial statements. Our responsibilities do not extend to any other information.

### ***Basis of audit opinion***

We conducted our audit in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures in the financial statements and the part of the Directors' Remuneration Report to be audited. It also includes an assessment of the significant estimates and judgements made by the directors in the preparation of the financial statements, and of whether the accounting policies are appropriate to the group's and company's circumstances, consistently applied and adequately disclosed.

We planned and performed our audit so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial statements and the part of the Directors' Remuneration Report to be audited are free from material misstatement, whether caused by fraud or other irregularity or error. In forming our opinion we also evaluated the overall adequacy of the presentation of information in the financial statements and the part of the Directors' Remuneration Report to be audited.

**Opinion**

In our opinion:

- the financial statements give a true and fair view, in accordance with IFRSs as adopted by the European Union, of the state of the group's and the parent company's affairs as at ..... and of the group's and the parent company's profit [loss] for the year then ended;
- the financial statements and the part of the Directors' Remuneration Report to be audited have been properly prepared in accordance with the Companies Act 2006 and Article 4 of the IAS Regulation; and
- the information given in the Directors' Report is consistent with the financial statements.

**Registered auditor**

**Address**

**Date**

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The wording of this audit report contains a number of caveats. These are, however, buried in the text of the document and require a very careful reading.

For example, the word 'opinion' crops up in several places. This is a warning that the preparation of the statements and the collection and evaluation of audit evidence all involve subjective judgement.

There are even more subtle hints. For example, the fact that the report is addressed to the members of the company is meant to warn other potential readers that the auditor does not accept any duty of care for their use of the financial statements and also that the audit work was planned to satisfy the needs of the shareholders and so could be inappropriate for other purposes.

## 4.2 Variations on the standard report

The wording of the standard report can be modified if the auditor wishes to highlight areas of uncertainty or is unable to express an unqualified opinion that the financial statements give a true and fair view.

There are various degrees of qualification:

- emphasis of matter paragraphs
- qualified opinion
- disclaimer of opinion
- adverse opinion

and these are described briefly below.

### Emphasis of matter paragraphs

If there is a significant uncertainty which has been disclosed in the accounts, the auditor should point this out for the sake of emphasis. That means that it is unnecessary to issue a qualified audit report because the financial statements give a true and fair view.

Management has disclosed the problem and the auditor has taken care to ensure that the shareholders have read the disclosure.

## Qualified opinion

The auditor would issue a qualified opinion in circumstances where a restriction has been placed on the evidence that the auditor can access or where the auditor disagrees with the treatment of a matter.

A qualified opinion effectively states that the financial statements give a true and fair view 'except for' the problem that has been described in the body of the audit report.

## Disclaimer of opinion

If the auditor is faced with such extreme uncertainty about the financial statements that it is impossible to express an opinion then the auditor would issue a disclaimer instead ('we are unable to form an opinion').

This is such an extreme form of qualified audit report that it should only be used very sparingly and in cases where it is unavoidable.

## Adverse opinion

The auditor issues an adverse opinion in extreme cases of disagreement where the financial statements have been rendered so misleading that it must be stated that they do not give a true and fair view.

Again, this form of qualified report should be used sparingly and only when it is necessary.

If a company fails to comply with the Companies Act, the directors can be required to pay for the preparation of a revised set of accounts.



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### Question

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Explain why a company would want to avoid receiving anything other than an unqualified opinion on its accounts.

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### Solution

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Anything that reflects badly on the company can reduce its credit rating, increase its cost of borrowing and reduce its share price. Anything that reflects badly on the management team controlling the company can lead to them being replaced or taken over.

Management will therefore, for personal and corporate reasons, wish to avoid receiving anything other than an unqualified set of accounts.

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### 4.3 The regulation of auditors

The auditor must belong to one of the recognised supervisory bodies who have registered with the Department of Business, Innovation and Skills. In practice, the majority of company auditors are firms of chartered accountants.

The supervisory bodies are responsible for the supervision and discipline of all of the registered auditors whom they accredit. There is a system of visitation and monitoring of standards and firms which do not achieve a satisfactory standard may have their registration withdrawn.

The accountancy profession also regulates the practice of audit by the publication of auditing standards. The Auditing Practices Board (APB) issues: International Standards on Auditing (ISAs) (UK and Ireland), Practice Notes and Bulletins. If auditors do not comply with standards they may be subject to action from their recognised supervisory body. For example, ISA 700 sets out the standard wording of the audit report as illustrated above.

There have been two major fears about auditors in recent years:

- conflicts of interest (if the auditing firm also acts in an advisory role to the company)
- familiarity (if the auditor has audited the accounts of a company for many years).

There is an overriding requirement for auditors to be *conceptually independent* of their clients. However, the decision as to whether or not an auditor is independent is – at least in the UK – currently a matter which is down to the individual auditor to determine, in the light of their own professional judgement.

## 5 Accounting concepts

Accounting standards are based on concepts and conventions which have gradually come together and evolved over many years since bookkeeping and accountancy came into being. In more recent years accounting standards bodies have attempted to put more cohesion behind these concepts and conventions.

For example, the International Accounting Standards Board published IAS 1 'Presentation of Accounting Statements' and IAS 8 'Accounting Policies, Changes in Accounting Estimates and Errors'.

Accounting Standards have placed greater emphasis on neutrality, rather than prudence, and there has also been a move away from historical cost towards 'fair values'.

In very broad terms, this means revaluing assets (and liabilities) in the statement of financial position at the end of each accounting period. Any loss on revaluation should be included in that period's statement of profit or loss. Any gain on revaluation is taken to the revaluation reserve in the statement of financial position, where it is held until the gain is realised (*ie* the asset is sold). A consequence is volatility in the financial statements and so this move is controversial.

The 11 accounting concepts we discuss in detail are:

- the cost concept (often called 'historical cost')
- the money measurement concept
- the business entity concept
- the realisation concept
- the accruals concept
- the matching concept
- the dual aspect concept
- the materiality concept
- prudence
- the going concern concept
- consistency.

When reading each concept, don't just memorise the text – try to visualise what the consequences of the concept would be when drawing up the accounts of a small manufacturing company, billing customers, receiving invoices from suppliers and trying to complete quarterly accounts at the same time.

### 5.1 The cost concept

The cost concept has been presented as one of the cornerstones of accounting for a very long time. Under that concept, non-current assets generally appear in the statement of financial position at their original cost less depreciation to date, subject to a possible impairment write-down.

For most non-current assets such as machinery, manufacturing properties, computers *etc*, the cost concept dictates that any expenditure in acquiring them is not just taken as a cost in the year in which the asset is purchased as the asset will have a value for many years. Instead an amount of depreciation is calculated each year and taken as a cost through the statement of profit or loss. The asset is placed on the balance sheet, but its value is written down year by year as the original cost is depreciated to zero.

If a bond is purchased at £70 per £100 nominal, a strict reading of the cost concept suggests that it should be held in the books at this price until it is sold or matures. However a more appropriate policy might be to increase the book value gradually from £70 to £100 over the period to maturity. This avoids a large capital gain on redemption.

This would still be classed as a 'book value' basis of accounting because it is not trying to reflect the market value of the bond in the financial markets.

**The cost convention ignores changes in the purchasing power of money and can produce different values for identical items, but simplifies the task of maintaining bookkeeping records because the original cost of an asset is normally a straightforward matter to determine.**

**The cost concept is being gradually phased out to provide more scope for realism in the financial statements. For example, tangible non-current assets such as property, plant and equipment can be shown at their fair value rather than their historical costs. That creates the risk of dispute over the accuracy of the resulting figures because there are rarely transparent and visible markets to enable the fair value of, say, a specific office block in London, Edinburgh or Kuala Lumpur to be observed. Fair values will usually involve a degree of judgement and will frequently be open to challenge.**

**The movement from cost to fair value indicates that the accountancy profession is constantly reviewing the advantages and disadvantages of competing approaches. For example, cost was favoured in the past because it is generally a defensible and reliable measure. There is now greater reliance on fair values because they offer a more relevant measure of the value of the resources controlled by the company.**

For example, it would be over-prudent to allow land to remain at original cost in the balance sheet if it is worth ten times what the company paid for it. That is why 'fair values' are permitted for such assets.

## 5.2 The money measurement concept

**Accounting statements restrict themselves to matters which can be measured objectively in money terms. Again, this simplifies accounting enormously. It also means that a statement of financial position will rarely give even a rough approximation of the value of the business because it will exclude such items as the values of the company's customer base, its workforce and its brand names.**

## 5.3 The business entity concept

**The affairs of the business are kept separate from those of the owners. This is perfectly valid in the case of a limited company, which has its own legal identity. It would, however, also apply to sole traders and partnerships where the business does not have a separate legal form.**

It seems common sense that the financial transactions of a business entity are maintained separately from those of the owner, especially for limited companies. However it is useful to state it as an accounting concept.

## 5.4 The realisation concept

**Income is recognised as and when it is 'earned'. It is not, therefore, necessary to wait until the customer settles his or her bill. This avoids the fluctuations in reported income which might arise if everything was accounted for on a cash basis. It can also create the impression that the business is performing well when, in fact, it is in danger of running out of cash. A business might report income long before the related cash inflows which may be a problem for a growing business.**

This concept runs alongside the accruals concept by emphasising the fact that profit should be recognised in the period it is earned, rather than when the financial settlement takes place. If a company has sold its products or services, then the sales should be recognised in the accounts. The fact that the company might not have received payment is an entirely separate concern. The profitability of the business is measured through the statement of profit or loss and the cashflow is dealt with through the cashflow statement and the provision for bad debts.

## 5.5 The accruals concept

**Expenses are recognised as and when they are incurred, regardless of whether the amount has been paid. Again, this avoids the random allocation of costs to periods depending on whether the bill happens to have been paid or not.**

Suppose for example, that on 1 February, a drug company pays the quarterly rental on its development laboratories for the period February, March and April, then completes its accounts for the year to March. The company would be justified in allocating only two thirds of the rental payment in the period to the end of March.



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### Question

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Explain whether it would be appropriate to spread the costs of a failed drug development over a 5-year period.

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### Solution

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No. It would not be consistent with either the prudence principle or the accruals principle. If the drug has failed, then the next five years do not have anything to do with the expenditure – it should be recognised immediately.

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## 5.6 The matching concept

**Income and expenses which relate to each other should be matched together and dealt with in the same statement of profit or loss. From the above two concepts this should be for the period in which the amounts were earned/incurred.**



The *matching concept* brings the realisation and the accruals concepts together. Expenditure incurred in generating the income for a period should be recorded as incurred over the same period, *ie* the expenditure is matched to the income.

## 5.7 The dual aspect concept

**The dual aspect concept recognises that every transaction or adjustment will affect two figures. For example, the purchase of inventory for cash will increase the asset of inventory and reduce the asset of cash. This concept forms the basis for the double entry bookkeeping system.**

We discuss this concept later when we introduce double-entry bookkeeping and the trial balance.

## 5.8 Materiality

**There is little point in providing information which is so detailed as to be unintelligible. The statements can, therefore, be made clearer by showing totals such as 'administrative expenses' instead of listing every item which makes this heading up.**

**Similarly, there is very little point in making minute adjustments which have no real effect on the overall picture portrayed by the financial statements. Accountants might report rough approximations for certain costs rather than waste time calculating more precise figures.**

**What is, or is not, material however does depend to some extent on the emphasis which the company will put on the relevant figures.**

All transactions in accounts must be recorded in an accurate manner. The materiality concept affects the presentation of accounts when, for example, some rounding is required on accruals or an error is discovered that is deemed too small to warrant reworking the accounts.

Materiality enters almost every aspect of accountancy. It is relevant in deciding whether to publish accounts in millions rather than to the exact dollar, whether the extra effort required to split administration costs by country is justifiable (or whether some broad percentage could be applied to the overall costs), or whether the extra costs of a fire in one factory should be detailed separately in the accounts. The key question is whether the extra disclosure would add to the reader's understanding of the business.

In some cases the materiality principle has to be interpreted carefully. For example, if a financial company is fined by the regulator for breaching some guidelines, the fine should be disclosed. This *event* is material so the fine should be disclosed, even if the *amount* of the fine is immaterial.

## 5.9 Prudence

**The preparers of the financial statements should avoid presenting an unduly optimistic set of results.**

**The lowest *reasonable* figure should be stated for profit or for any of the assets. The highest *reasonable* figure should be stated for any liabilities. This means that there is very little danger of the figures lulling anybody into a false sense of security by overstating the company's strengths.**

**However, it is not permitted to include deliberate margins in the financial statements by understating assets or revenues or by overstating expenses or liabilities. Prudence should only be applied in situations where there is uncertainty.**

This means that:

- provision is made for all known liabilities, expenses and losses, whether the amount is known with certainty or is a best estimate in the light of the information available
- profits are only recognised by inclusion in the statement of profit or loss when realised in the form of cash or of other assets, the ultimate cash realisation of which can be assessed with reasonable certainty.

## 5.10 The going concern concept

**It is usually assumed that a business will continue indefinitely in its present form. This concept acts as a justification for the limitations imposed by the cost concept because there is little harm in reporting historical figures for value if the assets concerned are unlikely to be sold in the immediate future.**

The going concern concept means that the enterprise 'will continue in operational existence for the foreseeable future'.

If the alternative to publishing accounts on a 'going concern' basis is to present them on the basis that the company is to be wound up, then the going concern basis has much to recommend it. A winding-up basis is not at all representative of the state of a company (unless it is about to be wound up!).

For example, specialised machinery can be given a non-zero value even if it would be worthless if the business were to cease trading.

Directors are required to report that 'the business is a going concern'. If they are in doubt, they should not prepare accounts on a going-concern basis. A series of disclosures is required in these circumstances. The auditors will be required to comment on the statement that 'the business is a going concern' if they feel that it does not reflect the message of the financial statements.

## 5.11 Consistency

**The figures published by the company should be comparable from one year to the next. Accounting policies should not, therefore, be changed from one year to the next unless there is a very good reason for doing so. Any changes should be highlighted and their impact explained, which may involve restating prior year figures in the accounts.**

The numerical effect of such a change on the company's results for the year must be shown.

The consistency concept states that accounting treatment of like items should be consistent within each accounting period and from one accounting period to the next. Often when a company does alter its accounting treatment of a particular item – usually because its contribution to profit has become much more important than before, and the previous treatment is no longer acceptable – it will rework its previous-year profits on the new basis for comparison purposes.

## 5.12 Bringing the concepts together

**Taken individually, each of the concepts would appear to be little more than common sense. Most are designed to make the statements easier to prepare (eg the money measurement concept) while other are designed to make the statements more useful (eg accruals produces more meaningful profit figures). When taken together, however, the concepts often conflict with one another and this makes their application confusing for accountants and readers of financial statements alike.**



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### Question

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Last year, the XYZ company sold £100,000 worth of goods. It received payment for £70,000 of these during the last year, and expects to get paid £25,000 in the future in respect of the remainder. XYZ does not expect to receive the remaining £5,000 because the person who owes this money has been declared bankrupt.

Determine how much should XYZ show in its accounts as sales in the last year.

---

### Solution

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Prudence means that the amount of £5,000 should *not* be included in the total figure for 'sales'. The accruals concept means that the £25,000 that will be paid in the future can be included. Therefore one answer is £95,000. An alternative solution, more in line with best accounting standards, would be to show sales of £100,000 with a deduction of £5,000 as a provision for bad debts.

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The most obvious conflicts are between the concept of prudence and the going concern and realisation concepts.

**It seems incongruous to attempt to present a prudent view while assuming that the business has an almost unlimited useful life. Similarly, it is hardly prudent to assume that a transaction will result in a positive outcome without first waiting to ensure that the income will actually be received.**

On 1 January a sole trader withdraws £100 from the company bank account and lends it to an employee for one year at a rate of interest payable monthly over the calendar year. When preparing its statement of profit or loss at the end of the financial year in March it can apply the accounting principles in various ways:

1. Applying the realisation concept, it could record the interest payments monthly as they are earned by the company.
2. Applying the prudence concept, it could record the interest payments only when they are received.
3. Applying the materiality concept, it could treat the loan as a loss in petty cash when the loan is made and a profit if and when it is repaid.

**IAS 8 states that in the absence of a specific rule to specify an appropriate accounting policy, the company should select policies on the basis that they yield information that is both relevant and reliable.**

**Information is relevant if it informs decisions taken by users of the financial statements.**

**Information is reliable if it:**

- provides a faithful representation of the entity's financial position, financial performance and cashflows
- reflects the economic substance of transactions, other events and conditions, and not merely their legal form
- is neutral and free from bias
- expresses prudence
- is complete in all material respects.

There can sometimes be a conflict between relevance and reliability. For example, valuing assets at cost is very reliable because the cost is a historical fact. Unfortunately, cost is unlikely to be very relevant to most decisions. Valuations tend to be more useful, but they can be unreliable unless they can be based on clear and observable market prices which are rarely available in the real world.

The concept of substance over form deals with many of the ways in which financial statements can be distorted.

For example, the legal substance of a long-term lease is that the user of an asset pays an annual fee to the owner. Legally, the asset does not belong to the user and there was a time many years ago when financial statements would simply have shown the fee as an expense in the statement of profit or loss. However, the economic substance is that the user has acquired the risks and rewards associated with using the asset. On that basis, the statement of financial position should treat the lease as an arrangement under which the asset has been purchased and the annual lease payments should be viewed as the repayment with interest of the capital sum used to purchase the asset.

This was the basis for the accounting treatment of finance leases.

## Chapter 9 Summary

Companies publish accounts each year in order to report back to their shareholders. Accounts show how shareholders' funds have been used to generate profits.

The main *users* of accounting information are:

- equity investors
- loan creditors
- employees
- business contacts.

*Regulations* governing the preparation of accounts are of two main types:

- those concerning specific disclosures (mainly covered by the national laws and stock exchange rules)
- those concerning the manner in which items should be valued (mainly covered by professional standards and conventions).

In the UK, *statutory requirements* are based on the Companies Act. Companies must produce:

- a statement of financial position (the balance sheet)
- a statement of comprehensive income (including the statement of profit or loss)
- detailed disclosures (or notes to the accounts)
- a directors' report
- an auditors' report.

The *auditors' report* must state whether or not, in the opinion of the auditors, the accounts have been properly prepared and give a true and fair view of the state of the company's affairs.

The wording of the standard report can be modified where the auditors want to highlight some uncertainty or are unable to give an unqualified opinion. The categories are:

- emphasis of matter paragraphs
- qualified opinion
- disclaimer of opinion
- adverse opinion.

All listed UK limited companies must use international accounting standards for consolidated accounts.

The *International Accounting Standards Board* (IASB) is the body that develops, issues and withdraws international accounting standards. New standards that are issued by the IASB are called *International Financial Reporting Standards* (IFRS). Older standards are called *International Accounting Standards* (IAS).

A company's accounting policies must be *relevant* and *reliable*. The accounts must conform to various *accounting concepts*. The full list of eleven concepts is:

- **Money measurement**
- **Cost**
- **Materiality**
- **Matching**
- **Consistency**
- **Business entity**
- **Realisation**
- **Accruals**
- **Dual aspect**
- **Prudence**
- **Going concern.**



## Chapter 9 Practice Questions

Exam style

All of the questions that follow are exam style.

- 9.1 Which of the following is responsible for developing, issuing and withdrawing accounting standards?
- A International Accounting Standards Board  
 B Auditing Practices Board  
 C International Financial Reporting Standards  
 D Department of Trade and Industry [2]
- 9.2 Inventories (*ie* stock or raw materials used by a company) are valued at the lower of cost or net realisable value. This is an application of which accounting concept?
- A cost concept  
 B accruals concept  
 C prudence concept  
 D realisation concept [2]
- 9.3 Which of the following statements most accurately describes the main purpose of the external audit of a limited company?
- A To review the company's accounting systems and related internal controls.  
 B To assist the directors to prepare the company's annual financial statements.  
 C To express an opinion on the truth and fairness of the company's annual financial statements.  
 D To prevent and detect fraud within the company. [2]
- 9.4 'Expenses are recognised when they are incurred. It is not necessary to wait until the bills are paid.' This statement refers to the:
- A realisation concept  
 B accruals concept  
 C going concern concept  
 D money measurement concept [2]
- 9.5 (i) List the elements of a set of financial statements that are required under the Companies Act and state the Act's overriding requirement for the financial statements. [3]
- (ii) A company's accounts should comply with various accounting concepts. Outline the cost concept and the going concern concept. [2]
- [Total 5]
- 9.6 Explain why the going concern concept may simplify the preparation of financial statements. [5]
- 9.7 Describe the different opinions that a company's auditors may give on the company's financial statements. [5]

9.8 Describe the potential advantages and disadvantages of making it compulsory that the auditors of a company should be changed at least once every five years. [5]

9.9 Discuss the advantages and disadvantages of international accounting standards. [5]

9.10

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## Chapter 9 Solutions

9.1 Answer = A [2]

9.2 Answer = C

According to the prudence concept, assets should not be overestimated. If there is some uncertainty about the value of the inventories (*eg* Easter eggs after Easter!) and it is felt that the sale value is lower than the cost value then the lower (net realisable) value should be used in the statement of financial position. [2]

9.3 Answer = C

The wording of a typical auditors' report is:

'In our opinion, the financial statements give a true and fair view, in accordance with IFRSs as adopted by the European Union, of the state of the group's and the parent company's affairs as at ..... and of the group's and the parent company's profit [loss] for the year then ended; the financial statements and the part of the Directors' Remuneration Report to be audited have been properly prepared in accordance with the Companies Act 2006 and Article 4 of the IAS Regulation; and the information given in the Directors' Report is consistent with the financial statements.' [2]

9.4 Answer = B [2]

9.5 (i) **Requirements of the Companies Act**

Companies must produce:

- a statement of financial position [½]
- a statement of profit or loss [½]
- detailed disclosures which are normally presented as notes to the accounts [½]
- a directors' report [½]
- an auditors' report. [½]

The overriding requirement is that the financial statements must give a true and fair view. [1]  
[Maximum 3]

(ii) **Accounting concepts**

According to the *cost concept*, non-current assets should be valued at cost less depreciation. [1]

According to the *going concern* concept, accounts should be prepared on the assumption that the business will continue indefinitely in its present form. [1]

[Total 2]

- 9.6 The going concern concept, where it is assumed that a business will continue indefinitely in its present form, acts as a justification for the limitations imposed by the cost concept because there is little harm in reporting historical figures for value if the assets concerned are unlikely to be sold in the immediate future. [1]

This simplifies the preparation of financial statements because:

- there is no need to make difficult (and spurious) estimates of the market value of all the company's assets and liabilities, because we assume that they are not about to be sold imminently [1]
- not claiming to estimate market values also leaves the preparers and auditors of the accounts less open to challenge in the event that their estimates prove to be incorrect [1]
- non-current assets that are purchased can be depreciated on a straight-line basis over the useful life of the asset, because we assume that the asset will continue to be used for its useful life [1]
- potential errors in short-term estimates can be tolerated because the figures will resolve themselves over time [1]
- inventory, which often has zero value on wind up, can be included in the financial statements at original cost until it is used and generates revenue. [1]

If directors are in doubt that the company is a going concern they should indicate this fact and the accounts should not be drawn up using this principle. [1]

[Maximum 5]

- 9.7 An *unqualified opinion* is a statement that, in the opinion of the auditors:

- the financial statements and the part of the Directors' Remuneration Report to be audited have been properly prepared in accordance with the Companies Act and Article 4 of the IAS Regulation; [1]
- the financial statements give a true and fair view of the state of the group's and the company's affairs; and [1]
- the information given in the Directors' Report is consistent with the financial statements. [1]

The wording of the standard report can be modified if the auditor wishes to highlight an uncertainty or is not able to express an unqualified opinion that the accounts give a true and fair view. [1]

There are various degrees of qualification:

*Emphasis of matter paragraphs*

If there is a significant uncertainty which has been disclosed in the accounts, the auditor should point this out for the sake of emphasis. [1]

*Qualified opinion*

The auditor would issue a qualified opinion in circumstances where a restriction has been placed on the evidence that the auditor can access or where the auditor disagrees with the treatment of a matter. [1]

*Disclaimer of opinion*

If the auditor is faced with such extreme uncertainty about the financial statements that it is impossible to express an opinion then the auditor would issue a disclaimer instead ('we are unable to form an opinion ...'). [1]

*Adverse opinion*

The auditor issues an adverse opinion in extreme cases of disagreement where the financial statements have been rendered so misleading that it must be stated that they do not give a true and fair view. [1]  
[Maximum 5]

**9.8** Advantages of compulsory changing of auditors:

- An inherent problem with the concept of auditing in that the auditor is paid for its work by the company it is passing comment on. [1]
- In order to ensure that the auditor's opinion is not swayed by the desire to keep the client, it could be wise to force a change on a regular basis. [1]
- This may be worth imposing purely for public *perceptions*, ie avoiding any questions about potential conflicts of interest, even if there is no particular concern about a firm's behaviour having been influenced. [1]
- If an auditor audits the accounts for a long period, it may be too close to the company, and a fresh perspective may be valuable. [1]

## Disadvantages of compulsory changing of auditors:

- It is arguable that an auditor builds up expertise in the financial accounts of a company over the years. It should therefore get better at auditing the accounts as the years go by. [1]
- In addition, there may be relatively few big auditing firms, and it may be argued that rotation of auditing firms would not increase the independence of the opinion, only the expense and the bureaucracy. [1]  
[Maximum 5]

### 9.9 The advantages of international standards:

- Such standards reduce or eliminate variations between how companies produce accounts, allowing comparisons to be made across companies. [1]
- In formulating the standards attention is paid to particular areas of the accounts, the resulting debate can help ensure an appropriate approach. [1]
- International standards may lead to companies disclosing more information than otherwise they would do. [1]
- The standards may give flexibility in a way that legislation does not. [1]

### The disadvantages of international standards:

- The standards are likely to be based on an average company, and may not be appropriate for all companies in all situations. [1]
- The standards may not be objective, *eg* if lobbying of certain industry groups has led to the standards being formulated in a particular way. [1]
- The standards may allow flexibility in approach, which makes it more difficult to compare company's accounts. [1]
- The detail in the standards may not be appropriate, either too high level or too detailed. [1]

[Maximum 5]

# 10

## The main accounts

### Syllabus objectives

- 4.1 Describe the basic construction of accounts of different types and the role and principal features of the accounts of a company.
5. Explain the purpose of a:
  - statement of financial position
  - statement of comprehensive income
  - cashflow statement
  - and of the notes to the accounts.
6. Construct simple statements of financial position and statements of profit or loss.
7. Explain cashflow statements.

## 0 Introduction

We now move on to examine the main accounts. We will look at the purpose and construction of the statement of financial position, the statement of profit or loss, the cashflow statement and the statement of changes in equity. We will also consider the notes to the accounts.

We will often refer to the 'statement of financial position' and the 'statement of profit or loss' by their more common names, the 'balance sheet' and the 'income statement'.

This chapter can be difficult. There are lots of new terms to learn. However, it is important as it provides the building blocks to be able to understand how to compile a set of accounts. Later on, we will consider the construction process in more detail and provides lots of example questions to try.

The examination is likely to test *knowledge* of key definitions *eg* current assets, *understanding* of how to apply key concepts *eg* the accruals concept, and *ability to construct* the main accounts and parts of them.

# 1 The statement of financial position

**The statement of financial position summarises the company's financial position.**

It is a snapshot of events at one point in time.

**Effectively, the statement consists of two lists:**

1. **everything owned by the business**
2. **the various sources of finance used to fund these acquisitions.**

**Everything of value which is owned by a business is called an 'asset'. Finance can be provided by the owners of the business ('equity') or by third parties ('liabilities').**

**Logically, everything owned by the business must have been paid for by someone. Similarly, all amounts invested in or loaned to the business must be represented by something.**

**There is, therefore, a simple relationship between assets, liabilities and equity:**

$$\text{Assets} = \text{Equity} + \text{Liabilities}$$

**This is called the 'accounting equation'.**

**The statement of financial position format shown on the following page complies with the international standards.**

In practice, there are three main formats in which the statement of financial position is written:

- $\text{Assets} = \text{Equity} + \text{Liabilities}$
- $\text{Assets} - \text{Liabilities} = \text{Equity}$
- $\text{Non-current assets} + \text{Net current assets} = \text{Equity} + \text{Long-term liabilities}$

where:

$$\text{Net current assets} = \text{Current assets} - \text{Current liabilities}$$

Statement of financial position for XYZ Ltd as at 31/12/YY

<b>ASSETS</b>	
<i>Non-current assets</i>	
Property, plant & equipment	x
Intangible assets	x
	<u>x</u>
<i>Current assets</i>	
Inventories	x
Trade receivables	x
Other current assets	x
Cash	x
	<u>x</u>
<i>Total assets (#)</i>	<u>x</u>
<b>EQUITY AND LIABILITIES</b>	
Share capital	x
Other reserves	x
Retained earnings	x
<i>Total equity</i>	<u>x</u>
<i>Non-current liabilities</i>	
Long-term borrowings	x
Long-term provisions	x
<i>Total non-current liabilities</i>	<u>x</u>
<i>Current liabilities</i>	
Trade and other payables	x
Short-term borrowings	x
Current portion of long-term borrowings	x
Current tax payable	x
Short-term provisions	x
<i>Total current liabilities</i>	<u>x</u>
<i>Total liabilities</i>	<u>x</u>
<i>Total equity and liabilities (#)</i>	<u><u>x</u></u>

The amounts shown as (#) would be the same (*ie* the balance sheet balances!). Some of the categories may not mean much at this stage. We explain them in the rest of this section.



## 1.1 Non-current assets

The distinction between non-current and current assets has more to do with the motive behind their acquisition than their nature. Non-current assets usually have long lives and are bought with the intention of using them in the business.

Non-current assets are often known as *fixed assets*.

### Tangible Assets

There is usually a great deal of information about the figure for tangible non-current assets which are property, plant and equipment.

**Tangible non-current assets are generally valued at cost less depreciation.**

Depreciation is discussed in the next chapter. We give a very brief example here to demonstrate the concept.

#### Example

Four years ago, a company purchased a machine for £130,000 which was estimated to have a useful life of twelve years, after which it would have a residual scrap value of £10,000. The value of the machine to be shown in the statement of financial position, using the 'straight line' method of depreciation is:

$$= 130,000 - 4 \times \frac{130,000 - 10,000}{12}$$

$$= £90,000$$

---

The value of the asset is recorded at cost *less* accumulated depreciation to date.

**Depreciation has very little to do with reflecting the 'true' value of the assets in the statement of financial position. Instead, it is an attempt to write the cost of the assets off as an expense over their estimated useful life.**

Not all tangible assets depreciate in value. For example, most companies assume that land (but not buildings) has an infinite life.

### Intangible Assets

**Intangible non-current assets are non-current assets that literally cannot be touched, ie are not physical in nature.**

**The most common type of intangible asset is goodwill. This arises when a company buys another company for more than the value of the target company shown in its accounts, its book value. The difference between the price paid and the book value is the goodwill.**

The book value of the target company is: total assets *less* total liabilities, ie the equity.

**Possible intangible assets include research and development costs, concessions, patents, trade marks and brand names.**

To qualify as an intangible, the asset must be identifiable, and the company must have the power to obtain economic benefits from it.

### **Research and development costs**

For example, 'research and development' expenditure must initially be treated as an expense and can only be capitalised as an intangible asset if commercial feasibility is established.

### **Concessions, patents**

A company can buy the rights over a particular product or discovery. A few companies show such rights as an asset. For example, a television company that owns the franchise to broadcast over a certain period of time might class this expenditure as an intangible.

### **Trade marks and brand names.**

Similarly, a few companies claim that their trade marks and brand names are valuable assets which should be shown in the statement of financial position.



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## **Question**

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Give an example of an intangible asset that a record company might have on its statement of financial position.

---

## **Solution**

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A record company might have the contracts with certain recording artists it has signed and paid for, who are contracted to sell their albums through that company, classed as intangible assets.

---

## **Investments**

**Non-current asset investments may consist of interests in other companies, in the form of shares, loan stock, debentures, or conventional loans.**

Investments will be shown under the non-current assets heading only if the company intends to hold those investments for a reasonable period of time, say more than a year. Most companies do classify most of their investments as non-current assets.

**They are normally shown at market value.**

We discussed the problem of valuing financial assets when discussing the cost concept in the previous chapter.

## Revaluation

The problems associated with the valuation of assets at cost less depreciation can be reduced slightly by the regular revaluation of non-current assets, most notably land and buildings.

The total in the statement of financial position for non-current assets may consist of a mixture of costs and valuations, dating from a variety of accounting periods, and all less depreciation charged since the date of acquisition or valuation. The figure will, therefore, have an arithmetic precision but will usually be meaningless for decision-making purposes.

### 1.2 Current assets

Current assets are cash and items which will be converted into cash in the normal course of business.

#### Inventories (Stocks)

In accounts, the term inventories (or stocks) includes raw materials, consumables, work in progress and finished goods awaiting sale. Inventories are shown in the statement of financial position at the lower of cost and net realisable value (*ie* expected sale value).

An inventory figure is needed for the end of year statement of financial position, and is known as *closing inventories*. Inventory is commonly called stock(s). You will see stock (and hence opening stock, closing stock, cost of stock used *etc*) mentioned in past papers, ActEd notes and in the real world.

#### Trade receivables (Debtors)

Trade receivables (or debtors) are the amounts which the company is owed by its customers. The trade receivable heading may also include amounts due under bills of exchange receivable.

#### Cash and other current assets

Under current assets, the other current assets heading might include, for example, money held on short-term deposit.

#### Revaluation

The figures for inventories and trade receivables should allow for any anticipated losses due to obsolescence or deterioration in the case of inventories, and the likelihood of default in the case of trade receivables.

### 1.3 Equity

Equity is the amount contributed by the shareholders in the form of shares and in the form of reserves. It may simply be referred to as *capital* or as the *Shareholders' Fund*. Shareholders' equity is the net value of the company, *ie* its assets less its liabilities.

**Shareholders' equity can arise in a number of ways. Some is contributed directly in the form of payments made for the purchase of shares (share capital and share premium). Most of the remainder will be generated from trading activities. This consists of profits which have not been distributed in the form of dividends or share buybacks (retained earnings).**

We will see that the equity (or shareholders' capital) comprises:

- share capital – the nominal value of the shares issued
- other reserves:
  - share premium account – the amount raised above the nominal value of the shares issued
  - the revaluation reserve – the amount by which the non-current assets have been increased in value. When the non-current assets in the statement of financial position are revalued upwards there must be a corresponding increase in the equity of the business. This is normally shown as a revaluation reserve.
- the retained earnings – the amount of profit ploughed back or retained by the business.

## 1.4 Liabilities

**Liabilities are analysed according to their date of maturity.**

### Current Liabilities

**Balances which are due within one year are classified as 'current'.**

*Net current assets (or working capital)* is defined as current assets *less* current liabilities. It therefore shows the amount that the business has in cash or near-cash having deducted the claims on that cash in the form of current liabilities. This term is not usually used in the statement of financial position, but it is widely used to indicate the liquidity of the business.

We now describe the subheadings that might be expected under the heading 'Current Liabilities'.

#### ***Trade payables (or creditors)***

As with trade receivables (debtors), the amounts are included in the statement of financial position at their face value, *not* at their present value. This includes amounts owing for goods already received, electricity bills owing *etc.*

#### ***Short-term borrowings***

Any overdraft (negative current account balance) is shown at face value. The amount shown is the amount actually overdrawn, *not* the maximum overdraft limit that the company might have agreed with its bankers. Short-term borrowings could also include bills of exchange payable.

#### ***Current portion of long-term borrowings***

Loans are usually entered in long-term liabilities, but they will be entered in current liabilities as they reach maturity if they have to be repaid within one year.

**Current tax payable**

A company may have a provision for tax. This is tax which will become payable, but not in the year being reported on. If it has to be paid within a year, then it is a current liability.

**Non-current liabilities**

**Liabilities which are not due within one year are classified as non-current (or long-term).**

**Long-term borrowings**

This includes finance leases, medium-term bank loans, long-term unsecured loan stock, debentures and Eurobonds. All loan stock is shown at its nominal (or par) value. Most loans are issued at around the nominal value. Any difference between the cash actually raised and the nominal value will be allowed for as part of the residual item, under the heading 'other reserves'.

**Long-term provisions**

**The figure in respect of long-term provisions will include estimated liabilities in respect of deferred taxation and other matters such as pension commitments. These differ from the term loans and obligations under finance leases (included in long-term borrowings) in that the actual amounts and timing of these payments are subject to some uncertainty. They are, nevertheless, liabilities and should be shown as such in the statement of financial position.**

In addition to the above, the company can have Contingent Liabilities.

**Contingent liabilities**

Where the liability is only a potential one – not even *likely* – it is not shown on the statement of financial position, although such 'contingent liabilities' must be disclosed in the notes to the accounts. Examples of contingent liabilities include guarantees given on goods sold and potential court claims.

**Question**

State whether each of the following items, which can appear in a financial statement, is a non-current asset (NA), a current asset (CA), a non-current liability (NL), a current liability (CL) or capital (C):

Cash	Trade receivable
Building	Tax due
Trade payable	Land
Inventories	Ordinary share capital
Debenture	

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**Solution**


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Cash <i>CA</i>	Trade receivable <i>CA</i>
Building <i>NA</i>	Tax due <i>CL</i>
Trade payable <i>CL</i>	Land <i>NA</i>
Inventories <i>CA</i>	Ordinary share capital <i>C</i>
Debenture <i>NL</i> .	




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**Question**


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The following data was taken from the records of ABC plc and relates to the values of the company's assets, liabilities and equity at 31 December 20XX.

Prepare the company's statement of financial position (its balance sheet) as at 31 December 20XX using these items.

	<i>£000s</i>
Inventories	135
Trade payables	65
Machinery (cost)	347
Machinery (accumulated depreciation)	132
Cash	56
Long-term loans	289
Ordinary share capital	200
Trade receivables	195
Tax provision	67
Retained earnings	230
Land	350
Other reserves	100

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**Solution**


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Statement of financial position for ABC plc at 31 December 20XX

	£000s
<b>ASSETS</b>	
<b>Non-current assets</b>	
Machinery	
Cost	347
Accumulated depreciation	<u>(132)</u>
Land	<u>350</u>
	565
<b>Current assets</b>	
Inventories	135
Trade receivables	195
Cash	<u>56</u>
	<u>386</u>
<b>Total assets</b>	<b><u>951</u></b>
 <b>EQUITY AND LIABILITIES</b>	
Ordinary share capital	200
Other reserves	100
Retained earnings	<u>230</u>
<b>Total equity</b>	<b>530</b>
 <b>Non-current liabilities</b>	
Long-term borrowings	289
<b>Current liabilities</b>	
Trade payables	65
Tax provision	<u>67</u>
	<u>132</u>
<b>Total liabilities</b>	<b><u>421</u></b>
 <b>Total equity and liabilities</b>	 <b><u>951</u></b>

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## 2 The statement of comprehensive income

### 2.1 Overview

The main (and more frequently examined) component of the *statement of comprehensive income* is the *statement of profit or loss*.

The first part of the statement, starting with revenue and concluding at profit for the year, can be described as the 'statement of profit or loss'. This draws together the various revenues and expenses.



The statement of profit or loss (formerly known as the income statement) provides an insight into a company's trading activities. It compares the income generated from trading with the costs associated with earning that income, the difference being the profit or loss for the year.

For the sake of clarity, the statement of profit or loss is one component of the statement of comprehensive income. The statement of profit or loss is the section that deals with revenues and expenses and calculates the profit after tax.

The second part of the statement of comprehensive income is concerned with 'other comprehensive income'. The only part of this that is examinable, *ie* 'gains on revaluation' is covered briefly later in this chapter and in more detail in the next chapter.

The components of 'other comprehensive income' that are combined with the profit after tax are not examinable in the CB1 syllabus (apart from gains on revaluation) and so the remainder of this text will refer to the statement of profit or loss rather than the statement of comprehensive income.

### 2.2 The statement of profit or loss

The following format complies with the international standards.

Revenue	X
Cost of sales	(X)
Gross profit	<u>X</u>
Other operating income	X
Distribution costs	(X)
Administrative expenses	<u>(X)</u>
Operating profit	X
Finance income	X
Finance costs	(X)
Profit before tax	<u>X</u>
Tax expense	(X)
Profit for the year	<u>X</u>
Other comprehensive income	
Gain on revaluation	<u>X</u>
Total comprehensive income	<u>X</u>
Earnings per share for profit attributable to equity holders	<u>X</u>

A dividend of  $xp$  per share was paid to ordinary shareholders during the year.



We now look at each item in detail.

## 2.3 Revenue

Revenue is recorded when it is *earned* (not necessarily when it is received) in accordance with the realisation concept. Revenue can be called *turnover* or *sales*.

## 2.4 Cost of sales

The cost items (which follow) are usually recorded as they are *incurred* (not necessarily when they are paid) in accordance with the accruals concept.

**Cost of sales reflects the raw material, components, wages and salaries expended in producing the goods sold. Changes in inventory levels (both finished goods and raw materials) will need to be included, as will the charges for depreciation.**

According to the matching concept, only the costs incurred in generating the sales must be included in the account.



### Question

A shop buys £20,000 worth of goods during a particular year. It began the year with £2,000 worth of inventories and ended the year with £7,000 of inventories. Assuming there are no other items to be included in the cost of sales, calculate the shop's cost of sales.

### Solution

In general, the cost of sales can be found as:

Cost of inventories sold:	}
opening inventories	
+ purchases	
– closing inventories	}
+ Wages and salaries of production staff	
+ Depreciation of non-current assets	

Cost of inventories sold could be calculated as:
---

purchases
less increase in inventories

In this case the cost of sales is simply the cost of inventories sold, so this is found:

Opening inventories	£2,000
+ Purchases	£20,000
– Closing inventories	<u>(£7,000)</u>
Cost of sales	<u>£15,000</u>

## 2.5 Distribution costs and administrative expenses

**Distribution costs include costs associated with sales, distribution and advertising. Administrative expenses include associated wages and salaries and directors' remuneration.**

These costs are sometimes called overheads. They are not strictly related to production. In the short run, their value will not normally change with the level of production.

In practice, it is sometimes difficult to distinguish between costs related to production (direct costs) and those not related to production (indirect costs). For example, electricity might be used to power the production machinery or to heat and light the offices. Depreciation of equipment sometimes arises from wear and tear and thus from production, but sometimes it arises from obsolescence or simply from the passage of time.

In an exam question, if necessary, make an assumption about whether a cost is direct or indirect and justify that assumption.

## 2.6 Finance income

This will include income from investments such as rent from property, interest on bonds, dividends from shares.

## 2.7 Finance costs

This category includes interest payments made on loans. It is important that these costs are seen clearly in the statement of profit or loss so that investors can see the scale of the interest payments and the company's ability to pay them.

## 2.8 Tax expense

**The tax charge in the income statement arises because companies pay corporation tax on their adjusted profit figures. The adjustments to profit may be disputed by the tax authorities and may be revised after the publication of the accounting statements. The estimate for corporation tax forms the core of the charge in the statement of profit or loss, although there are usually additional charges.**

The tax charge in a company's accounts rarely equals exactly:

$$\text{corporation tax rate} \times \text{pre-tax profit}$$

The main reasons for this are:

- The tax authorities will calculate the income statement using official 'capital allowances' instead of depreciation for non-current assets. This will produce a different profit and so a different tax charge. Likewise, some of the expenses that a company brings in to its income statement might not be allowable in a tax computation.
- A company may have disputes or negotiations with the tax authorities over tax issues, and these can cause tax to be 'provided for' rather than 'paid' while the dispute is settled.
- Carried forward losses from previous years can reduce the current year tax bill.

Where a company believes its current-year tax figure does not reflect its long-term tax liability, it will create a provision for deferred tax in the statement of financial position.

## 2.9 Categories of profit



The profit figure is normally calculated in three stages:

1. **Gross profit** is the difference between the selling price of the goods and services which provide the basis for the company's main trading activities and the cost of sales.
2. **Operating profit** is usually defined as profit earned after all expenses except finance costs (interest).
3. **Profit before tax** is the operating profit adjusted for financing (interest) costs and income. **Profit for the year** is this profit after deduction of tax.

The gross profit figure gives an insight into the company's pricing policies. The difference between cost and selling prices represents the contribution toward the non-trading expenses and profit.

Another version of the profit figure that is useful is *profit before tax and interest*, ie operating profit plus finance income.

These distinctions will become important when we come to analyse the accounts later in the course.

## 2.10 Earnings per share

Companies are obliged to calculate the earnings per share (EPS) figure and disclose it on the face of their statements of profit or loss. EPS is equal to the earnings attributable to the ordinary shareholders (usually, profit for the year) divided by the number of ordinary shares in issue.

Earnings is the profit that is available for distribution to the ordinary shareholders.

If the company raises all its share capital from ordinary shares, the earnings available for distribution to the ordinary shareholders will be equal to the amount of *profit for the year*.

If the company raises some share capital from preference shares, then earnings will be *profit for the year after the deduction of preference dividends*.

## 2.11 Realised capital gains (and losses)

If the company sells an asset for an amount different from the value of the asset shown in its financial statements, it has made a capital gain (or loss). This *realised* capital gain (or loss) is added to (subtracted from) the company's operating profit. Realised capital gains from the company's sale of assets (net of losses) are subject to capital gains tax, which, for companies, is levied at the corporation tax rate.

## 2.12 Other comprehensive income

This account includes income and expenses that are not recognised in profit or loss and yet help to give a comprehensive picture of the income of the organisation.

**Some adjustments to book values go directly to equity balances rather than being reported in the statement of profit or loss. For example, a gain on the revaluation of property will go to the revaluation reserve. Any such gains are not shown in the statement of profit or loss, but they are shown in the statement of other comprehensive income. The total for other comprehensive income reflects increases in shareholder wealth, whether arising from profit or from the recognition of some other gain.**

Other comprehensive income includes, for example:

- the change in the revaluation reserve arising from the revaluation of property, plant, equipment and intangible assets
- the gains/losses from translating financial statements of a foreign operation (currency translation differences)
- actuarial gains/losses on defined benefit pension schemes
- losses/gains on cashflow hedges
- tax relating to components of other financial income.

The most likely item that you will have to deal with is the first, *ie* revaluation.

### Revaluation

Revaluation of non-current assets (such as land and property) is the practice of recording non-current assets at market or fair value. For example, a building could be revalued at £2m (from £1m), so the value of the company's assets in the statement of financial position increases by £1m.

If the asset is used in the company's business:

- the *revaluation reserve* (in the equity section of the statement of financial position) is increased by £1m and so the balance sheet remains balanced
- there is no impact on the statement of profit or loss
- the £1m would also be shown as a *gain on revaluation* in the 'other comprehensive income' section at the bottom of the statement of comprehensive income.

The treatment of unrealised gains on assets held as investments is more complicated, but, fortunately, beyond the requirements of the syllabus.

If revaluation is downwards rather than upwards and the asset is used in the company's business, then any downward revaluation is charged as an expense in the statement of profit or loss *unless* it reverses a previous upward revaluation, in which case it is charged against the revaluation surplus for that asset.




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## Question

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The following data relates to Zip plc for the trading year ending 31 December Year 20XX.

	<i>£000s</i>
Advertising expenses	50
Revenue	1,135
Inventories at 31 December (20XX – 1)	25
Interest paid	14
Interest received	5
Depreciation of machinery	25
Inventories at 31 December 20XX	38
Wages and salaries of production staff	161
Wages and salaries of distribution staff	278
Wages and salaries of administration staff	40
Purchases	300
Directors' remuneration	135
Dividends paid in respect of year ending 31 December (20XX – 1)	30

Prepare the company's statement of comprehensive income for the year, assuming:

- corporation tax is 20%
- the company proposes a payout ratio of a third, *ie* to distribute a third of this year's earnings to shareholders
- the number of ordinary shares in the company is 200,000
- at the end of the year, the company's property was revalued at £525,000, an increase of £22,000 from its previous value.

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**Solution**


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**Statement of comprehensive income for Zip plc for the year ending 31 Dec Year 20XX**

		£000s
<b>Revenue</b>		1,135
<b>Cost of sales</b>		
Cost of inventories sold:		
Opening inventories	25	
Purchases	300	
less Closing inventories	(38)	287
Wages and salaries of production staff		161
Depreciation of machinery	<u>25</u>	<u>(473)</u>
<b>Gross profit</b>		662
<i>Distribution costs:</i>		
Advertising expenses	50	
Wages of distribution staff	278	328
<i>Administrative expenses:</i>		
Wages of administrative staff	40	
Directors' remuneration	135	<u>175</u> <u>(503)</u>
<b>Operating profit</b>		159
Finance income		5
Finance cost		<u>(14)</u>
<b>Profit before tax</b>		150
Tax expense (20%)		<u>(30)</u>
<b>Profit for the year</b>		120
<b>Other comprehensive income</b>		
Gains on revaluation		<u>22</u>
<b>Total comprehensive income</b>		<u>142</u>
Earnings per share for profit attributable to equity holders		60p

**Notes to the accounts:**

1. The company's property was revalued and increased in value by £22,000.
  2. A dividend of £30,000, ie 15p per ordinary share, was paid during the year in respect of the year ending 31 December 20XX – 1.
  3. The company proposes to make a dividend payment of £40,000, ie 20p per ordinary share, in respect of the year ending 31 December 20XX.
-

### 3 The cashflow statement

The cashflow statement is not a requirement of the UK Companies Act. However it is a requirement of Financial Reporting Standard 1 (FRS 1) and International Accounting Standard 7 (IAS 7).

**The cashflow statement reports the cash paid during the accounting period for non-current assets, raw materials, wages, etc (rather than matching the consumption of those resources to the sales generated) and the cash received from customers (rather than the sales made). It also includes cash received from owners and lenders.**

In order to prepare a cashflow statement, the following items are needed:

- details of all cash transactions that have taken place over the year, or
- the start and end-year statements of financial position and the statement of profit or loss for the year.

#### 3.1 Why is the cashflow statement needed?

##### To show cash movements

The statement of profit or loss and statement of financial position do not provide a sufficient insight into movements in cash balances. This is unfortunate because even profitable companies will collapse if they are not sufficiently liquid. Hence the cashflow statement is important to supplement the statement of profit or loss and statement of financial position.

The bank balance is, of course, disclosed in the statement of financial position. It is easy to see whether the balance has changed since the end of the previous year. It is, however, difficult to identify the major causes of such changes. Shareholders and other readers require a more structured description of the cashflows.

The cashflow statement is intended to answer the following types of question:

- **Why has the bank overdraft increased, despite the company having had a profitable year?**
- **Is the company capable of generating cash, as opposed to profit, from its trading activities?**
- **What was done with the loan which was taken out during the year?**

Cashflow statements show where the money has come from, and where it has gone. They ignore the accruals concept.

##### Cash is important

**Very few businesses could survive a prolonged cash outflow.**

It is often this rather than lack of profits which causes companies to file for bankruptcy.

Cash may also be important for the opposite reason. Because most companies ought to be able to earn a higher rate of return on their assets than on cash, a company that passively holds large amounts of cash may not be making the best use of its resources.

So, a clear statement of a company's cashflow position allows shareholders to check whether the company is being run efficiently (*ie* not holding too much cash) as well as checking on liquidity (*ie* holding too little cash). Cashflow statements help focus on the changes in a company's holdings of cash.



**Cashflows are important, but only because the entity needs cash to survive. The main reason for being in business is to earn a profit.**

**Cashflows should be monitored to ensure, for example, that expansion of the business does not force it into a cash deficit, but a strong cash inflow is not always the aim. If a business has too much cash then it may be desirable to put that money to some good use by investing in productive assets or even by repaying loans. If there are no such opportunities then it may even make sense to make a sizeable payment to the shareholders as a dividend or the repurchase of shares.**

### Profit is not the same as cash

**The profit figure for the year is unlikely to bear any resemblance to the increase or decrease in the company's bank balance or total for working capital (current assets less current liabilities) over that period. Several entries in the statement of profit or loss, such as depreciation, do not involve a payment or receipt of cash. Furthermore, the statement of profit or loss recognises credit sales and purchases before any cash changes hands. Conversely, many receipts and payments, such as the proceeds of share issues and loan repayments, have no immediate impact on profit. It is possible for a company to trade profitably and still run into liquidity problems.**

A company can be very successful and profitable in terms of the statement of profit or loss, yet not be able to find enough cash to finance its day-to-day activities. The company could be selling its goods in large quantities but building up large amounts of trade receivables (debtors) and overdrafts as the company pays its suppliers and its other expenses but its customers are slow to pay their bills.

The increase in a company's cash holdings will differ from the accounting profits shown in the statement of profit or loss. The main reason for this difference is the application of the accruals principle.




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### Question

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Give an example of how the accruals concept can cause the cashflow statement and the statement of profit or loss to differ from one another.

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### Solution

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The following is only one of a number of possible examples. Let us assume that a company pays a fee of \$10 million to a marketing company to advertise its product over the coming 12 months. Let us also assume that the company's accounting year runs from 1 January to 31 December, and that the date of the deal is 1 July.



The payment of the fee is clearly a distribution cost and should be shown as such in the statement of profit or loss. The payment of the fee would have an immediate cashflow effect which would fall into the cashflow statement in the current financial year. However, by the accruals principle, the expense should be recognised over the period of the contract, *ie* over the period which the company expects to benefit from the expenditure. It will therefore be accrued over the coming 12 months, and \$5 million will fall into this year's statement of profit or loss and \$5 million into the next financial year.

So cash will fall by \$10 million, but the statement of profit or loss for the year will show an expense of \$5 million.



### Question

Complete the following table, stating the immediate effect of each of the following events on a company's pre-tax accounting profit and on its holdings of cash:

	<b><i>Event</i></b>	<b><i>Pre-tax profits</i></b>	<b><i>Cash</i></b>
a	the purchase of a non-current asset for cash		
b	selling goods on credit		
c	purchasing raw materials on credit		
d	increasing the depreciation charge		
e	an upward revaluation of inventories held		
f	issue of loan capital or new shares for cash		
g	selling an investment (capital gain = 0)		
h	being assessed for, and paying tax		
i	paying dividends		
j	paying a creditor		

---

**Solution**


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	<b>Event</b>	<b>Pre-tax profits</b>	<b>Cash</b>
a	the purchase of a non-current asset for cash	No change	Lower
b	selling goods on credit	Higher	No change
c	purchasing raw materials on credit	Lower	No change
d	increasing the depreciation charge	Lower	No change
e	an upward revaluation of inventories held	Higher	No change
f	issue of loan capital or new shares for cash	No change	Higher
g	selling an investment (capital gain = 0)	No change	Higher
h	being assessed for, and paying tax	No change	Lower
i	paying dividends	No change	Lower
j	paying a creditor	No change	Lower

The table shows that profit and cash are not the same.

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**Less subjective nature of cashflow statement**

The preparation of a cashflow statement is open to less interpretation than the preparation of the statement of profit or loss. For example in determining 'profits' subjective judgements are often needed, *eg* on:

- how much provision should be made for bad debts
- the method of depreciation to be used
- how inventories should be valued
- how the accruals concept should be interpreted.

In contrast, there is much less interpretation involved in preparing a statement of cashflows. Either cash has been spent or it hasn't.

### 3.2 The structure of a cashflow statement

There are three sections to the cashflow statement:

- cashflows from *operating activities* – starting from operating profit and reconciling operating profit to cash
- cashflows from *investing activities* – acquisitions and disposals of long-term assets and other investments not included in cash equivalents
- cashflows from *financing activities* – changes in the size of equity capital and borrowings.

The following is an example of a cashflow statement:

	£000s
<b><i>Cashflows from operating activities</i></b>	
Cash generated from operations	33,100
Interest paid	(9,200)
Tax paid	(14,500)
<b>Net cash generated from operating activities</b>	<b>9,400</b>
<b><i>Cashflows from investing activities</i></b>	
Purchases of property, plant and equipment	(9,800)
Proceeds from sale of property, plant and equipment	6,400
Purchases of intangible assets	(3,000)
Loans granted to related parties	(1,300)
Loan repayments received from related parties	100
Interest received	1,200
<b>Net cash used in investing activities</b>	<b>(6,400)</b>
<b><i>Cashflows from financing activities</i></b>	
Proceeds from issuance of ordinary shares	1,000
Proceeds from borrowings	8,500
Repayments of borrowings	(10,000)
Dividends paid to company's shareholders	(11,000)
<b>Net cash used in financing activities</b>	<b>(11,500)</b>
<b><i>Net (decrease)/increase in cash, cash equivalents and bank overdrafts</i></b>	<b>(8,500)</b>
<b>Cash, cash equivalents and bank overdrafts at beginning of the year</b>	<b>30,000</b>
<b><i>Cash, cash equivalents and bank overdrafts at end of the year</i></b>	<b>21,500</b>

The details of the calculation of cash generated from operations would normally be shown as a note. We will look at the three sections of the statement in turn.

#### Net cash generated from operations

**This shows that the company generated cash inflows of £9.4m from its trading activities.**

The starting point for this figure is the operating profit from the statement of profit or loss. Various adjustments are made in order to find the cash generated from operating activities.

The cash generated from operations is determined as:

Operating profit	<b>33,000</b>
Adjustments for:	
Depreciation	<b>18,000</b>
Changes in working capital:	
• Inventories	<b>(7,000)</b>
• Trade and other receivables	<b>(1,500)</b>
• Trade and other payables	<b>(9,400)</b>
Cash generated from operations	<b>33,100</b>

The operating profit figure in the statement of profit or loss includes an accounting adjustment in respect of depreciation. The cashflow related to that expense occurred when the non-current assets were purchased.

Depreciation has been added back in to the operating profit before calculating the 'cash generated from operating activities' because depreciation is not a cash item.

The company's trading activities also include transactions involving inventories, trade receivables and trade payables. These can affect cashflows without affecting profits. If, for example, the company received £100 from its debtors at the start of the year, made sales of £1,000 during the year and was owed £150 at the year end it would have received cash from its debtors of  $£100 + £1,000 - £150 = £950$ . It would report income of £1,000 even though cash takings were less because some of the sales had resulted in an increase in debtors rather than an inflow of cash.

Two more deductions must be made – interest paid and tax paid – in order to arrive at *net* cash generated from operating activities.

The other headings on the statement deal with cashflows which arise from non-trading activities: investing activities and financing activities.

## Investing activities

These can include the following:

- purchase and sale of non-current assets, property, plant and equipment plus intangible assets, like patents
- receipts of interest and dividends from investments
- transactions involving 'liquid' assets other than cash, such as short-term investments in securities.

## Financing activities

These can include the following:

- payment of dividends to the company's shareholders
- cashflows arising from the repayment of loans and from fresh borrowing and the issue of shares.

The cashflows are classified according to the broad headings of operating activities, investing activities and financing activities. The boundaries of those classifications are not that clearly defined (for example, the payment of tax can be shown under any of the three headings). It is, however, possible to see how the net cash inflow or outflow for the year is broken down into categories such as:

- cash received from customers and paid to suppliers (operating)
- cash applied by purchasing property, plant and equipment and raised from its disposal (investing)
- cash raised from borrowing and issuing shares and applied to repayments and repurchases (financing).

The key to interpreting a cashflow statement is to look at the financial position both before and after the period. The cashflow statement is a useful means of determining whether the cash balances have increased or decreased and explaining those movements. It is impossible to tell whether that increase or decrease was desirable without considering the closing balances to check that the financial position is solvent.

The syllabus requires an *understanding* and ability to *interpret* cashflow statements; but not to be able to *construct* them. However, it is worth constructing one as it will help with understanding.



### Question

Using the information given below, construct LoadsaMoney's cashflow statement for 20X5 and comment on the cash movements and the final cash position. During 20X5, LoadsaMoney had the following items of income and expenditure:

	£
increase in stocks of finished goods	13,500
income from dividends	4,200
turnover	362,000
tax paid	49,120
increase in cash	23,780
dividends paid	15,000
increase in work-in-progress	2,100
interest received on 3-month bank deposit	3,500
interest paid on loan stock	5,500
20X5 sales for which payment not yet received	71,000
payments for 20X4 sales received in 20X5	63,000
20X5 raw material purchases not yet paid for	37,000
20X4 purchases paid for in 20X5	40,000

The company bought three bank note printing machines in January 20X5 for £35,000 each. The total depreciation charge for 20X5 was £22,450.

On 1 January 20X5, the company had £50,000 in cash and £98,000 in a three-month bank deposit. By 31 December 20X5, it had a £73,780 in cash and £95,000 in three-month bank deposit.

LoadsaMoney's operating profit for 20X5 was £191,850.

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## Solution

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### *Cashflow statement for LoadsaMoney 20X5*

	£
<b>Cashflows from operating activities</b>	
Cash generated from operations *	187,700
Interest paid	(5,500)
Tax paid	<u>(49,120)</u>
Net cash generated from operating activities	133,080
<b>Cashflows from investing activities</b>	
Purchases of machinery	(105,000)
Interest received	3,500
Dividends received	<u>4,200</u>
Net cash used in investing activities	(97,300)
<b>Cashflows from financing activities</b>	
Equity dividends paid	<u>(15,000)</u>
Net cash used in financing activities	(15,000)
<b>Net increase in cash/cash equivalents and bank overdrafts</b>	<b>20,780</b>
Cash/cash equivalents and bank overdrafts at beginning of the year	148,000
<b>Cash/cash equivalents and bank overdrafts at end of the year</b>	<b>168,780</b>

\* Cash generated from operations is:

Operating profit		191,850
<i>plus</i> Depreciation		22,450
<i>less</i> Increase in inventories (stocks)	(13,500 + 2,100)	(15,600)
<i>less</i> Increase in trade receivables (debtors)	(71,000 – 63,000)	(8,000)
<i>less</i> Decrease in trade payables (creditors)	(37,000 – 40,000)	<u>(3,000)</u>
Cash generated from operations		187,700

## Comments:

- The cash balance has increased by £20,780 from £148,000 to £168,780 (an increase of £23,780 in cash and a decrease of £3,000 in a three-month bank deposit). We do not know whether this is a 'reasonable' cash position because we do not have sufficient information about the company's other assets and its liabilities. However, it seems high in relation to the company's annual turnover of £362,000.
- It seems strange that the company has increased the amount held in cash and decreased the amount held on three-month deposit, since the latter earned interest of £3,500 in 20X5.
- The company has generated £133,080 from its operating activities; and has spent £97,300 on investing activities and £15,000 on its financing activities. The company is in the fortunate position of being able to finance new investment (the purchase of the printing machines) with the cash generated from just one year's operating activities! To generate cash overall in a year of self-financed high investment is relatively unusual.
- The key to the company's healthy cash position is its operating profit of £191,850, which translates into a cash contribution of £133,080. During the year, it has used cash in building up inventories and work-in-progress, increasing its trade receivables and decreasing its trade payables. Although not causing a cash problem this year, the company should check that its stock levels are not unreasonably high, that its credit terms for customers are not unreasonably generous, and that it is making the best use of available credit from suppliers.
- The company's net profit before tax and interest is £199,550 (£191,850 + £3,500 + £4,200). As a percentage of its turnover, this is 55%, so this company seems to be well-named – it is both profitable and cash-rich!
- The company paid £5,500 in interest on loan stock. In future years, if its cash position continues to be as favourable, it might not need to take out any new loans and will therefore save the interest payments.
- The company paid £49,120 in tax. This represents about 25% of the company's net profit before tax and interest.
- The company has earned relatively little from investing in activities outside the business. In future years, it would seem to make sense to expand the business, but if further growth is unlikely, it could consider investing in a range of financial assets. Alternatively, it could reward the shareholders with more generous dividends or by buying back some shares.

## 4 Statement of changes in equity

A further requirement of the international standards is a statement of changes in equity. This summarises the changes in the capital and reserves attributable to equity holders of the company over the accounting period, and so reconciles the amounts shown in the statement of financial position at the start and end of the period.

An example for a one-year period is given below:

	Attributable to equity holders of the company			£000
	Share capital	Other reserves	Retained earnings	Total equity
<b>Balance at 1 January 20X1</b>	<b>30,000</b>	<b>10,000</b>	<b>15,000</b>	<b>55,000</b>
Fair value gains and (losses), net of tax:				
Land and buildings		2,000		2,000
Depreciation transfer, land and buildings		(750)		(750)
Net income/(expense) recognised directly in equity		1,250		1,250
Profit for the year			5,000	5,000
<b>Total recognised income for 20X1</b>		<b>1,250</b>	<b>5,000</b>	<b>6,250</b>
Dividends paid			(3,000)	(3,000)
Issue of share capital	10,000			10,000
<b>Balance at 31 December 20X1</b>	<b>40,000</b>	<b>11,250</b>	<b>17,000</b>	<b>68,250</b>

The revaluation of land and buildings is recognised in the 'other reserves'.

### 4.1 Dividends paid

The final earnings for the year may be used to pay dividends. It would be unusual for the company to distribute all of the profit in this way. The remainder is 'retained' within the business as part of the owners' equity and transferred to the retained earnings part of the statement of financial position.

The amount of dividend being *proposed* to the shareholders is included in the draft accounts presented for the approval of shareholders at the Annual General Meeting.

Once the dividends are *approved* at the AGM, an approved set of accounts can be drawn up.

When dividends are *paid* they appear as a note beneath the statement of profit or loss and will be deducted from the cash balance and from the retained earnings in the equity section of the statement of financial position as shown in the statement of changes in equity. They will also show up in the cashflow statement and in the notes to the accounts.





## Question

Produce a statement of changes in equity for Year X for Planet plc, given the following equity sections of the statements of financial position for 31 December Year X–1 and 31 December Year X plus notes.

<i>31 December X–1</i>		<i>31 December X</i>	
	<i>£000s</i>		<i>£000s</i>
Share capital (50p shares)	800	Share capital (50p shares)	1,000
Other reserves	200	Other reserves	400
Retained earnings	<u>500</u>	Retained earnings	<u>600</u>
Total equity	1,500	Total equity	2,000

Notes:

- During Year X, 400,000 new shares were issued @75p.
- On 30 June X, the company's land was revalued. Its book value at the time was £500,000. This increased to £600,000 at fair value. This increase is recognised in the revaluation reserve. There has been no depreciation since the revaluation.
- The profit after tax for Year X was £120,000.
- Dividends for Year X–1 of £20,000 were paid during Year X.

## Solution

### *Statement of changes in equity for Planet plc for Year X*

	<i>Attributable to equity holders</i>			<i>£000s</i>
	<i>Share capital</i>	<i>Other reserves</i>	<i>Retained earnings</i>	<i>Total equity</i>
<b>Balance at 31 December Year X–1</b>	<b>800</b>	<b>200</b>	<b>500</b>	<b>1,500</b>
Fair value gains on land and buildings		100		100
Profit for Year X			120	120
<b>Total recognised income for Year X</b>		<b>100</b>	<b>120</b>	<b>220</b>
Dividends paid			(20)	(20)
Issue of share capital in Year X	200	100		300
<b>Balance at 31 December Year X</b>	<b>1,000</b>	<b>400</b>	<b>600</b>	<b>2,000</b>

## 5 Notes to the accounts

As noted in the previous chapter, UK legislation requires companies to produce accounts which include detailed disclosures – appropriate explanatory notes and additional information. These are normally presented as a series of notes to the accounts.

The notes will cover details of the:

- accounting policies used in preparation of the financial statements
- analysis of totals shown in the statement of financial position
- analysis of items in the statement of profit or loss
- significant events after the end of the accounting year .

In addition, companies will normally disclose, voluntarily, additional information designed to help the readers of the accounts to gain a true and fair view of the position of the company.

## Chapter 10 Summary

### Statement of financial position

The *statement of financial position (balance sheet)* is a snapshot of a company's financial position at a moment in time. It shows what the company owns (its assets), what it owes (its liabilities) and the shareholders' equity.

$$\text{Equity} + \text{Liabilities} = \text{Assets.}$$

The *assets* are made up of non-current assets, both tangible *eg* machinery and intangible *eg* trademarks, and current assets (cash and items that can be quickly converted into cash *eg* inventories (stocks), trade receivables (debtors)).

The *liabilities* are made up of non-current liabilities (amounts falling due after one year) and current liabilities (amounts falling due within one year).

*Equity* consists of share capital, other reserves and retained earnings.

### Statement of comprehensive income

The *statement of profit or loss (income statement or P&L)* component of this shows the profit or loss generated by the company over a period of time, usually a year. The statement is prepared according to the realisation and accruals concepts.

The *gross profit* is found by deducting the cost of sales from the turnover.

The *operating profit* is found by deducting expenses (excluding interest) from the gross profit.

The *profit before tax and interest* is found by adding finance income.

The *profit before tax* is found by deducting finance costs.

The *profit for the year* is found by deducting tax.

The *earnings* of the ordinary shareholders, *ie* the *profit attributable to equity holders*, is the profit for the year *less* preference dividends (if any).

*Total comprehensive income* is found by adding *other comprehensive income*, *eg* gains on revaluation.

## Cashflow statement

*Cashflow statements* show where the money has come from and where it has gone. The accruals concept is ignored.

There are three sections to the cashflow statement:

- cashflows from *operating activities*
- cashflows from *investing activities*
- cashflows from *financing activities*.

## Statement of changes in equity

The *statement of changes in equity* shows how the composition of equity (share capital, other reserves and retained earnings) has changed over the year.



## Chapter 10 Practice Questions

Exam style

All of the questions that follow are exam style.

10.1 The term 'current asset' as used in company reports and accounts describes cash and other assets:

- A that are marketable.
- B that the company plans to dispose of within the next financial year.
- C that are tangible.
- D that will be converted into cash in the normal course of business. [2]

10.2 The term 'inventories' as used in company reports and accounts describes:

- A finished goods for resale only.
- B work-in-progress and finished goods for resale only.
- C raw materials, work-in-progress and finished goods for resale only.
- D raw materials and consumables, work-in-progress and finished goods. [2]

10.3 What are non-current assets?

- A tangible assets with an expected life of more than one year
- B tangible assets which are not held for sale in the normal course of business
- C assets which are not held for sale in the normal course of business
- D machines, factories and other immobile assets which are not intended for resale [2]

10.4 The following figures were taken from a company's accounts:

	20X1	20X0
Operating profit	£20,000	£25,000
Depreciation	£5,000	£5,000
Working capital (inventories + trade receivables – trade payables)	£8,000	£4,000

What is the company's cash inflow from operating activities for the year ended 20X1?

- A £19,000
- B £21,000
- C £25,000
- D £29,000 [2]

10.5 Which of the following items is NOT found in a cashflow statement under the heading 'cashflows from investing activities'?

- A issue of ordinary share capital
- B receipts from sales of non-current asset investments
- C payments to acquire tangible non-current assets
- D receipts from sales of tangible non-current assets [2]

10.6 Which of the following is NOT a current liability?

- A trade receivables
- B trade payables
- C overdraft
- D provision for tax (to be paid in six weeks) [2]

10.7 Which of the following is true?

- A The statement of profit or loss shows the cash generated by a company over the last year.
- B It is possible to calculate the market value of the shareholders' interest in a company from data shown in its statement of financial position.
- C A change in accounting policy that reduces a company's depreciation charge by £1m will usually increase the post-tax profits attributable to ordinary shareholders by £1m.
- D A provision is a potential liability which had not materialised as a liability by the date of the statement of financial position. [2]

10.8 Which of the following is NOT a current asset?

- A inventories
- B trade receivables
- C trade payables
- D cash [2]

10.9 A company's statement of profit or loss shows that it has generated substantial profits but its cashflow statement indicates that it has suffered a large outflow of cash during the same period. The figures are reliable and free from distortion.

Explain whether this set of circumstances warrants any major concern. [5]

10.10 Explain why financial statements must be supplemented and supported by notes to the accounts. [5]



## Chapter 10 Solutions

10.1 Answer = D

Land is an example of an asset that is marketable, tangible and a company may have plans to sell it. However, it is a non-current, not a current, asset.

10.2 Answer = D

10.3 Answer = C

Non-current assets may be tangible or intangible. They may also be mobile (*eg* a lorry).

10.4 Answer = B

The cash inflow from operating activities is found as follows:

Operating profit	£20,000
<i>plus</i> depreciation	£5,000
<i>less</i> increase in working capital	<u>(£4,000)</u>
	£21,000

10.5 Answer = A

The issue of ordinary share capital would be under the heading 'cashflows from financing activities'. In a cashflow statement, 'cashflows from investing activities' refers to purchases or sales of non-current assets, including investments that are non-current, *ie* investments that the company intends to hold for more than a year.

10.6 Answer = A

Trade receivables are a current asset of the business.

10.7 Answer = C

A is false as the statement of profit or loss is drawn up using the realisation and accruals concepts. Cash amounts are not necessarily shown.

B is false as the statement of financial position shows accounting values not market values.

C is true as this will increase operating profit and hence pre-tax profit by the amount of the reduced depreciation. The tax charge will not change since tax is based on capital allowances, rather than on the depreciation shown in the accounts. So the post-tax profit changes by the same amount.

D is false as it is discussing a 'contingent liability', included as a note to the accounts.

10.8 Answer = C

Trade payables are a liability of the business. The business owes trade suppliers money for supplies received.

10.9 Profit could look healthier than cash because:

- the full value of goods and services sold on credit is credited under sales revenue, and will therefore contribute to profit, even though cash may not be received for some time [1]
- inventories (the stock of materials, components, work-in-progress and finished goods) are only treated as a cost when they are used to produce the goods sold, so the build up of inventories will reduce cash by more than it will reduce profit. [1]

In addition, cash balances are affected by items that do not affect the statement of profit or loss, *eg* the purchase of a non-current asset. [1]

*Cause for concern*

It is quite normal for a new business to show substantial profit and yet experience large cash outflows as it invests in new equipment, builds up stock and sells on credit, and so the discrepancy between the profit position and the cash position may not be a cause for concern. [1]

However, many profitable businesses fail because they run out of cash and/or exceed their overdraft limits. [1]

Therefore, although a discrepancy between profit and cash is inevitable and not a problem in itself, a large cash outflow is potentially a cause for concern. [1]

Companies should forecast and monitor their cash positions and should take action to remedy any unplanned shortages. [1]  
[Maximum 5]

10.10 The notes give detailed explanations and additional information to provide shareholders with a better understanding of the position of the company by helping them gain a true and fair view. [1]

Many of the disclosures in the notes are required by law or by accounting standards. [1]

Notes might deal with qualitative matters and disclosures that could not be reflected in the financial statements. For example, descriptions of contingent liabilities could be vitally important, as could information about post-balance sheet events. [1]

The notes will also cover details of the accounting policies used in the preparation of the statements, which will make the accounts more useful to users, *eg* aiding comparisons between companies. [1]

Providing an overview in the main statements and supplementing that with the notes gives shareholders and other readers the choice of reading further if they wish. [1]

Notes and appendices avoid burdening the statement of financial position and statement of profit or loss with excessive information. [1]  
[Maximum 5]



# 11

## Depreciation and reserves

### Syllabus objectives

- 4.1 Describe the basic construction of accounts of different types and the role and principal features of the accounts of a company.
12. Explain how depreciation is treated in company accounts.
13. Explain the function of the following accounts:
  - share capital
  - other reserves
  - retained earnings.

## 0 Introduction

This is a short chapter containing a more detailed discussion of depreciation and reserves.

The examination is likely test *understanding* of the purpose of depreciation and the nature of reserves, *ability to calculate* depreciation and reserves and *to evaluate* a company's policy on depreciation or reserves.

# 1 Depreciation

## 1.1 What is the purpose of depreciation?

**Depreciation adjustments are required because virtually all non-current assets have finite useful economic lives.**

Land is an exception and is usually revalued rather than depreciated over time.

The statement of profit or loss needs to show the cost of using non-current assets – not the value of non-current assets purchased during the year. There are two reasons for this:

1. If a company buys an asset which it still owns at the end of the year, the company has not lost the whole amount spent. The real loss is the difference between the value of the asset at the start of the year (or the cash the company used for its purchase) and the value of the asset at the end of the year.
2. The amount spent on non-current assets can vary considerably from year to year. The statement of profit or loss would not therefore give a true picture of a company's *underlying* long-term profitability if expenditure on non-current assets was allowed to distort profits from year to year.

So instead of showing expenditure on non-current assets, companies show the amount by which their assets have depreciated over the year. Depreciation measures the amount of the capital stock that has been used up during the year.



**Depreciation is defined as the measure of the wearing out, consumption or other reduction in the useful economic life of a non-current asset, whether arising from:**

- the passage of time, or
- obsolescence through technological or market changes.

**The first, and most important, aspect of this definition is that depreciation adjustments are not attempts to reflect the value of non-current assets in the statement of financial position. Rather, the purpose is to charge the purchase price of the company's non-current assets in the statement of profit or loss in a systematic way. Depreciation is, therefore, an application of the matching concept referred to earlier.**

The definition of depreciation also makes it reasonably clear that the manner in which an asset's life diminishes varies according to the nature of the asset.

- A financial asset, such as a lease on some property, has a life span which is fixed in terms of time.
- Physical assets are likely to wear out through use and are likely to deteriorate more rapidly when they are used more heavily.
- Some assets, such as computers, are more likely to be overtaken by new technology long before the end of their physical lives.

Ideally, these differences should be reflected by having different bases for depreciation which reflect the nature of the assets. In practice, the cost of calculating depreciation in this way would involve such detailed record keeping of usage and output that the charge is usually based on the passage of time.

For example, a new asset might be purchased for £1,000. Management might estimate that it will have a useful life of five years (or that normal wear and tear will bring it to the end of its useful physical life in five years' time), at which time it will be sold for scrap for, perhaps, £100. This raises the question of the most appropriate way to spread that £900 loss of value over the next five statements of profit or loss.

The simplest method is called the straight line basis.

## 1.2 The straight line basis



This charges equal amounts every year as follows:

$$\frac{\text{Cost} - \text{Estimated residual value}}{\text{Estimated useful life}}$$

That would give a charge of

$$\frac{1,000 - 100}{5}$$

= £180 per annum.

The straight line basis can also be expressed by charging a percentage of cost. If it was assumed that the estimated residual value was immaterial then the charge could be calculated as 20% of cost per annum

The cost is the original cost of the asset.

Intangible assets may also suffer depreciation (often called 'amortisation' of value when referring to intangibles). Depreciation or amortisation of intangible assets can be calculated in the same ways as depreciation of tangible assets. For example, a company's purchase for £60,000 of the right to use a particular brand name for the next 20 years will suffer depreciation of £3,000 each year (*ie* based on the straight line method with no residual value).

### 1.3 The reducing balance method

The reducing balance method is the other common method of charging depreciation. This charges a fixed percentage of 'book value' (ie cost less depreciation to date) each year so that the whole cost is charged over the life of the asset.

The depreciation rate is calculated as follows:

$$1 - \sqrt[n]{\frac{\text{Estimated residual value}}{\text{Cost}}}$$

where  $n$  is the estimated useful life in years.

Thus, the rate to be applied to our example would be:

$$1 - \sqrt[5]{\frac{100}{1,000}}$$

$$= 37\% \text{ (rounded and expressed as a percentage)}$$

The depreciation charged for a particular year under this method will be the value of the asset at the beginning of the year multiplied by the rate of depreciation. The *charge to the statement of profit or loss* of depreciation on a particular non-current asset will therefore fall each year under the reducing balance method.

That means that the first year's depreciation will be  $\text{£}1,000 \times 37\% = \text{£}370$ , leaving a book value of  $\text{£}630$ . The second year's depreciation will be  $\text{£}630 \times 37\% = \text{£}233$  and so on.

Over the life of the asset, the following pattern would emerge:

Year	Book value at start of year	Depreciation	Book value at end of year
1	1,000	370	630
2	630	233	397
3	397	147	250
4	250	92	158
5	158	58	100



## Question

Consider the following non-current assets:

- factory, initial cost £250,000, estimated useful life 25 years, no residual value
- two vans, initial cost £15,000 each, estimated useful life six years, no residual value
- machinery, initial cost £122,000, estimated useful life eleven years, estimated residual value £13,750.

The factory was bought seven years ago. The vans and the machinery were all bought at the beginning of Year Z. The factory and the vans are depreciated using the straight line method. Depreciation on the machinery is worked out using the reducing balance method.

Calculate the company's total depreciation charge for Year Z.

## Solution

Factory: annual depreciation charge (using the straight line method) =  $\frac{250,000}{25} = 10,000$

Vans: annual depreciation charge (using the straight line method) =  $\frac{2 \times 15,000}{6} = 5,000$

Machinery: using the reducing balance method, we first need to calculate the rate of depreciation  $r$  which is  $122,000 \times (1-r)^{11} = 13,750$ .

So  $r = 0.18$  and the depreciation for the first year =  $0.18 \times 122,000 = 21,960$

Total depreciation charge for the year =  $10,000 + 5,000 + 21,960 = £36,960$

**One advantage of the reducing balance method is that it tends to charge a heavier proportion of the cost of the assets when they are new. This might make the depreciation charge in the statement of profit or loss more relevant because most of the charge will be based on the cost of newer, more recent assets. The straight line method weights assets equally, regardless of their age, which can be a drawback when the cost of assets is rising because of inflation.**

**In practice, it is common for companies to assume that all assets of a particular class will last a 'standard' life (eg four years for vehicles and ten years for manufacturing plant). These rates will be based on experience and will reflect the general patterns observed by that company. The errors which creep in because some assets are depreciated too slowly will tend to cancel those which arise because others are depreciated too rapidly.**

**Clearly, management has a considerable amount of discretion over the amount to be charged for depreciation in any given year. The estimates of useful life and residual value will affect both the statement of profit or loss charge and the valuation in the statement of financial position. The selection of either straight line or reducing balance depreciation will also have an impact.**

A company cannot however change its depreciation policy from year to year without good cause. Companies also disclose a great deal of information concerning their depreciation policies which gives the reader a lot of information about the non-current assets and their book values over the accounting period.

**Thus, companies are required to provide a considerable amount of detail about their non-current asset balances:**

	<b>Freehold Land and buildings</b>	<b>Leasehold Land and buildings</b>	<b>Plant and Machinery</b>	<b>Total</b>
	<i>£000</i>	<i>£000</i>	<i>£000</i>	<i>£000</i>
<b>Cost or Valuation</b>				
<b>1 January 20X0</b>	<b>200</b>	<b>100</b>	<b>50</b>	<b>350</b>
<b>Additions</b>	<b>10</b>	<b>2</b>	<b>4</b>	<b>16</b>
<b>Disposals</b>	<b>(7)</b>	<b>(6)</b>	<b>(8)</b>	<b>(21)</b>
<b>31 December 20X0</b>	<b>203</b>	<b>96</b>	<b>46</b>	<b>345</b>
<b>Depreciation</b>				
<b>1 January 20X0</b>	<b>30</b>	<b>20</b>	<b>16</b>	<b>66</b>
<b>Charge for year</b>	<b>4</b>	<b>8</b>	<b>5</b>	<b>17</b>
<b>Disposals</b>	<b>(3)</b>	<b>(2)</b>	<b>(4)</b>	<b>(9)</b>
<b>31 December 20X0</b>	<b>31</b>	<b>26</b>	<b>17</b>	<b>74</b>
<b>Net Book Value</b>				
<b>31 December 20X0</b>	<b>172</b>	<b>70</b>	<b>29</b>	<b>271</b>
<b>1 January 20X0</b>	<b>170</b>	<b>80</b>	<b>34</b>	<b>284</b>



### Question

Explain why disposals represent a negative in the depreciation calculation table above.

### Solution

A non-current asset that has been in the company's books for some time will be valued at cost (*ie* the full purchase cost) less some amount of depreciation. When that asset is sold, the full purchase cost of the asset is deducted from the non-current asset account, and the amount of the depreciation to date-of-sale is deducted from the depreciation account – *ie* negative depreciation.

This information would be supplemented by a detailed statement of the accounting policies used in deriving the figures. Anyone reading this note will, therefore, be able to make some rough estimates of the effects of using a particular accounting policy and might, therefore, be able to change the figures to make them comparable with those of another company. It also permits some rough estimates of the proportion of the assets' useful lives which have been consumed to date. That might make it possible to predict major events such as the issue of fresh share capital or the raising of a loan with which to invest in non-current assets.



## Question

Given the following information about a company, calculate the amount it received from the sale of non-current assets in the year to 31 July 20X1.

	31 July 20X1	31 July 20X0
	£000s	£000s
Non-current assets:		
Cost	3,976	3,465
Depreciation	<u>1,245</u>	<u>1,033</u>
	2,731	2,432

During the year, the company paid £900,000 for new equipment and also made a loss on the disposal of non-current assets of £50,000. The depreciation allowance for the year is £432,000.

## Solution

Firstly, work out the value at cost of the assets that were sold. The non-current assets at cost were £3,465,000 in 20X0 and £3,976,000 in 20X1. During this year, £900,000 was spent on non-current assets and an unknown value of non-current assets at cost ( $x$ ) were disposed of. So:

$$£3,465,000 + £900,000 - x = £3,976,000$$

$$x = £389,000$$

Secondly, find the depreciation attached to the assets that were sold. The accumulated depreciation to 31 July 20X0 was £1,033,000, and the accumulated depreciation to 31 July 20X1 was £1,245,000. During the year, the company's assets depreciated by £432,000, but some assets with accumulated depreciation attached to them ( $y$ ) were sold. So:

$$£1,033,000 + £432,000 - y = £1,245,000$$

$$y = £220,000$$

Thirdly, find the book value of the assets that were sold. This amounts to:

$$x - y = £389,000 - £220,000 = £169,000$$

Finally, we find the amount received from the sale of these assets. We are told that these assets were sold at a loss of £50,000. Thus, the assets were sold at £50,000 less than their book value, *ie* they were sold at £119,000.



## 2 Capital and reserves

The statement of financial position lists the assets owned by the company and the liabilities which are owed to third parties. The residual amount is called capital or equity and belongs to the shareholders.

Equity can arise in three main ways:

- the sale of shares to the shareholders
- certain adjustments, such as the revaluation of non-current assets
- the retention of profit after tax.

### 2.1 Share capital and share premium



#### Question

State how the nominal value of a company's issued share capital is calculated.

#### Solution

The nominal amount of issued share capital = number of shares issued  $\times$  par value of shares.

**Shares carry a 'nominal' value for bookkeeping purposes. This does not, however, necessarily reflect the market value of the company and it is possible that the company will be able to find buyers who would be willing to pay rather more.**

Ordinary shares are always issued at or above their par value. Any excess money raised over their nominal value is shown under the heading 'share premium account', which is part of 'other reserves'.



#### Question

A US company issued half a million fully paid \$0.25 shares at a price of \$0.37 each. Determine the amount of share capital and the share premium account.

#### Solution

The nominal amount of \$125,000 ( $\$0.25 \times 500,000$ ) is shown under the heading 'called up share capital' and the extra \$60,000 raised ( $\$0.12 \times 500,000$ ) under the heading 'share premium account'.

**The difference between the nominal value of the shares and the amount paid for them is called the 'share premium account'. It is not permissible to issue shares at a discount.**

The share premium account can also be used for:

- the preliminary expenses of forming a company
- the expenses and commissions incurred in any issue of shares
- any profit or loss on the issue of loan stock
- any premium paid on the redemption of loan stock
- the expenses of issue of loan stock.

These items will be added/charged to the share premium account as and when necessary.

**Effectively, the share premium account is just a part of the company's share capital, but its value is included in 'Other reserves' in the statement of financial position format used in Chapter 10.**

It shows the excess of shareholder investment over the nominal value of the shares.

## 2.2 Revaluation reserve

**Despite the cost concept, it is common practice to revalue land and buildings in the statement of financial position.**

**If, for example, the company owned a factory which had cost £300,000 and had been depreciated by £70,000 it would be valued at a net book value of £230,000 in the statement of financial position. If the company's advisers valued the property at, say, £400,000 then this could be reflected in the financial statements by restating the depreciation to date as zero and replacing the 'cost' of £300,000 with a 'valuation' of £400,000.**

**Simply increasing the book value of assets by £170,000 would throw the statement of financial position out of balance. This is rectified by increasing the 'revaluation reserve' by £170,000.**

**The amount of the revaluation reserve is included in 'Other reserves' in the statement of financial position format used in the previous chapter.**




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### Question

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State where else the £170,000 is mentioned in this company's accounts.

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### Solution

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In addition to appearing in the revaluation reserve in the statement of financial position, the £170,000 would also be shown as a gain on revaluation in the 'other comprehensive income' section at the bottom of the statement of comprehensive income.

It would also appear in the statement of changes in equity.

---

**Gains on revaluation are the one exception to the statement (in the previous chapter) that 'other comprehensive income' will not be examined in this subject. If a gain on revaluation is recognised in any year then the profit for the year is calculated as before, but the gain on revaluation is then shown as one element of 'other comprehensive income'.**

The annual depreciation is then based upon the revalued amount. The valuation will be written off over the estimated useful life of the asset. It is acceptable for the company to revise its expectations as to the expected useful life at the time of the revaluation.

The following example shows revaluation through the revaluation reserve.

To illustrate the effect of revaluation, assume that the company which owned the factory had no other assets. Its statement of financial position entries before and after the revaluation might be made up as follows:

	31 December 20X0 before revaluation	31 December 20X0 after revaluation
	(£)	(£)
<b>Non-current assets</b>		
Factory (cost)	300,000	400,000
Factory (depreciation)	(70,000)	–
	230,000	400,000
<b>Total assets</b>	230,000	400,000
<b>Share capital</b>	25,000	25,000
<b>Other reserves</b>		
Share premium	15,000	15,000
Revaluation reserve	–	170,000
<b>Retained earnings</b>	90,000	90,000
<b>Total equity</b>	130,000	300,000
<b>Non-current liabilities</b>		
Long-term borrowings	100,000	100,000
<b>Total non-current liabilities</b>	100,000	100,000
<b>Total liabilities</b>	100,000	100,000
<b>Total equity and liabilities</b>	230,000	400,000

The second statement appears much stronger. Assets are now four times greater than non-current liabilities instead of just over twice as great. Equity has more than doubled. And yet all that has happened is that the company has decided to restate the basis for the valuation of its assets.



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**Question**

---

Discuss the advantages and disadvantages of fair value accounting for all assets and liabilities, *ie* the annual revaluation of assets and liabilities in the accounts.

---

**Solution**

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*Advantages*

- Readers of accounting information may want to know the current market value of the company's assets and liabilities.
- More realistic valuation of the company's capital will give a more realistic rate of return on capital.
- Fair values are a better basis for decision making than historical costs. They offer a more realistic view of the net worth of the business. This would be useful when selling assets, merging or being taken over.
- Company would, by increased allowance for depreciation, be conserving adequate funds for the replacement of the assets.
- Company could obtain more loan finance on the basis of the increased value of its assets.
- If a company's assets have fallen in value, this indicates poor stewardship of the company's assets and should be reflected in the statement of profit or loss.

*Disadvantages*

- Fair values are not a better basis for decision making unless all items in the statement of financial position are measured at fair values. At the moment some measurements are made at fair value and others at historical cost.
  - Fair values increase the risk of misunderstanding on the part of existing or potential investors. Although each asset is broadly shown at its market value, the net value of the balance sheet will not necessarily equate to the market value of the company because of internally generated goodwill in the form of intangible assets, such as the value of the customer base.
  - Properly qualified regulated professionals will be required to undertake the revaluation if fair values are to be relied on.
  - The data on fair values may not be reliable. Where there is a well-defined market in the asset, this is not a problem, but for illiquid assets and liabilities it may be necessary to use a model, such as one based on the present value of future income. The models used, and the assumptions made within those models, will differ across companies, causing problems for auditors.
-

## 2.3 Retained earnings

The balance on the retained earnings reserve is normally the aggregate amount of profits earned during the lifetime of the company, less amounts paid out of profits for tax and dividends.

Normally the balance on the retained earnings reserve provides all of the company's distributable reserves. Company law restricts dividends by linking the maximum payout to distributable reserves to protect the interests of creditors. Otherwise the directors could use all of a failing company's remaining assets to pay a massive dividend to its shareholders. Doing so would act against the interests of the company's creditors and lenders.

In the preceding example, the maximum dividend payment would be £90,000 and this is not affected by the fact that equity increases as a result of the revaluation.



### Question

Goright plc is in the process of preparing its statement of financial position for 31 December 20X2. So far, the items (valued at 31 December 20X2 unless otherwise stated) are:

	<i>£000s</i>
Non-current assets at cost	547
Accumulated depreciation (31 December 20X1)	50
Current assets	165
Long-term loans	200
Share capital	300
Share premium	50
Revaluation reserve	30
Retained earnings (31 December 20X1)	55

For the year to 31 December 20X2:

- the depreciation figure in the statement of profit or loss is £12,000
- the profit after tax is £30,000
- the directors distributed half of the company's earnings to its shareholders in the form of a dividend.

The company's accountants take the view that the company's non-current assets should be revalued at £600,000.

Prepare the statement of financial position for Goright plc at 31 December 20X2:

- without revaluation of the non-current assets
- with revaluation of the non-current assets.

---

**Solution**


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**(i) Without revaluation of the non-current assets**

Statement of financial position for Goright plc at 31 December 20X2 (£000s)

Non-current assets:	
Cost	547
Depreciation	<u>(62)</u>
	485
Current assets	<u>165</u>
<b>Total assets</b>	<b><u>650</u></b>
Share capital and reserves:	
Share capital	300
Other reserves:	
Share premium	50
Revaluation reserve	30
Retained earnings	<u>70</u>
	450
Long-term loans	<u>200</u>
<b>Total equity and liabilities</b>	<b><u>650</u></b>

**(ii) With revaluation of the non-current assets**

Statement of financial position for Goright plc at 31 December 20X2 (£000s)

Non-current assets:	
Cost	600
Depreciation	<u>0</u>
	600
Current assets	<u>165</u>
<b>Total assets</b>	<b><u>765</u></b>
Share capital and reserves:	
Share capital	300
Other reserves:	
Share premium	50
Revaluation reserve	145
Retained earnings	<u>70</u>
	565
Long-term loans	<u>200</u>
<b>Total equity and liabilities</b>	<b><u>765</u></b>

---

## Chapter 11 Summary

### Depreciation

*Depreciation* shows the cost of using non-current assets. It measures the amount of capital stock that has been used up over the year due to wear and tear, passage of time or obsolescence.

The manner in which an asset's life diminishes varies according to the nature of the asset.

- A financial asset, such as a lease on some property, has a life span which is fixed in terms of time.
- Physical assets are likely to wear out through use and are likely to deteriorate more rapidly when they are used more heavily.
- Some assets, such as computers, are more likely to become obsolete.

The value of the assets may be written off evenly over a number of years using the *straight line method*. Alternatively a constant rate of depreciation may be used, using the *reducing balance method*.

### Share capital and reserves

There are three main items in the share capital and reserves.

- *Share capital* is the nominal value of the shares issued.
- *Other reserves* include:
  - (a) the share premium account, which records the additional amount raised from the share issue in excess of the nominal value
  - (b) the revaluation reserve, which records the increase in the value of non-current assets if non-current assets are revalued upwards.
- *Retained earnings* records the profit retained in the business to date.

Normally the balance on the retained earnings reserve provides all of the company's distributable reserves. Company law restricts dividends by linking the maximum payout to distributable reserves in order to protect the interests of creditors.

The practice questions start on the next page so that you can keep the chapter summaries together for revision purposes.





## Chapter 11 Practice Questions

Exam style

All of the questions that follow are exam style.

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- 11.1** Which of the following is true?
- A Depreciation adjustments are attempts to reflect the value of non-current assets in the statement of financial position.
  - B Depreciation adjustments ensure that funds are available for the eventual replacement of the asset.
  - C Depreciation using the straight line method tends to charge a heavier proportion of the initial cost of the assets when they are new.
  - D Depreciation is a measure of the wearing out or consumption of a non-current asset over time. [2]
- 11.2** An increase in the value of a non-current asset recognised in the revaluation reserve would NOT:
- A increase the equity of the company.
  - B make the statement of financial position look stronger.
  - C increase the profit of the company.
  - D increase the other comprehensive income. [2]
- 11.3** ACE plc has authorised share capital of £750,000. Initially, it issued 400,000 £1 ordinary shares for £1.50 each. Later, the company decided to raise more capital through making a one-for-five rights issue. All the existing shareholders took up their rights. What should appear as the nominal value of ACE's share capital in its accounts following the rights issue?
- A £600,000
  - B £480,000
  - C £720,000
  - D £900,000 [2]
- 11.4** The XYZ company bought a new machine for £80,000. The assumed useful life of the machine is ten years. At the end of this time, its estimated scrap value is £5,000. The company charges depreciation on this machine using the reducing balance method.
- The value of the machine in XYZ's statement of financial position after two years is:
- A £22,005
  - B £45,948
  - C £60,000
  - D £65,000 [2]
- 11.5** State why a company may revalue its non-current assets and describe the impact of an upwards revaluation on the company's financial statements. [5]

11.6 Define the following accounting terms:

- (i) authorised capital
- (ii) depreciation
- (iii) revaluation reserve
- (iv) non-current assets.

[5]



## Chapter 11 Solutions

11.1 Answer = D

Depreciating an asset is not an attempt to estimate its value in the sense that it can be sold at this price. It will not ensure that funds are available to buy a replacement. The straight line method charges the same proportion of the initial cost of the assets each year. Depreciation represents the wearing out or the using up of the asset over a period of time.

11.2 Answer = C

The value of the non-current asset would increase and there would be an increase in the revaluation reserve. The equity of the company is the shareholders' fund, *ie* capital and reserves, so the equity would increase too. The profit would not increase in this case, though the gain would be shown as other comprehensive income. Profit would increase if the increase in the value of the asset were recognised in the statement of profit or loss.

11.3 Answer = B

Before the rights issue, the nominal value of the company's share capital is £400,000.

After a 1-for-5 rights issue the nominal amount of share capital will be  $\frac{6}{5} \times £400,000 = £480,000$

11.4 Answer = B

We first need to calculate the depreciation rate,  $r$ :  $80,000(1-r)^{10} = 5,000 \Rightarrow r = 0.24214$

After two years, the value of the machine is  $80,000(0.757858)^2 = £45,948$

11.5 It is common practice for a company to revalue land and buildings to give a more realistic value in the accounts. [1]

In the statement of financial position:

- The cost of the asset will be replaced with the new revalued figure. [1]
- Depreciation to date will be set to zero. Annual depreciation will then be based upon the revalued figure, with the asset written off over its estimated useful lifetime. [1]
- The company may revise its expectations of the useful remaining lifetime of the asset at the time of revaluation. [1]
- A revaluation reserve will be included in the equity section under the heading 'Other reserves'. This revaluation reserve will be the difference between the revalued asset and the book value of the asset at the date of revaluation. [1]

In the statement of comprehensive income a gain on revaluation is shown as one element of 'other comprehensive income'. [1]

The revaluation will also be listed in the statement of changes in equity. [1]

[Maximum 5]

### 11.6 (i) **Authorised capital**

This is the maximum amount of share capital which the company's directors can issue (or commit themselves to the possibility of issuing through conversion rights) including all the company's shares currently in issue. [1]

### (ii) **Depreciation**

Depreciation is a measure of the wearing out or using up of a non-current asset over time. It is a charge in the profit or loss to allow for the cost of using the asset over the accounting period. [1]

In the statement of financial position it reduces the value of the non-current assets, and the charge on the statement of profit or loss reduces the retained earnings. [1]

### (iii) **Revaluation reserve**

The revaluation reserve is held as part of the company's equity, *ie* the capital and reserves, to reflect any upwards revaluations of the company's land and buildings. [1]

If, for example, the company's land was purchased ten years ago at £100,000 but is revalued now at £500,000, then the process of revaluation increases the non-current assets of the company by £400,000 and increases the revaluation reserve by £400,000. [1]

### (iv) **Non-current assets**

Non-current assets are assets that are held for a long time by the business and are used by the business to produce goods and services for sale. They are not sold in the normal course of business. [1]

There are three types of non-current assets:

- Tangible non-current assets, *eg* machinery, vehicles, buildings and land.
- Intangible non-current assets, *eg* patents, goodwill, trademarks.
- Investments, *eg* shares in other companies, government bonds.

[1 mark for an example of a non-current asset]

[Maximum 5]

# 12

## Constructing accounts

### Syllabus objectives

- 4.1 Describe the basic construction of accounts of different types and the role and principal features of the accounts of a company.
6. Construct simple statements of financial position and statements of profit or loss.
7. Explain cashflow statements.

## 0 Introduction

We previously studied the structure of the main accounts. In this chapter, we are going to look at how to construct the statement of financial position and the statement of profit or loss from information contained in the trial balance.

The practice questions at the end of this chapter provide a good opportunity for you to develop the skills required to produce accounts.

# 1 The trial balance

## 1.1 Description of the trial balance

**The statement of profit or loss and statement of financial position are prepared from the underlying bookkeeping records. All transactions are recorded during the year and are entered into a double entry bookkeeping system. This generates a table called a trial balance.**

The double-entry system of bookkeeping is used to create a number of balancing *accounts*. These accounts are held together in a *ledger*, and all of the accounts can be used to create a trial balance.

The *trial balance* is simply a list of all the accounts in the ledger and the balances in each account.

You will not be required to construct a trial balance but you do have to know how to use a trial balance to construct a statement of financial position and a statement of profit or loss.

The trial balance can be presented in a number of ways:

1. as a simple list of numbers
2. as a list of positive and negative numbers adding to zero
3. as two columns (debits and credits) giving the same total.

If it is presented as a list of numbers, you are given no clue as to whether the accounts are debits or credits.

If it is presented as a list of numbers adding to zero, the credit items are positive and the debit items are negative.

The credit items consist of revenue (for the statement of profit or loss) and liabilities and capital (for the statement of financial position); and the debit items consist of expenses (for the statement of profit or loss) and assets (for the statement of financial position).

As an example, assume that the following balances have been extracted from the books of JK plc, as at 31 March 20X1:

	£000
Administrative expenses	150
Advertising	70
Cash at bank	10
Trade payables (Creditors)	45
Trade receivables (Debtors)	115
Directors' remuneration	75
Interest on long-term loans	4
Inventory at 31 March 20X0	130
Investment income	18
Investments (short-term)	350
Long-term loans	200
Ordinary dividend paid	30
Ordinary share capital, issued and fully paid	700
Plant and machinery – cost	210
Plant and machinery – depreciation at 31 March 20X0	95
Premises – cost	950
Premises – depreciation at 31 March 20X0	20
Purchases	600
Retained earnings at 31 March 20X0	236
Sales (Revenue)	1,760
Shareholder reserves	50
Wages and salaries – administrative staff	160
Wages and salaries – manufacturing staff	190
Wages and salaries – sales staff	80

**Additional information:**

1. Inventory at 31 March 20X1 was valued at £185,000.
2. Provision is to be made for administrative expenses owing at 31 March 20X1 amounting to £12,000.
3. Premises are to be depreciated at the rate of 2% on cost, and plant and machinery at 25% reducing balance.
4. Advertising paid in advance at the end of the year amounted to £9,000.
5. Corporation tax based on the year's profit is estimated at £15,000.
6. The company's ordinary share capital is 700,000 £1 ordinary shares, fully paid.



## 1.2 Awkward items in the trial balance

### Depreciation

**Non-current assets pose a slight problem. This is because of an issue called depreciation which was discussed in the last chapter. For now, it is worth noting that it is the net figure which is shown in the statement of financial position for each category of non-current assets. Thus, the value of premises is £950,000 – £20,000 = £930,000.**

The trial balance does not contain information on this year's depreciation. Thus, the book value of the premises at the *beginning* of this accounting year is £930,000.

This year's depreciation is given in a note at the bottom of the trial balance.

You will need this year's depreciation for the statement of profit or loss and you will also need it to find the book value of the non-current assets at the *end* of the accounting year for the statement of financial position.

### Retained earnings

The retained earnings reserve in the trial balance is for the *beginning* of the accounting year.

The retained profit for the period is added to the retained earnings reserve in order to complete the statement of financial position.

### Inventories (Stocks)

The figure for inventories in the trial balance is also at the *beginning* of the accounting year (*ie opening inventory*).

Inventories are a current asset of the business, but the opening inventory is not used in the end of year statement of financial position.

The figure for *closing inventory* is noted below the trial balance. This figure is needed for the end of year statement of financial position.

Both opening inventory and closing inventory are needed, along with purchases of new inventory, to find the cost of inventory sold for the statement of profit or loss.

### Adjustments for the accruals concept

Remember that the statement of profit or loss records cost items when they are incurred (even if the company has not yet paid for them or has paid for them in advance).

Notes will be made at the bottom of the trial balance to take account of any adjustments necessary.

For example, if corporation tax is incurred in this accounting year, it should be in this year's statement of profit or loss, even if it has not yet been paid. It will be recorded as a current liability in the statement of financial position if it has not been paid.

## Dividends

Any dividends shown in the trial balance will have been actually paid to shareholders during the year. Some or all of these dividends paid will be in respect of the previous financial year.

Dividends paid will be:

- shown as a note at the bottom of the statement of profit or loss
- deducted from the retained earnings in the statement of financial position
- disclosed in the notes to the accounts and will affect the statement of changes in equity and cashflow statement.

## 2 Using the trial balance

The preparation of a set of financial statements can be a complex affair. Degree courses in accountancy devote at least one course every year to this subject and it is a major component of the professional courses taken by trainee accountants.

This section is intended to give only a brief overview of the mechanics of preparing a statement of profit or loss, statement of financial position and understanding and interpreting a cashflow statement.

As we have seen, the trial balance consists of accounts that are needed for:

- the statement of profit or loss (*ie* revenue and expenses)
- the statement of financial position (*ie* assets, liabilities and capital).



**Every figure in the trial balance is used once in the preparation of either the statement of profit or loss or the statement of financial position.**



### Question

Prepare the statement of profit or loss for JK plc for the year ended 31 March 20X1.

---

**Solution**


---

The statement of profit or loss (set out in the same format as in [Chapter 10](#)) would be prepared by extracting the income and expense figures and rearranging them as follows

<b>JK plc</b>		<b>£000</b>
<b>Statement of profit or loss for the year ended 31 March 20X1</b>		
<b>Revenue</b>		<b>1,760</b>
<b>Cost of sales</b>		<b>(783)</b>
<b>Gross profit</b>		<b>977</b>
<b>Distribution costs</b>		<b>(141)</b>
<b>Administrative expenses</b>		<b>(397)</b>
<b>Operating profit</b>		<b>439</b>
<b>Finance income</b>		<b>18</b>
<b>Finance costs</b>		<b>(4)</b>
<b>Profit before tax</b>		<b>453</b>
<b>Tax expense</b>		<b>(15)</b>
<b>Profit for year</b>		<b>438</b>
<b>Profit for the year attributable to equity holders of the company</b>		<b>438</b>
<b>Earnings per share for profit attributable to equity holders</b>		<b>63 pence</b>

In order to prepare these reported figures, supplementary working needs to be done, as follows:

<b>Workings</b>	<b>£000</b>
<b>Cost of sales</b>	
Opening inventory	130
Purchases	600
Closing inventory	(185)
Depreciation – premises	19
Depreciation – plant and machinery	29
Wages and salaries	190
	<u>783</u>
	<u><u>783</u></u>
<b>Distribution costs</b>	
Advertising	70
Less – prepaid	(9)
Wages and salaries	80
	<u>141</u>
	<u><u>141</u></u>
<b>Administrative expenses</b>	
Administrative expenses	150
Add – accrual	12
Directors' remuneration	75
Wages and salaries	160
	<u>397</u>
	<u><u>397</u></u>




---

**Question**


---

Prepare the statement of financial position as at 31 March 20X1.

---

**Solution**


---

The remainder of the figures are reorganised to give a statement of financial position (set out in the same format as in [Chapter 10](#)):

JK plc

**Statement of financial position at 31 March 20X1**

<b>ASSETS</b>	<b>£000</b>
<b>Non-current assets</b>	<b>997</b>
<b>Current assets</b>	
Inventories	185
Trade receivables	115
Other current assets	359
Cash	10
	<b>669</b>
<b>Total assets</b>	<b>1,666</b>
<b>EQUITY AND LIABILITIES</b>	
<b>Share capital</b>	<b>700</b>
<b>Other reserves</b>	<b>50</b>
<b>Retained earnings</b>	<b>644</b>
<b>Total equity</b>	<b>1,394</b>
<b>Non-current liabilities</b>	
Long-term borrowings	200
<b>Total non-current liabilities</b>	<b>200</b>
<b>Current liabilities</b>	
Trade and other payables	57
Current tax payable	15
<b>Total current liabilities</b>	<b>72</b>
<b>Total liabilities</b>	<b>272</b>
<b>Total equity and liabilities</b>	<b>1,666</b>

In order to prepare these reported figures, supplementary working needs to be done, as follows:

**Workings**

**£000s**

***Non-current assets***

	<b>Cost</b>	<b>Aggregate depreciation</b>	<b>Net book value</b>
Premises	950	39	911
Plant and machinery	210	124	86
	<b>1,160</b>	<b>163</b>	<b>997</b>

***Other current assets***

Investments (short-term)	350
Pre-paid expense	9
	<b>359</b>

***Retained earnings***

Retained earnings at 31 March 20X0	236
Retained earnings for year to 31 March 20X1	438
Dividends paid	(30)
	<b>644</b>

***Trade and other payables***

Creditors (trade payables)	45
Administrative expenses	12
	<b>57</b>

## Chapter 12 Summary

The *statement of profit or loss (income statement)* and the *statement of financial position (SFP) (balance sheet)* are derived from the underlying bookkeeping records, in particular from the information in the trial balance.

Each figure in the trial balance is used once in this preparation of the statement of financial position and the profit or loss.

*Debit items* in the trial balance are expense items for the profit or loss and assets for the SFP. *Credit items* in the trial balance are revenue items for the profit or loss and capital and liabilities for the SFP.

Notes at the bottom of the trial balance give information on:

- inventories at the end of the year, *ie* closing stock
- this year's depreciation
- adjustments for the accruals concept.

The practice questions start on the next page so that you can keep the chapter summaries together for revision purposes.





## Chapter 12 Practice Questions

Exam style

All of the questions that follow are exam style.

12.1 The following information has been extracted from the accounting records of Aztec plc:

### Trial Balance at 31 July 20X5

	£000	£000s
Administration costs	800	
Marketing expenses	500	
Bank		700
Trade receivables (debtors)	1,300	
Factory – cost	23,300	
Factory – depreciation		1,800
Factory running costs	1,200	
Directors' remuneration	600	
Interim dividend paid	100	
Interest	1,680	
Long-term loans		12,000
Machinery – cost	15,000	
Machinery – depreciation		8,000
Manufacturing wages	1,700	
Purchases	1,600	
Retained earnings at 31 July 20X4		980
Sales		13,000
Sales salaries	1,600	
Share capital (50p shares)		13,000
Inventories at 31 July 20X4	700	
Trade payables (creditors)		600
	50,080	50,080

### Notes:

- The corporation tax charge for the year has been estimated at £300,000.
- At the year-end the directors had the factory professionally revalued. The valuer's report estimates the value of the property at £25,000,000. This value is to be incorporated into the statement of financial position.
- Depreciation for the year is charged at 1% of cost for the factory and at 20% of the reducing balance for the machinery.
- Inventories at 31 July 20X5 were valued at £550,000.
- After the year-end, an invoice for £100,000 was received for marketing costs incurred in the period 1 April – 31 July 20X5.

Prepare Aztec plc's statement of comprehensive income for the year ended 31 July 20X5 and the statement of financial position as at that date. [20]

12.2 At 31 December 20X0 the statement of financial position of TFLD Ltd was as follows:

	£	£
<b>ASSETS</b>		
<b>Non-current assets</b>		
Cost	300,000	
less depreciation	(90,000)	
		210,000
<b>Current assets</b>		
Inventories		62,500
Trade receivables		10,650
Cash		<u>12,825</u>
		<u>85,975</u>
<b>Total assets</b>		<b><u>295,975</u></b>
<b>EQUITY AND LIABILITIES</b>		
Ordinary share capital		100,000
Reserves		<u>39,350</u>
<b>Total equity</b>		<b><u>139,350</u></b>
<b>Non-current liabilities</b>		
12% Debenture loan		150,000
<b>Current liabilities</b>		
Trade payables		<u>6,625</u>
<b>Total liabilities</b>		<b><u>156,625</u></b>
<b>Total equity and liabilities</b>		<b><u>295,975</u></b>

During 20X1 the following items appeared in the company's accounting records:

	£
Sales	190,750
Increase in cash	3,950
Increase in inventories	9,250
Increase in trade payables	2,250
Decrease in trade receivables	1,700
Rent of factory	30,000
Costs of raw materials	45,000
Salaries and wages	55,000
Miscellaneous expenses	2,750
Purchase of non-current assets	40,000

The non-current assets are being depreciated on a straight line basis over a period of ten years including the year of purchase.

During 20X1 interest was paid on the debenture stock but no dividends were paid on the ordinary share capital.

Assume the rate of corporation tax is 20%, but the company did not pay its tax during 20X1.

Prepare the statement of profit or loss for 20X1 and the statement of financial position as at 31 December 20X1. [20]

12.3 At 31 July 20Y4 the statement of financial position of BOLD PLC was as follows:

	(£000s)
<b>ASSETS</b>	
<b>Non-current assets</b>	
Freehold land and buildings	2,000
Other non-current assets	<u>700</u>
	2,700
<b>Current assets</b>	
Inventories	400
Trade receivables	300
Cash	<u>120</u>
	<u>820</u>
<b>Total assets</b>	<b><u>3,520</u></b>
<b>EQUITY AND LIABILITIES</b>	
Ordinary shares of 20p	1,200
Retained earnings	<u>930</u>
<b>Total equity</b>	<b><u>2,130</u></b>
<b>Non-current liabilities</b>	
12% Mortgage	1,000
<b>Current liabilities</b>	
Trade payables	190
Tax	<u>200</u>
	390
<b>Total liabilities</b>	<b><u>1,390</u></b>
<b>Total equity and liabilities</b>	<b><u>3,520</u></b>

The following information is available for the year to 31 July 20Y5:

	(£000s)
Sales	1,000
Decrease in cash	95
Increase in inventories	50
Decrease in trade receivables	130
Decrease in trade payables	90
Wages, rent <i>etc</i>	210
Cost of raw materials	395
Cost of building extension to freehold buildings	200
Depreciation of freehold land and buildings	32
Other depreciation	93
Tax paid	110
Payment of dividend declared for year ending 31 July 20Y4	100

Assuming a corporation tax rate of 20%, prepare:

- |       |  |            |
|-------|--|------------|
| (i)   | the statement of profit or loss for the year ending 31 July 20Y5     | [7]        |
| (ii)  | the statement of financial position as at 31 July 20Y5               | [9]        |
| (iii) | the statement of changes in equity for the year ending 31 July 20Y5. | [4]        |
|       |  | [Total 20] |

- 12.4 Shown below is the statement of financial position dated 31 December 2026 for Bodgit & Fixit, a manufacturing firm making tools and DIY equipment:

	£	£
<b>ASSETS</b>		
<b>Non-current assets</b>		
Factory		675,000
Machinery		<u>125,000</u>
		800,000
<b>Current assets</b>		
Inventories		85,000
Trade receivables		25,000
Cash		<u>40,000</u>
		<u>150,000</u>
<b>Total assets</b>		<b><u>950,000</u></b>
<b>EQUITY AND LIABILITIES</b>		
Issued ordinary shares of 50p		250,000
Other reserves:		
Share premium account	100,000	
Revaluation reserve		<u>80,000</u>
		180,000
Retained earnings		<u>87,000</u>
<b>Total equity</b>		<b><u>517,000</u></b>
<b>Non-current liabilities</b>		
8% Convertible loan stock		200,000
10% Debentures		<u>150,000</u>
		350,000
<b>Current liabilities</b>		
Trade payables		34,000
Bank loan		30,000
Tax payable		<u>19,000</u>
		<u>83,000</u>
<b>Total liabilities</b>		<b><u>433,000</u></b>
<b>Total equity and liabilities</b>		<b><u>950,000</u></b>

During 2027, the following occurred:

	£
Sales	555,000
Increase in inventories	17,000
Purchases of raw materials	112,000
Staff costs	85,000
Electricity costs	91,000
Advertising & delivery costs	59,000
Cash payments received	447,000
Increase in trade payables	25,000
Dividends paid	12,000
Tax paid	13,000
Increase in cash	39,000

You are also given the following information:

- (a) The company repaid its bank loan on 5 January 2027.
- (b) The factory was originally purchased in December 2020. In 2026 it was revalued and its remaining life estimated to be ten years at which time it would be worth zero. The annual depreciation charge for 2026 was based on the revalued figure and the revaluation of the factory was included in the 2026 revaluation reserve.
- The machinery was purchased in 2026 for a price of £150,000. It is being depreciated to zero over a period of six years.
- (c) The first conversion date for the 8% convertible loan stock was 15 December 2027. £100,000 nominal was converted. The conversion terms were two shares for every £5 nominal of convertible stock. Interest was paid before conversion took place.
- (d) The directors were concerned about the level of trade receivables and decided to set up a provision for bad debts equal to 10% of the trade receivables outstanding at the end of the accounting year.

Assuming a tax rate of 20%, draw up the statement of profit or loss for 2027 and the statement of financial position dated 31 December 2027 in a form suitable for publication. [20]

12.5 The following information has been extracted from the bookkeeping records of Perso plc:

*Trial balance as at 31 December 20T4*

	£000	£000
Bank	12	
Trade payables		187
Trade receivables	245	
Land and buildings – cost	1,300	
Land and buildings – depreciation		195
Interest	65	
Loan		450
Plant and machinery – cost	800	
Plant and machinery – depreciation		140
Retained earnings at 31 December 20T3		215
Raw materials purchased	502	
Advertising	30	
Directors' remuneration	45	
Sales		1,175
Share capital		700
Other reserves		180
Inventories at 31 December 20T3	6	
Salaries – factory staff	112	
Salaries – administration	125	
	3,242	3,242
	3,242	3,242

Notes:

- (1) Depreciation is to be charged on the following bases:
  - Buildings on a straight line basis, assuming a residual value of £100,000 on 31 December 20T8. The book value on 31 December 20T3 was £555,000.
  - Plant and machinery at 20% of reducing balance.
- (2) No dividend was paid in relation to the 20T3 accounting year. There was no change in the issued share capital during 20T4.
- (3) The corporation tax charge has been estimated at £12,000 for the year. No tax was payable in respect of the 20T3 accounting year.
- (4) Inventories at 31 December 20T4 were £8,000.
- (5) In the statement of financial position at 31 December 20T3, trade payables were £131,000, trade receivables were £199,000, cash at bank was £6,000 and loans were £750,000.

- (i) Prepare Perso's statement of profit or loss for the year ended 31 December 20T4 and its statement of financial position as at that date.

These should be in a form suitable for publication insofar as this is possible from the information provided. [14]

- (ii) Prepare Perso's cashflow statement for the year ended 31 December 20T4. [6]

*The ability to construct a cashflow statement is not part of the CB1 syllabus, and hence unlikely to be tested in the exam, but it might be useful to have the experience.*

[Total 20]





## Chapter 12 Solutions

For the accounts construction questions, start with the total mark, deduct 1 mark for the first mistake and 1 mark for each subsequent mistake, down to a minimum of 0. Where possible follow through mistakes to see whether or not the correct principles have been used, and only deduct further marks for further mistakes.

### 12.1 The statement of comprehensive income for Aztec plc for the year ending 31 July 2025

	£000
Sales	13,000
Cost of sales <sup>1</sup>	<u>(6,283)</u>
<b>Gross profit</b>	<b>6,717</b>
Distribution costs <sup>2</sup>	(2,200)
Administrative expenses <sup>3</sup>	<u>(1,400)</u>
<b>Operating profit</b>	<b>3,117</b>
Finance costs	<u>(1,680)</u>
<b>Profit before tax</b>	<b>1,437</b>
Tax	<u>(300)</u>
<b>Profit for the year</b>	<b>1,137</b>
Other comprehensive income:	
Gains from revaluation <sup>4</sup>	3,733
<b>Total comprehensive income</b>	<b><u>4,870</u></b>
EPS for profit attributable to equity holders	4.4p

An interim dividend of £100,000, ie 0.4p per share was paid during the year.

Notes:

1. Cost of sales calculated as:

Opening stock	700
+ Purchases	+1,600
– Closing stock	(550)
+ Factory running costs	1,200
+ Manufacturing wages	1,700
+ Depreciation of factory	233
+ Depreciation of machinery	<u>1,400</u>
<b>Total</b>	<b>6,283</b>

2. Distribution costs calculated as:

Marketing	600
Sales salaries	<u>1,600</u>
<b>Total</b>	<b>2,200</b>

3. Administrative expenses calculated as:
- |                         |              |
|-------------------------|--------------|
| Administrative costs    | 800          |
| Directors' remuneration | <u>600</u>   |
| <b>Total</b>            | <b>1,400</b> |
4. Gains from revaluation – see Note 7

**Statement of financial position for Aztec plc as at 31 July 2025**

<b>ASSETS</b>	<i>£000</i>
<b>Non-current assets</b> <sup>5</sup>	30,600
<b>Current assets</b>	
Trade receivables	1,300
Inventories	<u>550</u>
	<u>1,850</u>
<b>Total assets</b>	<b><u>32,450</u></b>
<b>EQUITY AND LIABILITIES</b>	
Share capital	13,000
Retained earnings <sup>6</sup>	2,017
Revaluation reserve <sup>7</sup>	<u>3,733</u>
<b>Total equity</b>	<b><u>18,750</u></b>
<b>Non-current liabilities</b>	
Long-term loans	12,000
<b>Current liabilities</b>	
Creditors	600
Overdraft	700
Marketing bill owing	100
Tax provision	300
	<u>1,700</u>
<b>Total liabilities</b>	<b><u>13,700</u></b>
<b>Total equity and liabilities</b>	<b><u>32,450</u></b>

Notes:

5. Non-current assets calculated as:
- |                                    |               |
|------------------------------------|---------------|
| Factory (revalued)                 | 25,000        |
| Machinery (15,000 – 8,000 – 1,400) | <u>5,600</u>  |
| <b>Total</b>                       | <b>30,600</b> |
6. Retained earnings = 980 + 1,137 – 100 = 2,017
7. Revaluation reserve is the new value of the factory at the end of the year less its book value prior to revaluation (*ie* 25,000 – (23,300 – 1,800 – 233) = 3,733)

## 12.2 Statement of profit or loss for TFLD Ltd for 20X1

	£	€
Revenue		190,750
Cost of sales:		
Raw materials	45,000	
<i>less</i> Increase in inventories	(9,250)	
Salaries/wages <sup>1</sup>	55,000	
Depreciation <sup>2</sup>	<u>34,000</u>	
		<u>(124,750)</u>
<b>Gross profit</b>		<b>66,000</b>
Expenses:		
Rent of factory		(30,000)
Miscellaneous expenses		<u>(2,750)</u>
<b>Operating profit</b>		<b>33,250</b>
Finance costs <sup>3</sup>		<u>(18,000)</u>
<b>Profit before tax</b>		<b>15,250</b>
Tax at 20%		<u>3,050</u>
<b>Profit for the year attributable to equity holders</b>		<b><u>12,200</u></b>

No dividends were paid to ordinary shareholders in the year.

Notes:

1. Wages and salaries are assumed to vary directly with output and therefore are included in the cost of sales. It could be argued that they are an overhead in which case they would be included as an expense.
2.  $(300,000 \text{ cost of old assets} + 40,000 \text{ purchase}) \times 10\%$
3.  $12\% \times \text{£}150,000$

**Statement of financial position as at 31 December 20X1**

	£	£
<b>ASSETS</b>		
<b>Non-current assets</b>		
Cost <sup>1</sup>	340,000	
less Depreciation <sup>2</sup>	<u>(124,000)</u>	
		216,000
<b>Current assets</b>		
Inventories <sup>3</sup>		71,750
Trade receivables <sup>4</sup>		8,950
Cash <sup>5</sup>		<u>16,775</u>
		<u>97,475</u>
<b>Total assets</b>		<b><u>313,475</u></b>
<b>EQUITY AND LIABILITIES</b>		
Ordinary share capital		100,000
Reserves <sup>6</sup>		<u>51,550</u>
<b>Total equity</b>		<b><u>151,550</u></b>
<b>Non-current liabilities</b>		
12% Debenture loan		150,000
<b>Current liabilities</b>		
Trade payables <sup>7</sup>		8,875
Tax provision		<u>3,050</u>
		11,925
<b>Total liabilities</b>		<b><u>161,925</u></b>
<b>Total equity and liabilities</b>		<b><u>313,475</u></b>

## Notes:

- £300,000 carried forward, plus £40,000 purchased this year.
- £90,000 from last year's statement of financial position plus £34,000 from this year's statement of profit or loss.
- £62,500 from last year's statement of financial position plus £9,250 increase in inventories.
- £10,650 carried forward from last year, less this year's decrease of £1,700.
- £12,825 from last year's statement of financial position plus £3,950 increase in cash.
- £39,350 carried forward from last year's statement of financial position plus £12,200 from this year's profit.
- £6,625 carried forward from last year, plus this year's increase of £2,250.

12.3 (i) **Statement of profit or loss for BOLD PLC for 20Y5**

	£000s	£000s	
Sales revenue		1,000	
Cost of sales:			
Raw materials	395		
<i>less</i> Increase in inventories	(50)		
Depreciation	<u>125</u>		(32 + 93)
		<u>(470)</u>	
<b>Gross profit</b>		<b>530</b>	
Expenses:			
Wages and rent		<u>210</u>	
<b>Operating profit</b>		<b>320</b>	
Finance costs		<u>(120)</u>	(1,000 × 0.12)
<b>Profit before tax</b>		<b>200</b>	
Tax @ 20%		<u>(40)</u>	
<b>Profit for the year attributable to equity holders</b>		<b><u>160</u></b>	

A dividend totalling £100,000 was paid to ordinary shareholders during the year in respect of the year ending 31 July 20Y4.

[Total 7]

(ii) **Statement of financial position for BOLD PLC as at 31 July 20Y5**

	(£000s)
<b>ASSETS</b>	
<b>Non-current assets</b>	
Freehold land and buildings <sup>1</sup>	2,168
Other non-current assets <sup>2</sup>	<u>607</u>
	2,775
<b>Current assets</b>	
Inventories	450
Trade receivables	170
Cash	<u>25</u>
	<u>645</u>
<b>Total assets</b>	<b><u>3,420</u></b>
<b>EQUITY AND LIABILITIES</b>	
Ordinary shares of 20p	1,200
Retained earnings <sup>3</sup>	<u>990</u>
<b>Total equity</b>	<b><u>2,190</u></b>
<b>Non-current liabilities</b>	
12% Mortgage	1,000
<b>Current liabilities</b>	
Trade payables	100
Tax <sup>4</sup>	<u>130</u>
	<u>230</u>
<b>Total liabilities</b>	<b><u>1,230</u></b>
<b>Total equity and liabilities</b>	<b><u>3,420</u></b>

## Notes:

1.  $2,000 + 200 - 32$
2.  $700 - 93$
3.  $930 - 100$  (dividend paid) + 160
4.  $200 + 40 - 110$

[Total 9]

(iii) **Statement of changes in equity for BOLD PLC for 20Y5**

	Attributable to equity holders			£000s
	Share capital	Other reserves	Retained earnings	Total equity
<b>Balance at 31 July 20Y4</b>	<b>1,200</b>		<b>930</b>	<b>2,130</b>
Profit for 20Y5			160	160
<b>Total recognised income for 20Y5</b>			<b>160</b>	<b>160</b>
<b>Dividends paid</b>			<b>(100)</b>	<b>(100)</b>
<b>Balance at 31 July 20Y5</b>	<b>1,200</b>		<b>990</b>	<b>2,190</b>

[Total 4]

### 12.4 Statement of profit or loss for Bodgit & Fixit for the year ending 31 December 2027

	£	£
Sales		555,000
Cost of sales:		
Raw materials	112,000	
less Increase in inventories	(17,000)	
Depreciation <sup>1</sup>	<u>100,000</u>	
		<u>(195,000)</u>
<b>Gross profit</b>		<b>360,000</b>
Expenses:		
Staff costs	85,000	
Electricity	91,000	
Advertising & delivery costs	59,000	
Provision for doubtful debts <sup>2</sup>	<u>13,300</u>	
		<u>(248,300)</u>
<b>Operating profit</b>		<b>111,700</b>
Finance costs <sup>3</sup>		<u>(31,000)</u>
<b>Profit before tax</b>		<b>80,700</b>
Tax @ 20%		<u>16,140</u>
<b>Profit for the year attributable to equity holders</b>		<b><u>64,560</u></b>

A dividend totalling £12,000 was paid to ordinary shareholders during the year.

Notes:

- To calculate the depreciation on the factory, we need to know the value of the factory at the start of 2026. At the end of 2026, after one year's depreciation (out of ten) the factory was worth 675,000, or 9/10 of the starting value. Hence the 2026 starting value is  $675,000 \times 10/9 = 750,000$ . The annual depreciation is  $1/10$  of  $750,000 = 75,000$ .

The depreciation charge for the machinery will be  $1/6 \times 150,000 = 25,000$ .

- $10\% \times [25,000 + (555,000 - 447,000)]$
- $0.08 \times 200,000 + 0.1 \times 150,000$

[8 for profit or loss with notes]



**Statement of financial position for Bodgit & Fixit at 31 December 2027**

	£	£
<b>ASSETS</b>		
<b>Non-current assets</b>		
Factory	600,000	675,000 – 75,000
Machinery	<u>100,000</u>	125,000 – 25,000
	700,000	
<b>Current assets</b>		
Inventories	102,000	85,000 + 17,000
Trade receivables	133,000	25,000 + (555,000 – 447,000)
Provision for bad debts	(13,300)	10% × 133,000
Cash	<u>79,000</u>	40,000 + 39,000
	<u>300,700</u>	
<b>Total assets</b>	<b><u>1,000,700</u></b>	
<b>EQUITY AND LIABILITIES</b>		
Issued ordinary shares of 50p	270,000	see Note 1
Other reserves:		
Share premium account	180,000	see Note 1
Revaluation reserve	<u>80,000</u>	
	260,000	
Retained earnings	<u>139,560</u>	87,000 + 64,560 – 12,000
<b>Total equity</b>	<b><u>669,560</u></b>	
<b>Non-current liabilities</b>		
8% Convertible loan stock	100,000	200,000 – 100,000
10% Debentures	<u>150,000</u>	
	250,000	
<b>Current liabilities</b>		
Trade payables	59,000	34,000 + 25,000
Tax payable	<u>22,140</u>	19,000 + 16,140 – 13,000
	<u>81,140</u>	
<b>Total liabilities</b>	<b><u>331,140</u></b>	
<b>Total equity and liabilities</b>	<b><u>1,000,700</u></b>	

## Notes:

1. The number of new shares issued as a result of the conversion was:

$$100,000 \times \frac{2}{5} = 40,000$$

As the par value of the shares is 50p, the issued share capital needs to increase by £20,000. The share premium account therefore increases by:

$$(100,000 - 20,000) = 80,000$$

[12 for statement of financial position with notes]

**12.5 (i) The statement of profit or loss for Perso plc for the year ending 31 December 20T4**

	£000
Sales revenue	1,175
Cost of sales:	
Cost of inventories sold <sup>1</sup>	500
Depreciation of buildings <sup>2</sup>	91
Depreciation of plant and machinery <sup>2</sup>	132
Salaries – factory staff	<u>112</u>
	<u>(835)</u>
<b>Gross profit</b>	<b>340</b>
Administrative expenses:	
Salaries – administration	125
Directors' remuneration	<u>45</u>
	(170)
Distribution costs	<u>(30)</u>
<b>Operating profit</b>	<b>140</b>
Interest	<u>(65)</u>
<b>Profit before tax</b>	<b>75</b>
Tax	<u>(12)</u>
<b>Profit for the year attributable to equity holders</b>	<b><u>63</u></b>

No dividends were paid to ordinary shareholders during the year.

## Notes:

1. Cost of inventories sold = opening inventories + purchases – closing inventories  
= 6 + 502 – 8 = 500
2. Buildings depreciation = 20% × (555 – 100) = 91  
Plant and machinery depreciation = 20% × (800 – 140) = 132  
[7 for statement of profit or loss and notes]

**Statement of financial position for Perso plc as at 31 December 20T4**

		(£000s)
<b>ASSETS</b>		
<b>Non-current assets</b>		
Land and buildings – cost	1,300	
Plant and machinery – cost	800	
Depreciation <sup>1</sup>	<u>(558)</u>	
		1,542
<b>Current assets</b>		
Inventories		8
Trade receivables		245
Cash		<u>12</u>
		265
<b>Total assets</b>		<b><u>1,807</u></b>
<b>EQUITY AND LIABILITIES</b>		
Share capital		700
Other reserves		180
Retained earnings <sup>2</sup>		<u>278</u>
<b>Total equity</b>		<b><u>1,158</u></b>
<b>Non-current liabilities</b>		
Loan stock		450
<b>Current liabilities</b>		
Trade payables		187
Tax		<u>12</u>
		<u>199</u>
<b>Total liabilities</b>		<b><u>649</u></b>
<b>Total equity and liabilities</b>		<b><u>1,807</u></b>

## Notes:

1. Total depreciation to date on:  
     buildings =  $195 + 91 = 286$   
     plant and machinery =  $140 + 132 = 272$
2. Retained earnings =  $215 + 63 = 278$   
     [7 for statement of financial position and notes]

(ii) **The cashflow statement for Perso plc for the year ending 31 December 20T4**

	£000
<b>Cashflows from operating activities</b>	
Cash generated from operations <sup>1</sup>	371
Interest paid	(65)
Tax paid	<u>0</u>
Net cash generated from operating activities	<u>306</u>
 <b>Cashflows from investing activities</b>	 0
 <b>Cashflows from financing activities</b>	
Repayment of loan capital	(300)
<b>Increase in cash over the year</b>	<u><b>6</b></u>

## Notes:

1. Calculated as follows:
- |                                       |                   |
|---------------------------------------|-------------------|
| Operating profit                      | 140               |
| + depreciation                        | 223               |
| – increase in inventories             | (2)               |
| – increase in trade receivables       | (46)              |
| + increase in trade payables          | <u>56</u>         |
| <b>Cash generated from operations</b> | <u><b>371</b></u> |
- [6 for cashflow statement and notes]

# 13

## Group accounts and insurance company accounts

### Syllabus objectives

- 4.1 Describe the basic construction of accounts of different types and the role and principal features of the accounts of a company.
- 8. Describe the structure and content of insurance company accounts.
- 9. Explain what is meant by the terms subsidiary company and associated company.
- 10. Explain the purpose of consolidated accounts.
- 11. Explain how goodwill might arise on the consolidation of group accounts.

## 0 Introduction

We now consider two particular types of accounts.

Firstly, we look at how accounts are produced by groups of inter-related companies. Here the accounts need to show not only the financial position of each company within the group, but also the picture for the group as a combined economic entity.

We will also look at the accounts of insurance companies, where the complex nature of the business necessitates special features in the accounts.

The examination is likely to test your *knowledge* of terms involved in group accounts such as subsidiary company and goodwill, and your *understanding* of the purpose of group accounts and insurance company accounts.

# 1 Consolidated financial statements

Large organisations are often organised as groups of inter-related companies. There are a number of reasons why this may be so. Historically, the companies within the group could have been acquired as going concerns. The management of the controlling company could have felt that there were political or marketing considerations which would have made it unwise to transfer the assets of the controlled company to the acquirer and to liquidate the purchased company itself.

## 1.1 Subsidiary companies



The company which holds the controlling interest in the others is known as the 'parent company'. The companies which are controlled by the parent company are known as 'subsidiaries'. Collectively, a parent company and its subsidiaries are known as a 'group'.

A parent company may also be referred to as a 'holding' company.

A controlling interest can arise in a number of ways. The most obvious would be where the parent company owns a majority of the voting rights.

It is, however, possible to control the subsidiary in other ways. A parent could hold less than half of the voting shares but still have the right to appoint or remove directors holding a majority of the voting rights at board meetings or it could have some other right to exercise a dominant influence over the subsidiary.

This could be done by holding a 'golden share' in the subsidiary or by entering into a contract giving it the right to exercise control.

If Company H (holding) owns 100% of the shares of Company S (subsidiary), Company S is said to be a *wholly owned subsidiary*. Where the holding is less than 100%, Company S is said to be a *partially owned subsidiary*.

## 1.2 Consolidated statements of financial position

Legally, the companies in the group retain their independence.

In many cases, however, the business activities of the group members are closely related to one another, with group members supplying others with products or components or different group members manufacturing complementary product ranges. It is also common for group members to provide fellow members with finance.

Even in the case of industrial conglomerates, where there is no direct link between the businesses of the members, all of the companies are under the control of the same senior management.

It would be illogical for most purposes to view the group as being anything other than a single economic entity.

The shareholders of the parent will certainly be more interested in the performance of the group as a whole than they will be in that of the parent taken on its own.

Decisions on how to structure a company can be complex. There may be a desire to split a group into manageable semi-autonomous units and promote some form of competition between the various subsidiaries as well as to have a spirit of co-operation between them.

**The parent is required to publish a set of consolidated financial statements which reflect the economic reality of the group's existence.**

**These statements comprise a consolidated statement of profit or loss and statement of financial position. These statements must comply with the format and disclosure requirements which apply to individual companies.**

**Basically, consolidation is a process of totalling the various items in the statements of profit or loss and statements of financial position of the individual group members.**

**However, it is important to remember that the purpose of the exercise is to present the statements as if the group was a single economic unit. Certain balances in the statements of the individual group members arise from relationships within the group and must be cancelled out before the figures can be meaningfully combined.**

**For example, H Ltd acquired 10,000 shares in S Ltd on 31 December 20X0.**

**The statements of financial position of the two companies at that date were as follows:**

	<u><i>H Ltd</i></u>	<u><i>S Ltd</i></u>
	<i>£000</i>	<i>£000</i>
<b>Non-current assets</b>	<b>8</b>	<b>6</b>
<b>Investment in S Ltd</b>	<b>10</b>	<b>–</b>
<b>Current assets</b>	<b>12</b>	<b>10</b>
<b><i>Total assets</i></b>	<b><u>30</u></b>	<b><u>16</u></b>
<b>Share capital (£1 shares)</b>	<b>20</b>	<b>10</b>
<b>Current liabilities</b>	<b>10</b>	<b>6</b>
<b><i>Total equity and liabilities</i></b>	<b><u>30</u></b>	<b><u>16</u></b>

Imagine Company H paid £10,000 to buy the shares in Company S.

We can imagine that the statement of financial position of Company H *before the purchase* of Company S looked very much as it does at present, except that instead of having a £10,000 investment, it would have had an extra £10,000 of cash in current assets.

**If this group is looked at from the outside, the directors of H Ltd control non-current assets with a book value of £14,000 (ie £8,000 + £6,000) and current assets of £22,000 (ie £12,000 + £10,000). The group has current liabilities of £16,000.**

**The calculation of the book value of the group's assets and liabilities is, therefore, a simple matter of adding across the statements.**



Before doing so, however, it is necessary to cancel out any internal relationships which arise within the group. For example:

- The parent shows an asset of £10,000 in respect of its investment in the subsidiary.
- This is matched by a capital balance of £10,000 which appears in the subsidiary's statement of financial position.

In other words, if we were to simply add all the entries in both statements of financial position together, we would encounter some double-counting problems.

- On the assets side, we would be including *both* the value of Company H's investment in Company S *and* the assets that Company S possesses.

This double counting would be removed in a set of consolidated accounts.

- Similarly, on the equity side, we would be including Company S's share capital as well as the equity capital of Company H itself. This would not make sense as Company S no longer has shareholders in its own right.

Again, this double counting would be removed.

Once these have been offset against one another, the consolidated statement of financial position would appear as follows:

#### H Group

##### Consolidated statement of financial position

	<i>£000</i>
Non-current assets	14
Current assets	<u>22</u>
<b>Total assets</b>	<b><u>36</u></b>
Share capital (£1 shares)	20
Current Liabilities	<u>16</u>
<b>Total equity and liabilities</b>	<b><u>36</u></b>

The process of identifying and cancelling internal relationships can become more complicated in practice. Such problems are, however, beyond the scope of this syllabus.

The parent would also prepare a consolidated statement of profit or loss. The principles are the same as for the statement of financial position, in that any transactions between group members would have to be cancelled before totalling across the statements.

## 1.3 Goodwill on consolidation

### Defining goodwill

The figures in the previous example deliberately had the amount that Company H paid to buy Company S's shares as £10,000, the same as the share capital and reserves of Company S.

However, in many takeovers, the amount that Company H has to pay to Company S's shareholders exceeds the balance sheet value of the share capital and reserves of Company S.

In this case, a balancing item known as 'goodwill' is needed. This is a consequence of the way in which the consolidated statement of financial position for a parent company with a subsidiary is drawn up.



Goodwill is calculated as:

$$\text{cost of acquisition} - \text{book value of shares acquired}$$

The *cost of the acquisition* is the value of any cash paid out, plus the market value of any shares or debt paid out, to Company S's shareholders.

The *book value of shares acquired* means the value of the proportion of the share capital and reserves that Company H owns as a result of the acquisition.

It may seem strange that a company would pay more for another company than the balance sheet says it is worth. But, remember that the balance sheet:

- only values certain assets – some, notably the value of the skilled workforce and the customer base, are excluded from the balance sheet
- may not allow for revaluation of assets such as land and buildings that were valued at cost, but may have increased significantly in value.

**Any amount paid in excess of the nominal value of the shares and reserves acquired by a parent is known as 'goodwill'.**

**In theory, this is the amount which the parent is paying for such intangibles as:**

- **the reputation of the subsidiary**
- **its customer base**
- **its loyal workforce.**

## Accounting for goodwill

### *Goodwill as a non-current asset*

Goodwill is normally shown as a non-current asset in the consolidated statement of financial position.

In the previous example, assume instead that Company H has paid £11,000 for Company S rather than £10,000. Goodwill would therefore be £1,000.

The amount shown as an investment in H's balance sheet would be £11,000 rather than £10,000 and presumably H would have less cash as a result, so the current assets would be £11,000 (rather than £12,000).

Now if we try adding both balance sheets together we find that the book value of the assets of S are not equal to the amount of the investment shown in H's accounts. The difference is goodwill and remains on H's balance sheet after the consolidation. The statements of financial position would look as follows:

	<u>H Ltd</u>	<u>S Ltd</u>	<u>Consolidated H</u>
	<u>£000</u>	<u>£000</u>	<u>£000</u>
Non-current assets (incl goodwill)	8	6	15
Investment in S Ltd	11		
Current assets	<u>11</u>	<u>10</u>	<u>21</u>
Total assets	<u>30</u>	<u>16</u>	<u>36</u>
Share capital (£1 shares)	20	10	20
Current liabilities	<u>10</u>	<u>6</u>	<u>16</u>
Total equity and liabilities	<u>30</u>	<u>16</u>	<u>36</u>

Non-current assets have a value of £15,000 that includes £1,000 of goodwill on consolidation.

### ***Splitting up goodwill***

International accounting standards state that 'goodwill' ought to be broken down into its constituent parts where possible, *eg* brand names, patents.

**IFRS 3 deals with the accounting treatment of goodwill. Under IFRS 3, if a business is acquired it is necessary to record all separately identifiable intangibles. Many assets which would previously have been treated as part of goodwill must now be identified and valued separately. Valuing these assets can be a complex matter in many cases and will often require specialist advice.**

### ***Negative goodwill***

If in the previous example Company S had been purchased for £9,000, this would indicate that Company H had purchased Company S's assets cheaply, relative to the book value of Company S, and so would enhance the residual value of H.

The calculation of goodwill therefore results in a negative amount which would be added to the 'other reserves' in the consolidated accounts (so that 'other reserves' increase).

### ***Goodwill on the purchase of an associate company***

The value of an associate (see Section 1.5) is taken to be whatever it cost.

Hence, no goodwill item appears in the consolidated balance sheet, as the value of the associate will be balanced exactly by the amount paid out. However, companies do show the goodwill element of an associate acquisition in a note to the accounts.



## Question

Statements of financial position (in £s) for Company A and Company B are shown below. Shares in Company A have a par value of 50p, and those in Company B a par value of 25p.

	<u>A</u>	<u>B</u>
Non-current assets	300	100
Current assets	600	440
Share capital	400	160
Reserves	400	80
Current liabilities	100	300

Calculate the goodwill assuming that Company A's shares are priced at par, and that Company B's shareholders are offered 1 share in Company A for every 1 share in Company B when Company A acquires:

- (i) 100% of Company B
- (ii) 75% of Company B.

## Solution

### (i) **Company A acquires a 100% share of Company B**

B's share capital is 160 and the shares have par value 25p, so the number of shares in B is:

$$\frac{160}{0.25} = 640$$

A therefore needs to offer 640 of its own shares, with a value of  $640 \times 0.50 = 320$ .

The total value of B to A is the value of 100% of its share capital and reserves, *ie*  $160 + 80 = 240$ .

Goodwill = the value of A's shares given to B's shareholders – the value of A's holding in B.

So goodwill =  $320 - 240 = 80$ .

### (ii) **Company A acquires a 75% share of Company B**

A is acquiring 75% of the 640 shares in B, *ie* 480 shares. A needs to offer 480 of its own shares to B's shareholders. The value of these shares is  $480 \times 0.50 = 240$ .

The value of 75% of B to A is  $(160 + 80) \times 0.75 = 180$ .

Therefore the goodwill is  $240 - 180 = 60$ .

## 1.4 Non-controlling interests

### Defining non-controlling interest

It is unnecessary for the parent to own all of the subsidiary's share capital in order for it to exercise control. In most circumstances, the parent will have control if it owns 50% or more of the shares or if it can otherwise control the subsidiary company.

Given that the directors of the parent control all of the subsidiary's assets, it would not be appropriate to consolidate only that percentage which the parent can claim to own.

This leaves the problem of accounting for the portion of the subsidiary's finance which is provided by the other shareholders.



The value of the share capital and reserves provided by the subsidiary's minority shareholders is called the 'non-controlling interest'.

### Accounting for non-controlling interest

The non-controlling interest must be shown separately in the statement of financial position, in the equity section, after the capital and reserves attributable to equity holders. An example is:

EQUITY	£
<i>Capital and reserves attributable to equity holders of the company</i>	
Share capital	40,000
Other reserves	15,000
Retained earnings	80,000
	135,000
Non-controlling interest	10,000
Total equity	145,000

## Example

Mr X decides to expand by acquiring 80% of the business of a friend Mr Y. The statements of financial position of the two businesses are as follows:

<i>all figures in \$</i>	<u>Mr X</u>	<u>Mr Y</u>
<b>Assets</b>		
Cash	50	200
Trade receivables	<u>200</u>	<u>50</u>
<b>Total assets</b>	<b><u>250</u></b>	<b><u>250</u></b>
<b>Equity and liabilities</b>		
Capital (\$1 nominal)	50	200
Reserves	<u>100</u>	<u>50</u>
Equity	150	250
Loan	<u>100</u>	<u>0</u>
<b>Total equity and liabilities</b>	<b><u>250</u></b>	<b><u>250</u></b>

Mr X pays \$240 for an 80% stake in the business of Mr Y and raises this cash by increasing the loan from \$100 to \$340.

We can say the following:

- Mr X has acquired 80% of the shares in Mr Y's business = 160 shares of \$1 each.
- The value of the 80% holding is  $80\% \times (\$200 + \$50) = \$200$ .
- Goodwill is cost of acquisition – book value of shares acquired =  $\$240 - \$200 = \$40$ .
- Mr Y's non-controlling interest has a value of  $\$250 - \$200 = \$50$  (=  $20\% \times \$250$ ).

To complete a consolidated set of accounts we can consider that Mr X owns and controls all of the assets in both companies, but that Mr Y has provided some of the capital for the combined company in the shape of the non-controlling interest.

We can now consolidate both statements of financial position and eliminate internal relationships.

<i>all figures in \$</i>	<u>Mr X</u> <u>Unconsolidated</u>	<u>Mr Y</u>	<u>Mr X</u> <u>Consolidated</u>
<b>Assets</b>			
Shares in Mr Y	240		0
Goodwill			40
Cash	50	200	250
Trade receivables	<u>200</u>	<u>50</u>	<u>250</u>
<b>Total assets</b>	<b><u>490</u></b>	<b><u>250</u></b>	<b><u>540</u></b>
<b>Equity and liabilities</b>			
Capital (\$1 nominal)	50	200	50
Reserves	<u>100</u>	<u>50</u>	<u>100</u>
Capital and reserves attributable to equity holders of the company	150	250	150
Non-controlling interest			50
Total equity	150	250	200
Loan	<u>340</u>	<u>0</u>	<u>340</u>
<b>Total equity and liabilities</b>	<b><u>490</u></b>	<b><u>250</u></b>	<b><u>540</u></b>

To reach the final column we have done the following:

- added the cash of both companies together
- added the goodwill to the consolidated balance sheet (this would be held under 'intangibles' in the non-current asset category)
- added all other categories together such as trade receivables together
- added the book value of Mr Y's non-controlling interest as part of the equity of the consolidated company.

The share capital and reserves of Mr Y's company disappear – to include them would be double counting these liabilities as discussed earlier.

## 1.5 Associated companies

Along with holding companies and subsidiaries, there is a third type of group member.



**An associated undertaking is one which is not a subsidiary, but which is subject to significant influence (but not control) by the parent.**

There is normally a presumption that significant influence would arise if the parent owned more than 20% of the associate's voting rights.

For most purposes, it is adequate to assume that a holding of between 20% and 50% of S's shares will make S an associate company of H.

The fact that the parent can merely exert influence means that it would not be appropriate to include the value of its assets in the consolidated financial statements. It would also be inappropriate to treat the associate as a simple investment.

Instead, compromise is reached by including the parent's share of the associate's results in the consolidated statement of profit or loss – regardless of whether it receives these by way of dividend. The consolidated statement of financial position includes the parent's share of the associate's assets and liabilities. The entries in both the statement of profit or loss and statement of financial position are single line entries, which state the total amounts attributable to associate companies.



### Question

A plc owns shares in three companies, B Ltd (40% shareholding), C Ltd (100% shareholding) and D Ltd (25% shareholding).

A plc has a contractual right to appoint two thirds of the board of B Ltd. A plc has used its voting rights to appoint all of the directors of C Ltd.

State, with reasons, whether companies B, C and D are subsidiaries of A or are associates.

### Solution

C Ltd is a subsidiary because A Ltd controls a majority of voting rights.

B Ltd is also a subsidiary because A Ltd controls a majority of the board.

D Ltd is an associated company because A owns more than 20% of voting rights but does not have control.

## 1.6 Interpretation of consolidated financial statements

One should always be aware of the artificial nature of the group structure. Strictly, the group has no legal identity. It is impossible to enter into a contract with a group. Any relationships will be with one or more of the group's members.

In theory, it would be possible for a group member to collapse without receiving any support from the other group members.



In practice, a large group would find it almost impossible to permit a subsidiary to fail without compensating the company's creditors because of the negative publicity it would cause. It is also possible to insist on a formal guarantee from the parent as a condition of granting a loan to a group member.

Any support between group members could be restricted by the overseas location of some subsidiaries, and therefore subject to exchange restrictions or other local regulations which prohibit the payment of funds back to head office.

Alternatively, minority shareholders might be able to block transactions which would be damaging to their company, even though they were potentially beneficial for the group as a whole.

It is also notable that the accounting techniques associated with consolidated financial statements has recently been one of the most controversial areas for regulators.



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### Question

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Define the following terms:

- (i) parent company
- (ii) subsidiary company
- (iii) associated undertaking
- (iv) non-controlling interest.

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### Solution

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- (i) ***Parent company***

A company which holds shares in other companies.

- (ii) ***Subsidiary company***

A subsidiary is a company controlled by a parent company. This control may be through holding a majority of voting rights or by being able to appoint or remove directors holding a majority of voting rights at board meetings.

- (iii) ***Associated undertaking***

An associated undertaking is one which is not a subsidiary, but which is subject to significant influence by the parent. A significant influence would normally arise if the parent owned between 20% and 50% of the associate's voting rights.

- (iv) ***Non-controlling interest***

The non-controlling interest is the value of the share capital and reserves provided by the subsidiary's minority shareholders.

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## 2 Insurance companies

### 2.1 Introduction

Insurance companies are effectively subject to the same reporting regime as any other type of limited company. As for other companies, a statement of financial position and a statement of profit or loss must be produced.

For most companies, the concept of profit is relatively intuitive. If a company sells an item of stock for more than it costs to make, it makes a profit. For an insurance company, the concept of profit is not so clear-cut.

When a policy is sold, the policyholder pays the company a premium and the company incurs sales and administration expenses. However, at this point the company does not know how much profit it will make as the policy may last for many years, during which time the company will have to pay claims and incur expenses and further premiums may be paid.

To allow for these future cashflows, the company will set up an estimated liability (a reserve) in its statement of financial position. A conservative approach may be adopted in estimating this to avoid too much profit being made at the start of the policy.



**The preparation of insurance company accounts is complicated by two special features:**

- **The underlying contracts (liabilities) fall due outside the accounting period and are uncertain in size.**
- **Premature transfer of 'profit' to shareholders may endanger the financial stability of the company and the ability to meet future liabilities.**

**In order to address these features, insurance accounts contain special features.**

This section looks at the special features of insurance company accounts. We consider both general insurance (short-term insurance, *eg* car or buildings insurance) and long-term insurance (*eg* life insurance).

### 2.2 Estimation of liabilities and timing of profit

**Estimated values for future liabilities must be assessed, either on a statistical basis or by expert judgement. For long-term (life and pensions) business this is often entrusted to actuaries.**

**Premiums already received in respect of such liabilities need to be identified and held until the liabilities have expired.**

**Additional sums may have to be set aside to meet any anticipated worsening in claims experience or any failure by third parties to honour their commitments towards meeting eventual liabilities.**

**Therefore, the provisions made for future liabilities are likely to be conservative in nature, with the result that current profit is under-stated. This conflicts with the basic accounting principle that the accounts should show a 'true and fair' view of the position of the company.**

**This feature is exacerbated by the profit profile of long-term contracts, whereby business written initially causes a financial strain due to the costs of setting up the contracts and establishing adequate initial reserves.**

There may be a loss on the policy in the early years, due to the initial expenses and the need to set up initial reserves. This is known as *new business strain*.

**However, the product design will provide for these initial costs to be subsequently recovered, and will also aim to provide an overall return to the company. The question arises as to when (and how) this profit should be reported.**

**A further problem is introduced by the taxation environment whereby particular classes of business may operate under different tax rules. This may require that the overall activities of the company are allocated to separate sub-funds for tax purposes.**

For example, general insurance may be taxed differently from long-term insurance.

## 2.3 Statement of profit or loss

The statement of profit or loss for an insurance company is divided into *technical* and *non-technical* accounts.

In general, all items relating to the main insurance business are shown in the *technical account*. This is divided further into separate accounts for general and long-term business.

The *non-technical account* then brings together the profits from the two types of business and adds in any profit made on other non-insurance business. To this is added other items such as the investment return on investments other than those supporting the insurance business and tax on profit to give the overall profit to shareholders.

**Thus, the statement of profit or loss will typically appear in three forms – separate revenue ('technical') accounts for general insurance and long-term insurance businesses and a 'non-technical' statement of profit or loss.**

### Technical accounts

Each revenue account will take the form:

	<b>Earned premiums (net of reinsurance)</b>
+	<b>Investment income</b>
+	<b>Realised capital gains</b>
–	<b>Claims incurred (net of reinsurance) or benefits payable</b>
–	<b><u>Net operating expenses incurred (including investment expenses)</u></b>
	<b>Balance on revenue account</b>

where the investment income and realised capital gains are those earned on the investments held to cover the insurance liabilities. There may need to be transfers from the reserves to cover the actual liabilities which are payable.

There may be additional items in the revenue account depending, for example, on company practice, accounting standards, regulatory requirements, or the purpose of the accounts.

For general insurance, these could include any change in the claims equalisation provision.

The 'claims equalisation provision' is a type of reserve used to smooth out fluctuations in claims from year to year.

**For long-term business, they could include transfer to (or from) the 'fund for future appropriations' (ie all funds the allocation of which – either to policyholders or shareholders – has not been determined by the end of the financial year).**

The 'fund for future appropriations' is a type of reserve applicable to life-insurance business.

**For general insurance or long-term business, unrealised gains or losses on investments might be included.**

## **Non-technical account**

**The balances on the revenue accounts are then transferred to the 'non-technical' statement of profit or loss.**

The non-technical account takes the form:

	<b>Balance on general insurance revenue account</b>
+	<b>Balance on long-term insurance revenue account</b>
+	<b>Investment income</b>
+	<b>Realised and unrealised gains (losses) on investments</b>
+	<b>Profit (or loss) from other ordinary activities before tax</b>
–	<b><u>Tax on profit (or loss) from all activities</u></b>
	<b>Profit or loss for the financial year</b>

where investment income and capital gains are those earned on investments relating to shareholders' funds / free reserves.

**'Other ordinary activities' would be other business activities of the company that are not general or long-term insurance business.**

## **2.4 Statement of financial position**

Remember the balance sheet equation:

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

We can see that some of the assets of the business cover the liabilities and some of the assets cover the equity capital (or shareholders' fund or free reserves).

**The statement of financial position contains the usual items plus, typically, these additional entries:**

## **Assets**

- **Assets held to cover insurance liabilities**

Insurance companies consider the term of their liabilities and invest in appropriate assets. For example, long-term insurers tend to invest in medium- and long-term assets whereas general insurers tend to invest in short-term assets.

- **Assets representing free reserves**

The shareholders' fund or free reserves is the value of the share capital and reserves of the business. The greater the free reserves, the more freedom the company has in its investment policy, eg it could invest in long-term assets that yield a greater return.

- **Reinsurers' share of technical provisions**

If the insurer is using reinsurance, then the reinsurer will pay the insurer for their share of the claims. This can be shown as an asset in the balance sheet.

- **Trade receivables arising out of direct insurance operations (policyholders, shareholders)**

These are amounts owed to the company by policyholders or sales intermediaries.

- **Trade receivables arising out of reinsurance operations**

These are amounts owed to the company by reinsurers.

- **Prepayments and accrued income**

Prepayments are amounts paid in advance. Accrued income is income that has accrued on an investment since the last payment.

## **Liabilities**

- **Fund for future appropriations**

This is a type of reserve applicable to life-insurance business.

- **Technical provisions:**

- **long-term insurance business provisions, including the actuarially estimated value of the company's liabilities including bonuses already declared and after deducting the actuarial value of future premiums.**

- **general insurance business provisions, including unexpired risk reserves and outstanding claims reserves.**

The unexpired risk reserve is to cover the claims and expenses that are expected to emerge from an unexpired period of cover.

The outstanding claims reserve is to cover the claims and expenses for all outstanding claims that have not yet been settled.

## Shareholders' fund

In insurance company accounts, the assets less the liabilities equals the shareholders' funds.

Insurance company accounts will be considered in more detail in the relevant Specialist subjects.

Similar issues arise with respect to pension scheme accounts. Again, the relevant Specialist subjects will address these.




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### Question

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State where the following items appear in the accounts of an insurance company.

Use the following abbreviations:

- R for revenue account
  - I for the non-technical account
  - A for assets
  - L for liabilities
  - S for shareholders' fund.
- (i) revaluation reserve
- (ii) investment income earned on investments relating to insurance liabilities
- (iii) balance on general insurance revenue account
- (iv) unexpired risk reserve
- (v) reinsurers' share of technical liabilities.

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### Solution

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- (i) S (The shareholders' fund comprises share capital and reserves. Reserves include the revaluation reserve.)
- (ii) R
- (iii) R (the bottom line) and carried forward to I
- (iv) L
- (v) A
-

## Chapter 13 Summary

### Group accounts

Consolidated accounts are needed when one company owns a substantial proportion of another company. These accounts reflect the operations of the whole group owned by the parent or holding company, including its subsidiaries and associated companies.

### Subsidiary company

Company *S* is said to be a subsidiary company of holding Company *H* when Company *H* has a *controlling interest* in Company *S*, *ie* holds the majority of the shares of Company *S* or controls the board of directors of Company *S* in some other way.

If Company *H* owns 100% of the shares in Company *S*, *S* is a *wholly owned subsidiary*.

If *H* owns less than 100% of the shares in *S*, *S* is a *partially owned subsidiary*. The portion held by other shareholders is termed the *non-controlling interest*.

Consolidated accounts must be produced. This basically involves adding up the items in the statement of profit and loss and the statement of financial position, presenting the statements as if the group is a single unit. Any interrelationships between members of the group are cancelled.

### Associated company

Company *A* is an *associate* of Company *H* if Company *H* has an investment in the shares of Company *A* that gives Company *H* a significant influence but not control over Company *A*.

Normally, a holding by *H* of between 20% and 50% of *A*'s shares will make *A* an associate of *H*.

The consolidated statement of profit or loss and statement of financial position of the group include single line entries showing the parent company's share of the associate's income, assets and liabilities.

### Goodwill

*Goodwill* represents the excess of the value paid for a subsidiary company over the value to the predator company of the share of assets purchased. It is shown in the consolidated statement of financial position of the group.

### Non-controlling interest

In the consolidated statement of financial position, the value of the subsidiary's share capital and reserves that is owned by minority (non-controlling) shareholders is shown separately in the equity section, after the capital and reserves attributable to equity holders.

## Insurance companies

Insurance companies complete their accounts in a manner comparable to other limited companies, but the preparation of insurance company accounts is complicated by two special features:

- The underlying contracts (liabilities) fall due outside the accounting period and are uncertain in size.
- Premature transfer of 'profit' to shareholders may endanger the financial stability of the company and the ability to meet future liabilities.

In order to address these features, insurance accounts contain special features.

The statement of profit or loss is divided into *technical* and *non-technical* accounts.

The technical or revenue accounts show the profit made on the main insurance business and is split into a general business account and a long-term business account. The non-technical account adds in other sources of profit to show the profit attributable to shareholders.

Each technical revenue account takes the form:

	Earned premiums (net of reinsurance)
+	Investment income
+	Realised capital gains
–	Claims incurred (net of reinsurance) or benefits payable
–	<u>Net operating expenses incurred (including investment expenses)</u>
	Profit or loss for the financial year

The statement of financial position has the usual items plus typically, for assets:

- Assets held to cover insurance liabilities
- Assets representing free reserves
- Reinsurers' share of technical provisions
- Trade receivables arising out of direct insurance operations
- Trade receivables arising out of reinsurance operations
- Prepayments and accrued income

and for liabilities:

- Fund for future appropriations
- Technical provisions for long-term and general insurance business.





## Chapter 13 Practice Questions

Exam style

All of the questions that follow are exam style.

- 13.1 A Ltd paid £400,000 for 200,000 shares in B Ltd. B Ltd's share capital was 250,000 £1 ordinary shares, and at the time of the share purchase it had reserves of £125,000. Calculate the goodwill associated with this purchase.
- A £25,000  
B £100,000  
C £200,000  
D £275,000 [2]
- 13.2 Filton plc has shares in three companies.
- It has a 35% holding in Worthington Ltd and has a right to appoint 6 of the 10 directors.
- It has a 55% holding in Bartley Ltd and has used its voting rights to appoint all of its directors.
- It has a 25% holding in Dudley Ltd and has a right to appoint 3 of the 10 directors.
- Which are subsidiaries of Filton plc?
- A Dudley Ltd, Worthington Ltd and Bartley Ltd  
B Worthington Ltd and Bartley Ltd  
C Bartley Ltd only  
D Dudley Ltd only [2]
- 13.3 Which of the following items does NOT occur in the revenue account of insurance company accounts?
- A earned premiums  
B claims incurred  
C investment income on investments relating to shareholders' funds  
D realised capital gains on investments held to cover insurance liabilities [2]
- 13.4 Describe how non-controlling interests are treated in a consolidated statement of financial position. Explain why they are treated in this way. [5]

- 13.5 Company A takes over Company B. Immediately before the take-over, Company B's statement of financial position appeared as follows:

<i>Company B</i>	<i>£000s</i>
Non-current assets	240
Current assets	<u>190</u>
<b>Assets</b>	<b>430</b>
Ordinary share capital (10p shares)	60
Reserves	250
Long-term debt	<u>120</u>
<b>Share capital and liabilities</b>	<b>430</b>

The terms of the offer made to B's shareholders for every nine shares held in B were:

- 3 shares (50p market value each) in A *plus*
- 90p cash *plus*
- 2 £2 convertible preference shares in A (valued at par).

The terms of the conversion on the £2 preference shares are 5 ordinary shares for each £2 preference share.

Calculate the goodwill which will initially appear in A's consolidated accounts as a result of the offer assuming

- (i) conversion does not take place
- (ii) full conversion.

[5]



## Chapter 13 Solutions

13.1 Answer = B

Goodwill is calculated as  $400,000 - \frac{200,000}{250,000} \times (250,000 + 125,000) = 100,000$

13.2 Answer = B

The parent company has a controlling interest in Bartley and Worthington but not Dudley.

13.3 Answer = C

The revenue account is concerned with normal insurance business. Investment income on investments relating to shareholders' funds appears on the non-technical income statement.

13.4 Non-controlling (or 'minority') interests are shown as a separate item in a consolidated statement of financial position. [1]

Minority interests are shown in the equity section, after the capital and reserves attributable to equity holders. [1]

If a parent company has a controlling interest in a subsidiary company, it holds a percentage of the subsidiary's shares but it controls all of its assets. [1]

Thus it would not be acceptable to simply include the appropriate percentage of net assets (as would be the case for an associate company). [1]

Instead, on consolidation, all of the subsidiary's assets are included (including goodwill) along with a separate item to identify non-controlling interests. [1]

[Total 5]

13.5 (i) **Goodwill arising assuming conversion does not take place**

Number of shares in B =  $\frac{60,000}{0.1} = 600,000$  [1]

Net asset value of B =  $£60,000 + £250,000 = £310,000$  [1]

Value of A's offer =  $\frac{1}{9} \times (3 \times 0.50 + 0.9 + 2 \times 2) \times 600,000 = £426,667$  [1]

Goodwill value of B =  $£426,667 - £310,000 = £116,667$  [1]

(ii) **Goodwill assuming full conversion**

Value of A's offer =  $\frac{1}{9} \times (3 \times 0.50 + 0.9 + 2 \times 5 \times 0.50) \times 600,000 = £493,333$  [1]

Goodwill value of B =  $£493,333 - £310,000 = £183,333$  [1]

[Maximum 5]

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# 14

## Interpretation of accounts

### Syllabus objectives

- 4.2 Assess the accounts of a company or a group of companies, including the limitations of such assessment.
1. Calculate and explain priority percentages and gearing.
  2. Calculate and explain interest cover and asset cover for loan capital.
  3. Describe the possible effects of interest rate movements on a highly geared company.
  4. Calculate and explain price earnings ratio, dividend yield, dividend cover and EBITDA.
  5. Explain net earnings per share.
  6. Calculate and explain accounting ratios which indicate:
    - profitability
    - liquidity
    - efficiency.

## 0 Introduction

Analysis of company accounts is useful to appraise companies for investment purposes and to understand how well they are being managed. This chapter introduces many of the tools needed to analyse accounts for these purposes and in particular contains definitions of key accounting ratios.

Accounting ratios are a useful way to make comparisons between companies. In particular, by using a *ratio* rather than a single number, it is possible to make comparisons which are not distorted by the size of the companies.

Ratios are practical tools used by investment analysts *eg* when deciding which share to purchase. Consequently, there is often no 'right' definition of a particular ratio. Indeed, often there is no 'right' ratio to look at in a particular case.

In this chapter and the next we set out the most important ratios, in the form(s) in which they are most commonly used. In other notes/textbooks there will be differences, although these should usually be on points of minor detail.

In this chapter, we start by focusing on loan capital and the type of analysis primarily relevant to investors in loan capital. In particular, we look at measures to assess the security of loan capital. We then turn our attention to measures appropriate to the shareholders. We will also look at ratios that assess profitability, liquidity and business efficiency.

To illustrate ratio calculations, throughout the chapter we will use the accounts set out below for Cover-up Limited, a supplier of specialist equipment and technical advice. From time to time we will refer back to the next two pages.

The examination is likely to test *knowledge* of accounting ratios (*ie* of the definitions of the ratios and how to calculate them), but just as importantly, it will test *understanding* of the ratios (*eg* to explain what they mean or could mean and to give possible courses of corrective action for a company).

## Statement of profit or loss for Cover-up Ltd for the year 20X0

	£000s
Revenue	250,000
Cost of sales:	
Cost of stock used:	
Raw materials purchased	95,000
Decrease in stocks of finished goods and work-in-progress	<u>7,000</u>
	102,000
Depreciation	<u>30,000</u>
	<u>(132,000)</u>
Gross profit	118,000
Administrative expenses and other overheads	(85,000)
Operating profit	33,000
Finance income	<u>2,000</u>
Profit before interest and taxation	35,000
Finance costs	<u>(9,950)</u>
Profit before taxation	25,050
Tax	<u>(8,267)</u>
Profit for the year =	16,783
Profit for the year attributable to equity holders of the company	<u>16,783</u>
<i>EPS for profit attributable to equity holders</i>	<i>10.5p</i>

### Note to the accounts:

The company proposes to make a dividend payment of £6,000,000, *ie* 3.75p per ordinary share, in respect of the year ending 31 December 20X0.

## Statement of financial position for Cover-up Ltd as at 31 December 20X0

	<i>£000</i>
<b>ASSETS</b>	
Non-current assets	
Intangible assets	20,000
Tangible assets	75,000
	<hr/>
	95,000
Current assets	
Inventories	42,000
Trade receivables	60,000
Cash	14,000
	<hr/>
	116,000
	<hr/>
<b>Total assets</b>	<b>211,000</b>
<b>EQUITY AND LIABILITIES</b>	
Called up share capital (160 million shares @ 25p)	40,000
Retained earnings	20,000
Other reserves	10,000
	<hr/>
Total equity	70,000
Non-current liabilities	
10% unsecured loan stock 20X7	25,000
11% subordinated loan stock 20X4	19,000
9¼% mortgage debenture 20X5	16,000
9½% Eurosterling 20X4	40,000
	<hr/>
Total non-current liabilities	100,000
Current liabilities	
Trade payables	32,000
Taxation	9,000
Total current liabilities	41,000
Total liabilities	
	<hr/>
	141,000
	<hr/>
<b>Total equity and liabilities</b>	<b>211,000</b>



## 1 Measuring risk associated with loan capital

In general, if a company has a high level of operating profit in relation to the annual interest due on its loan capital, the loan interest should be secure. The higher the ratio of profits to interest payments, the more scope there is for profits to deteriorate before a company will default on its loan capital interest payments.

We can also consider what happens if the company *does* default on its interest payments. Whether the loan stock holders get any money back depends on whether the available assets of the company are sufficient to meet the claims of the loan capital holders.

To assess this, investors in loan capital can look at the ratio of the available assets to the amount of the loan stock. A high ratio gives scope for future reductions in the value of the company's available assets without endangering the asset security for the loan capital.

So assets and income are important in this context. The two main ratios associated with loan capital are called the interest cover and the asset cover.

**Shareholders will normally regard loan capital as a mixed blessing. It is a cheap source of finance for the company because it normally carries a relatively low risk for the lender.**

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### Question

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Explain the remark 'loan capital normally carries a relatively low risk for the lender'.

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### Solution

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Consider the different possible risks to the investor (*ie* the lender):

- Default risk – Loan stock capital ranks higher in the event of a wind-up than equity and preference shares, so can be described as relatively low risk.
- Market risk – Because the income flow is fixed and the security is better than equities, it is generally the case that the market price of debt securities is more stable than that of equity capital. Therefore the market risk is relatively low.

---

**This means that the shareholders will normally expect to enjoy a higher rate of return from their investment in share capital if the company is partly financed by borrowing.**

**The alternative would be that additional finance would have been raised by the sale of additional shares, thereby diluting the returns enjoyed by the original shareholders.**

**There is, however, a downside to this. The security enjoyed by the lenders has the effect of increasing the risk attributable to the shareholders.**

**This is because:**

- the interest has to be paid regardless of whether the company is making profits
- the greater the proportion of the company's assets that are financed by debt, the greater the risk that there will be nothing left for the shareholders if the company fails.

There are a number of ratios which can be used to measure the risks borne by the shareholders because of the company's borrowing policy. These should not be confused with the risks which arise because of any volatility in the underlying business itself.

## 1.1 Interest cover

Interest cover on an issue of loan capital is defined to be profit on ordinary activities before interest and taxation divided by the annual interest payments due on that issue of the loan capital *and* on all prior ranking loan capital.

$$\text{Interest cover} = \frac{\text{profit on ordinary activities before interest and taxation}}{\text{annual interest payments due on that issue of loan stock} + \text{all prior loan stock}}$$

Put simply, it measures the number of times that the company could pay its interest out of profit before tax and interest. The higher this multiple, the less likely that the company will run into difficulty.

Interest cover is sometimes known as income cover. To calculate the interest cover on the different types of loan capital issued by Cover-up Ltd, we need first to split up the 'interest payable on long-term debt'.

**The interest payable on an issue of debt can be calculated from the nominal amount outstanding and the interest rate shown in the financial statements.**

Below we set out the split of interest in order of priority. The mortgage debenture (highest ranking) comes first. The unsecured loan stock and Eurosterling will probably rank equally. The subordinated loan stock will rank lowest.

### Calculation of interest cover for Cover-up Ltd

Interest on 9¾% mortgage debenture	1,560	(0.0975 × 16,000)
Interest on 10% unsecured loan stock	2,500	(0.10 × 25,000)
Interest on 9½% Eurosterling	3,800	(0.095 × 40,000)
Interest on 11% subordinated loan stock	2,090	(0.11 × 19,000)
	9,950	
Interest cover on mortgage debenture	=	$\frac{35,000}{1,560} = 22.4\times$
Interest cover on unsecured loan stock	=	$\frac{35,000}{(1,560 + 2,500 + 3,800)} = 4.5\times$
Interest cover on Eurosterling	=	$\frac{35,000}{(1,560 + 2,500 + 3,800)} = 4.5\times$




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## Question

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Calculate the interest cover for the subordinated loan stock.

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## Solution

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$$\text{Interest cover} = \frac{35,000}{1,560 + 2,500 + 3,800 + 2,090} = 3.5\times$$

**It is normally considered risky if the company cannot cover interest at least three or four times.**

**This is, however, a general principle. If, for example, the company has a stable, predictable stream of profits then it could afford to operate with a lower interest cover.**

In addition, there is normally a trade-off between lower security and a higher expected return.

The main limitations of interest cover are that it does not consider how volatile profits are, nor does it take account of the length of time for which the loan is outstanding. For example consider the likelihood of default on the following two loan stocks:

1. a 25-year loan stock issued by a company with profits that fluctuate greatly from year to year with an interest cover of 5×.
2. a 5-year loan stock issued by a food retailer (stable profits) with an interest cover of 2×.

It is likely that the second is much safer than the first, despite the lower interest cover figure.

To take account of this, an investor is likely to modify the 3× or 4× rule of thumb depending upon the stability of profits and the term of the loan stock being analysed.

It is also sensible to calculate the average interest cover from the last few years' accounts, rather than rely only on the latest set of accounts. This will enable the analyst to make some allowance for the volatility of profits.

As default by the company on *any* of its loan stock may result in the company winding up, this may be bad news for all of the other loan stock holders (particularly if the company's assets are insufficient to repay all of the loan capital).

So it is common practice to calculate interest cover on *all* the company's issues of loan capital, not just the particular issue that an investor is considering purchasing.




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## Question

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Discuss the following comment:

'Since a company may be able to pay interest on a loan stock even when profit before interest and tax is negative, it is meaningless to calculate interest cover.'

---

## Solution

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It is true that a company may be able to pay interest on a loan stock even when profit before interest and tax is negative, but only if it has the spare cash (or an overdraft facility) available.

If the losses persist, the company might run out of cash and default on the loan.

The long-run success of a company depends upon it making profits. It is therefore sensible to consider the company's profits (and hence interest cover) when assessing whether or not to invest in the company.

This is particularly the case since there is no better, simpler alternative of assessing the company's likely future success.

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## 1.2 Interest priority percentages

**Interest priority percentages show the slice of profit on ordinary activities before interest and tax which covers the annual interest payments due on each issue of loan capital.**

If the interest cover for the loan stock in question is  $x$  and the interest cover for the loan stock immediately prior in ranking to the one in question is  $y$ , then the interest priority percentage for the

loan stock is  $\frac{1}{y}$  to  $\frac{1}{x}$ .

**For each issue of loan capital there will be a lower and upper interest priority percentile.**

**The lower percentile is calculated as the inverse of the cover figure for the previous highest-ranking issue. The upper percentile is calculated as the inverse of the cover figure for the issue of loan stock being considered.**

This may seem complex, but it will become clear with the help of an example.

**This statistic is more relevant to lenders.**

**If the company has, say, given some lenders a fixed charge or a mortgage over specific assets then these loans will be repaid before loans with floating charges. Unsecured loans will be repaid after these.**

**This ranking will be relevant to a lender who has to decide whether the other loans that the company has taken out will affect the risk of a further investment.**

## Calculation of interest priority percentages for Cover-up Ltd

<i>Issue of loan capital</i>	<i>Interest cover (see above)</i>	<i>Interest priority percentages</i>
Mortgage debenture	22.44×	0% to 4.5%
Unsecured loan stock	4.45×	4.5% to 22.5%
Eurosterling	4.45×	4.5% to 22.5%



### Question

Calculate the interest priority percentages for the subordinated loan stock.

### Solution

The interest cover figure for the unsecured loan stock and Eurosterling issues is 4.45×

The interest cover figure for the subordinated loan stock is 3.52×

The interest priority percentages for the subordinated loan stock are therefore:

$$\frac{1}{4.45} \text{ to } \frac{1}{3.52}, \text{ ie } 22.5\% \text{ to } 28.4\%$$

We can interpret the priority percentages in the above example as follows: Given a figure of £35,000 available to pay the interest on the loan capital:

- the first 4.5% of this amount is needed to meet the interest on the highest ranking loan capital (the mortgage debenture)
- the next 18% (of the £35,000) is needed to pay the interest on the next highest ranking loan capital (the unsecured loan stock and the Eurosterling)
- the next 6% is needed to pay the interest on the lowest ranking loan capital (the subordinated loan stock).

## 1.3 Asset cover

Asset cover on an issue of loan capital is usually defined to be:

$$\frac{\text{total assets less current liabilities less intangible assets}}{\text{loan capital plus prior ranking debt}}$$

This amount will usually represent a conservative estimate of the amount of money available to meet the loan stockholders' demands for repayment if the company were to wind up.

The assumption is that assets other than intangibles will be converted into cash at their book values, while intangible items are likely to be worthless on winding up. This is, of course, dependent on the nature of the business and its assets. A valuable brand name or patent might well be worth more than all of the company's other assets put together.

Current liabilities are assumed to be repaid before the debtholders even though they may rank below the loan capital.

It is standard practice to regard a class of loan which has an asset cover less than two or two and a half times as high risk.

An alternative definition of asset cover which is often used in practice is:

$$\frac{\text{total assets less current liabilities less intangible assets}}{\text{total loan capital}}$$

However, we will be using the first definition in the following examples.

For Cover-up Ltd, total assets less current liabilities less intangible assets equals £150,000 (ie 211,000 – 41,000 – 20,000).

The idea is that the assets could be converted into cash at the balance sheet value. However, intangible items (eg goodwill) are likely to be worthless on winding up, so they are excluded.

Current liabilities are assumed to be repaid before the stockholders even though they may rank below the loan capital. The reason for this is that companies getting into trouble may find it difficult to get credit from their suppliers and might have very low current liabilities anyway by the time the company is wound up.

### Calculation of asset cover figures for Cover-up Ltd

$$\text{Asset cover on mortgage debenture} = \frac{150,000}{16,000} = 9.4\times$$

$$\text{Asset cover on unsecured loan stock} = \frac{150,000}{(16,000 + 25,000 + 40,000)} = 1.9\times$$

$$\text{Asset cover on Eurosterling} = \frac{150,000}{(16,000 + 25,000 + 40,000)} = 1.9\times$$



### Question

Calculate the asset cover for Cover-up's subordinated loan stock.

### Solution

$$\text{Asset cover} = \frac{150,000}{16,000 + 25,000 + 40,000 + 19,000} = 1.5\times$$

**The main limitation of asset cover is that the current value shown in the statements of financial position for assets might not reflect their realisable market value if the company is wound up. The going concern concept means that there is no particular need to carry assets at their market values.**

The minimum of 2× cover gives a safety margin, but an arbitrary one. Also, like interest cover, capital cover does not take account of the term of the loan stock.

An investor is likely to modify the 2× rule of thumb depending upon the likely realisable value of the assets, the term of the loan stock being analysed and the adequacy of the interest cover.

## 1.4 Asset priority percentages

**Asset priority percentages show the slice of total assets less current liabilities less intangible assets which is available to cover the nominal value of each issue of loan capital.**

**For each issue of loan capital there will be a lower and upper percentile.**

**The lower percentile is calculated as the inverse of the cover figure for the previous highest-ranking issue.**

**The upper percentile is calculated as the inverse of the cover figure for the issue of loan stock being considered.**



### Question

Calculate the asset priority percentages for Cover-up's subordinated loan stock and interpret the figures.

### Solution

The asset cover for the unsecured loan stock and Eurosterling issues is 1.85×.

The asset cover for the subordinated loan stock is 1.50×.

The asset priority percentages for the subordinated loan stock are therefore:

$$\frac{1}{1.85} \text{ to } \frac{1}{1.5}, \text{ ie } 54.0\% \text{ to } 66.7\%$$

This means that, if the company were wound up, the first 54% of the company's assets would go towards covering the company's liabilities to the holders of the mortgage debenture, unsecured loan stock and Eurosterling issue. The next 12.7% of the company's assets would go to the holders of the subordinated loan stock.

## 1.5 Gearing

**Gearing refers to the relative proportions of long-term debt and equity finance in a company. High gearing means that the company has a high level of debt financing.**

In the US, gearing is known as 'leverage'.

There are many different ways of defining gearing. The common feature is that high gearing means that the company has a high ratio of debt finance (*eg* loan capital) to equity finance (*ie* share capital and reserves).

Gearing can be measured using the statement of financial position figures for debt and equity.

Three main ratios under each type are considered below.

## Asset gearing

Asset gearing is also known as 'capital gearing'.

There are two commonly used definitions of *asset gearing*, either:

$$\frac{\text{borrowings}}{\text{equity}} \quad \text{or} \quad \frac{\text{borrowings}}{\text{borrowings} + \text{equity}}$$

The term 'borrowings' will usually include all forms of long-term loan capital.

This can include loan stock, Eurobonds and debentures *etc.* Some analysts also include any part of an overdraft or other short-term borrowing which seems to be a permanent feature of the company's capital structure.

**The term 'equity' in this definition means the book value of the ordinary shares *ie* 'capital and reserves'. It is normal to deduct the amount of any intangible assets.**

By doing this, we are effectively 'writing off' intangible assets against reserves, which is what a lot of firms do anyway. This is sensible since we need to be consistent between companies, only some of which choose to show intangible assets in their statement of financial position. For example, it is much easier to deduct goodwill from the minority of companies that show it, than to add an unknown amount of goodwill to the statement of financial position of those companies that do not show goodwill.

**The treatment of preference shares varies. Usually they are included as part of borrowings rather than as part of equity because they carry a fixed rate of dividend and because their holders are repaid before ordinary shareholders in the event of default.**

This is appropriate when analysing gearing from the perspective of ordinary shareholders.

**This means that they are more like liabilities when viewed from the perspective of the ordinary shareholders. The treatment of preference shares within related ratios, such as interest cover, needs to be consistent.**

**A company whose gearing reached 40% using the second of the above formulae would normally be regarded as high risk.**

Where the data is available, and depending on the purpose of the calculation, some analysts like to use market values of loan stock and share capital instead of the balance sheet values.



Using the first definition given above (*ie* borrowings to equity), asset gearing for Cover-up is calculated as:

$$\frac{25,000 + 19,000 + 16,000 + 40,000}{40,000 + 20,000 + 10,000 - 20,000} = \frac{100,000}{50,000} = 200\%$$



### Question

Calculate asset gearing for Cover-up using the second definition of gearing (*ie* debt to total capital).

### Solution

$$\text{Asset gearing} = \frac{100,000}{100,000 + 50,000} = 66.7\%$$

So Cover-up is pretty highly geared by most measures.

The reasons for gearing increasing risk can be illustrated with the following example involving two identical companies, one financed by 4 million ordinary shares of £1, the other by 2m shares and £2m of 12% loan stock:

Average year

	<u>Lowgear</u>	<u>Highgear</u>
Earnings before interest and tax	540,000	540,000
Interest	0	(240,000)
Earnings before tax	<u>540,000</u>	<u>300,000</u>
Tax (30%)	(162,000)	(90,000)
	<u>378,000</u>	<u>210,000</u>
No of shares	<u>4m</u>	<u>2m</u>
Earnings per share (pence)	9.45p	10.5p

Thus, the shareholders benefit from gearing in an average year because the interest rates are relatively low and because the company enjoys the benefit of tax relief on the loan interest.

The 12% interest on debt may not be low in absolute terms but is low relative to the return enjoyed by the equity shareholders who contributed £4 million capital of  $\frac{540,000}{4,000,000} = 13.5\%$ .

We now consider the effect if the profits double:

**Good year**

	<u>Lowgear</u>	<u>Highgear</u>
Earnings before interest and tax	1,080,000	1,080,000
Interest	0	(240,000)
	<hr/>	<hr/>
Earnings before tax	1,080,000	840,000
Tax (30%)	(324,000)	(252,000)
	<hr/>	<hr/>
	<u>756,000</u>	<u>588,000</u>
No of shares	4m	2m
Earnings per share (pence)	18.9p	29.4p
Times average year's EPS	2.0 ×	2.8 ×

In a good year, earnings before interest and tax have doubled.

This results in a doubling of the returns to shareholders in the low-g geared company.

The high-g geared company has, however, had its shareholders' return increase 2.8 times.

This is because of the effects of the fixed payment of interest on the half of the long-term finance which comes from borrowing.

However, if profits halve...

**Bad year**

	<u>Lowgear</u>	<u>Highgear</u>
Earnings before interest and tax	270,000	270,000
Interest	0	(240,000)
	<hr/>	<hr/>
Earnings before tax	270,000	30,000
Tax (30%)	(81,000)	(9,000)
	<hr/>	<hr/>
	<u>189,000</u>	<u>21,000</u>
No of shares	4m	2m
Earnings per share (pence)	4.725p	1.05p
Times average year's EPS	0.5 ×	0.1 ×

The gearing effect is even more pronounced when the company has a poor year.

In this case, halving the earnings before interest and taxation halved the shareholders' return in the ungeared company.

The highly geared company's return was reduced to one tenth that of a normal year.

The gearing ratio is important because increasing the proportion of debt in the company's long-term finance tends to accentuate any volatility in the underlying business. This would tend to increase the total risk for shareholders.

In extreme cases, where it might force the company to risk default, it might also create some risk for lenders.

An associated ratio used by financial analysts is the *shareholders' equity ratio*

$$\frac{\text{shareholders' equity} - \text{intangibles}}{\text{total assets} - \text{current liabilities} - \text{intangibles}}$$

This is similar to the second definition of asset gearing, but this ratio looks at the proportion of finance provided by equity, rather than the proportion provided by debt.

The higher this ratio, the stronger the financial position of the organisation. The lower the proportion, the more possibility of the organisation becoming over-dependent on outside providers of capital.

The term *shareholders' equity* in this definition means the statement of financial position value of the capital and reserves. It is normal to deduct the amount of any intangible assets.



### Question

Calculate the shareholders' equity ratio for Cover-up.

### Solution

$$\text{Shareholders' equity ratio} = \frac{70,000 - 20,000}{170,000 - 20,000} = 33.3\%$$

### Income gearing

The most commonly used definition of *income gearing* is:

$$\frac{\text{interest on borrowings}}{\text{profit on ordinary activities before interest and tax}}$$

'Interest on borrowings' will usually include all forms of interest payable on debt.

This includes interest on loan capital, and on overdrafts.

The treatment of preference shares again varies. When they are included as part of 'interest on debt', they should be grossed up at the company's rate of corporation tax.

So the definition would be:

$$\frac{\text{interest on borrowings} + \frac{\text{preference dividends}}{(1 - \text{corporation tax rate})}}{\text{profit on ordinary activities before interest and tax}}$$

Dividends are grossed up at the corporation tax rate because preference share dividends are paid out of tax profits and we are assessing how much interest cost the company is bearing.

The true cost to the company of £x of preference dividends at the before tax level is  $\frac{£x}{1-t}$  (assuming a corporation tax rate of  $t$ ).



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**Question**

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Calculate income gearing for Cover-up Ltd.

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**Solution**

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$$\text{Income gearing} = \frac{9,950}{35,000} = 28.4\%$$

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## 2 Ratios involving share information

We will look at the following sets of ratios for shareholders:

- ratios involving share information
- profitability ratios
- liquidity ratios
- efficiency ratios.

**Investors in ordinary shares are entitled to receive dividends, which may be very large relative to the issue price of the shares if the company is successful. Equally, the dividends may not be paid at all if the company is unsuccessful.**

Whilst ordinary shareholders may look at the cover and gearing ratios we have covered so far, income and capital cover will not be their main concern.

**They will want to know about a company's profitability, efficiency, earnings for ordinary shareholders and dividends.**

### 2.1 Earnings per share

In principle, earnings per share is a simple concept:

$$\text{earnings per share} = \frac{\text{earnings on ordinary activities}}{\text{number of issued ordinary shares}}$$

Within this context, earnings on ordinary activities are usually taken to mean earnings for ordinary shareholders.

**The earnings per share (EPS) ratio is the amount of profit that has been earned for each ordinary share.**

**It is customary to calculate this ratio by taking the net profit after taxation and, since it is concerned with the ordinary shareholders' position, it excludes any preference dividend.**

In other words, the payments in respect of preference dividend are deducted from the earnings before the calculation of the ratio.

**Businesses whose shares are publicly traded are required to disclose two versions of earnings per share.**

#### Basic earnings per share

**This is calculated by dividing the net profit or loss for the period attributable to ordinary shareholders by the weighted average number of ordinary shares outstanding during the period.**

**The net profit or loss attributable to ordinary shareholders is after taxation, minority interests, extraordinary items and preference dividends.**

'Minority interests' was described earlier as 'non-controlling interests'.

## Diluted earnings per share

The basic EPS takes into account only those equity shares in issue that were outstanding during the period.

However, a company may have entered into obligations that could dilute the EPS in the future. In such cases, the basic EPS should be adjusted for the effects of all dilutive potential ordinary shares.

The calculation should be made on the assumption that any conversion rights or options had been exercised in full on the first day of the accounting period. (If the date of issue of the securities giving rise to the rights or options is later, a weighted average calculation should be performed.)

For example, consider a company which has earnings on ordinary activities of £75m for the year ending 31 December.

During the year, there were 500m ordinary shares in issue. On 1 July, £50m of convertible loan stock was issued, with the option to convert into ordinary shares in five years' time. Under the conversion terms, if all of the loan-stock holders take the option to convert, 100m new ordinary shares will be issued.

The earnings per share for the year are  $\frac{£75,000,000}{500,000,000} = 15p$  per share.

Since we had 500,000,000 shares for six months and a potential 600,000,000 for the second six months, the weighted average number of shares allowing for conversion rights is:

$$0.5 \times 500,000,000 + 0.5 \times 600,000,000 = 550,000,000$$

Therefore, the *diluted* earnings per share are

$$\frac{£75,000,000}{550,000,000} = 13.6p \text{ per share}$$

There are various other ways of calculating EPS. For example, some companies provide additional EPS figures that exclude exceptional items or exclude discontinued operations.

It is difficult to see why the EPS ratio should command so much attention. The number of ordinary shares is, after all, a meaningless number. A company wishing to raise £1m of share capital could, for example, issue 1m £1 shares, 2m 50 pence shares or 10m 10 pence shares.

It is important as it is used as the basis for the calculation of the Price / Earnings (P/E) ratio.



### Question

A company's pre-tax profits have doubled over the past four years but EPS have hardly grown at all. Give two reasons why this might have occurred.

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## Solution

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Possible reasons would include:

- acquisitions by the issue of shares
  - a higher tax charge than in earlier years.
- 

## 2.2 Price earnings ratio

$$\text{price earnings ratio} = \frac{\text{market price of an ordinary share}}{\text{earnings per share}}$$

**The earnings per share figure used in this ratio can be historical or prospective.**

Some analysts calculate a PE ratio based on their best estimate of the company's earnings over the *next* 12 months. This is known as a *prospective* PE ratio. Other analysts calculate the PE ratio based on the *previous* year's earnings. This is known as a *historical* PE ratio.

Where companies have convertible shares, warrants or share options that may at some point be converted into new shares, it is common to calculate the PE ratio on a 'full conversion basis' using diluted earnings per share.

**The market price of the share encapsulates everything that the market knows about the company. Relating this to earnings gives an insight into the market's opinion of the company's performance.**

**If the price earnings ratio is high then that would suggest that the company is relatively attractive when considered as a source of revenues. This might imply that the market believes:**

- that the company is a relatively low risk investment, or
- earnings will grow rapidly in the future.

**If the P/E ratio of a share is high relative to other, similar companies (taking the above factors into account) it may mean that the share is overvalued.**

### Use of the price earnings ratio

Earnings are the amount of money generated by the company for its shareholders. These are of fundamental importance in determining the income a shareholder receives and also the potential for growth of the company.

The price earnings ratio shows how many times bigger the price of a share is than the earnings that the share produces.

There are two main reasons why investors might be prepared to pay a bigger multiple of the earnings for one share than for another share:

1. they expect earnings to grow rapidly, so are paying for expected high future earnings
2. the earnings are considered to be less risky.

To use this ratio sensibly, we could consider the likely growth prospects of the company, and so derive the PE ratio that the share *should* have. The share is then expensive (cheap) if the actual PE ratio is higher (lower) than the estimated PE ratio.

One way of estimating the PE ratio that a company should have is to consider what is normal for the industry to which the company in question belongs. A company whose shares have a PE above the norm for the industry may be considered expensive (or to have above average growth prospects).

**In theory (and almost certainly in practice) the P/E ratio will vary as a result of changes in the share price. Unfortunately, many directors behave as if the relationship has been inverted. They seem to assume that the P/E ratio is fixed (or is at least 'sticky') and that the share price can be improved by overstating the EPS.**

## 2.3 Dividend yield

$$\text{dividend yield} = \frac{\text{dividends per share}}{\text{market price of an ordinary share}}$$

### Use of dividend yield

In theory, the value of a share is the discounted present value of the proceeds obtained from owning it. If held forever, the present value of a share can be taken to be the discounted value of all future dividends. Thus dividends are of key importance to shareholders.

**The dividend yield measures the amount of current income (dividends) an investor receives per unit of investment (the share price). A low dividend yield may mean that:**

1. investors expect dividends to grow rapidly, or
2. the share is overvalued.

**The dividend yield cannot be interpreted as the expected return on a share because it shows only part of the return for an investor – it ignores any potential capital gain.**

## 2.4 Dividend cover

$$\text{dividend cover} = \frac{\text{earnings per share}}{\text{dividends per share}}$$

**This way of calculating cover is not directly comparable with the interest cover used for loan capital.**



### Question

Explain why the calculations are not entirely consistent.

### Solution

Interest cover and asset cover are calculated by dividing the total income (or assets) available by the loan stock + all prior debt.



To be consistent, when calculating dividend cover, we would have to calculate the total income available to equity shareholders + all prior ranking capital (debt, preference, ...) and divide by the dividends on ordinary shares + all prior capital. This is *not* what is done.

**The inverse of the dividend cover is the payout ratio.**

$$\text{payout ratio} = \frac{1}{\text{dividend cover}} = \frac{\text{dividend per share}}{\text{earnings per share}}$$

## Use of dividend cover

**Dividends are paid out of earnings. In the long run, a company will not be able to maintain dividends if they are not covered by earnings.**

**In contrast, a company with a high level of dividend cover has more scope to increase dividends in the future.**

**So, for a given dividend yield on a share, a high dividend cover figure suggests better value for money than a share with low dividend cover.**

There is a relationship between the PE ratio, the dividend yield and dividend cover:

$$\frac{\text{market price}}{\text{earnings per share}} \times \frac{\text{dividend per share}}{\text{market price}} = \frac{\text{dividend per share}}{\text{earnings per share}}$$

*ie* PE ratio × dividend yield = payout ratio

## 2.5 EBITDA

**The statement of profit or loss shows how operating profit reflects revenue less the cost of sales, distribution costs, administrative expenses and other operating income.**

**The operating profit plus finance income is sometimes referred to as earnings before interest and taxation (EBIT).**

**The figure does, however, allow for depreciation and amortisation charges.**

**Some analysts feel that these are not well measured in statements of profit or loss, since the amounts charged are based on subjective analysis and may therefore be seen as discretionary. They prefer to focus on earnings before interest, taxation, depreciation and amortisation (EBITDA). This is often referred to as 'cashflow from operations'.**

**(The evaluation of depreciation charges was covered previously. Amortisation is a similar exercise in respect of intangible assets such as goodwill, advertising and research and development, R&D.)**

EBITDA can be used to calculate an alternative version of earnings per share. This can then be used to compare different companies or to look at trends over time for a particular company if tax, depreciation or amortisation might otherwise distort the comparison.



### Question

Calculate the following ratios for Cover-up Ltd, given that its current share price is 200p.

- (i) EPS
- (ii) EBITDA per share
- (iii) PE ratio (using net earnings)
- (iv) dividend yield
- (v) dividend cover.

Assume that the dividend proposed is approved and paid.

### Solution

- (i) EPS =  $\frac{16,783}{160,000} = 10.49p$
- (ii) EBITDA per share =  $\frac{35,000 + 30,000}{160,000} = 40.63p$
- (iii) PE ratio =  $\frac{\text{market price of an ordinary share}}{\text{earnings per share}}$   
 $= \frac{200}{10.49} = 19.1\times$
- (iv) dividend yield =  $\frac{6,000 \times 100}{160,000} \times \frac{1}{200} = 0.019$  or 1.9%
- (v) dividend cover: =  $\frac{\text{earnings}}{\text{dividends}} = \frac{16,783}{6,000} = 2.8\times$



### Question

A company made £5m pre-tax profit last year. It paid a dividend for the year of £0.02 per share. It has 100m shares in issue currently priced at £1.

Assuming corporation tax is charged at 20%, calculate:

- (i) earnings per share
- (ii) dividend cover
- (iii) dividend yield
- (iv) PE ratio.

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## Solution

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- (i) Post-tax profits is  $£5m \times (1 - 0.2) = £4m$ . Divided between 100m shares, this gives earnings per share of 4.0p.
- (ii) Dividend cover =  $\frac{4}{2} = 2.00 \times$
- (iii) Dividend yield =  $\frac{2}{100} = 2\%$
- (iv) The price earnings ratio is  $\frac{100}{4} = 25.0 \times$
- 

## 2.6 Net asset value per share

The formula for net asset value per share is:

$$\frac{\text{ordinary shareholders' equity} - \text{intangible assets}}{\text{number of issued ordinary shares}}$$

### Comments on definition

**'Ordinary shareholders' equity' means called up share capital, other reserves including share premium account and revaluation reserve and retained earnings.**

If a company has convertible preference shares or convertible loan capital, it is normal to re-work the statement of financial position assuming that conversion occurs immediately to give a 'fully diluted' net asset value.

Intangible assets are excluded because they are treated differently by different firms and also because they may be worth nothing if the company is wound up.

### Purpose

**This shows the book value of the tangible assets backing each share, net of all liabilities to non-ordinary shareholders. It is approximately what the ordinary shareholders would receive for each share they hold if the company was immediately wound up (assuming the book values are reliable).**

**The main problem with the ratio is that the book values in historical cost accounts do not necessarily reflect the true value of the assets.**

For a highly geared company, the net asset value is the small difference between two big numbers, tangible assets and liabilities. So problems of inaccurate valuation of assets may be very acute.

**Often, net asset value will be compared to the share price.**

If the net asset value is much greater than the share price, then the shares may be undervalued.

Net asset value per share is particularly useful when looking at property companies and investment trusts where the share price should be closely related to the net asset value (because the value of such a company is generally just the value of the underlying assets).

Net asset value is also used in take-overs, as the target company's assets are being acquired. So the net asset value gives a guide as to what should be paid (or possibly the *minimum* fair value). If a company's share price is *below* the net asset value, it may be worthwhile taking over the company simply to acquire its assets cheaply.

The realisable value of the assets for a company in liquidation will often be a long way below the value placed on them in the statement of financial position. Accounts are usually compiled, and assets valued, on the assumption that the company will be a going-concern.

The share price may exceed the net asset value if the share price is more dependent upon the company's ability to generate profits (*eg* due to a good customer image and/or management) than the value of the assets. For many companies, it is the discounted value of future dividends that determines the share price, not the net asset value.

A good example might be an advertising agency (or any other 'people' based industry) where the value of the firm's tangible assets may be tiny. However, a low asset value relative to the share price *may* suggest that the share price is too high.

## Variations

Most analysts can partially overcome the problem of historical cost values. They do this by replacing the balance sheet value of land with the market value (remember that this needs to be disclosed in the directors' report if it is not shown in the statement of financial position). The move away from historical cost towards fair value accounting is reducing the extent to which these kinds of adjustments by users of the accounts are necessary.

Some analysts divide net asset value per share by the company's share price, to make the comparison between book value and market value explicit. If this ratio is less than 1, it means the market value exceeds the book value.

### 3 Introduction to other accounting ratios

There are four main groups of ratios:

1. Those which measure profitability
2. Those which measure liquidity
3. Those which measure business efficiency
4. Those which relate to the business' financial structure (as discussed above).

We have already discussed the ratios which relate to financial structure (gearing, etc) earlier in this chapter.

The ratios we will look at are:

1. Profitability
  - return on capital employed
  - profit margin
  - asset utilisation ratio
2. Liquidity
  - current ratio
  - quick ratio (also called acid test or liquidity ratio)
3. Efficiency
  - inventory turnover ratio
  - trade receivables turnover ratio
  - trade payables turnover ratio.

These will help to indicate how successful the company is in various parts of its operations.

For many ratios, there is no single agreed definition and many variations are used.

As well as defining each ratio, we'll look at its purpose and, where appropriate, any problems in calculating it along with some of the common variations.

## 4 Profitability ratios

The profitability ratios are used to check that the company is generating an acceptable return for its owners.

A number of benchmarks can be used: previous years' figures, ratios calculated for similar businesses, industry averages, etc.

Management should consider the reasons for any ratios which are poorer than expected to see whether they imply that performance could be improved.

### 4.1 Return on capital employed

#### Definition

Return on capital employed is the most important profitability ratio – indeed it is often referred to as the 'primary ratio' or 'return on investment'.

It measures the relationship between the amount invested in the business and the returns generated for those investors.

The calculation of return on capital employed is complicated by the fact that capital employed can be measured in a number of different ways. It is vitally important that the figure for 'return' is calculated in a consistent manner with that for 'capital employed'.

The two main formulae for return on capital employed are:

$$\frac{\text{profit before tax and interest}}{\text{share capital} + \text{reserves} + \text{long-term debt}} \times 100$$

and

$$\frac{\text{profit before tax}}{\text{share capital} + \text{reserves}} \times 100$$

The first formula defines capital employed in terms of the total amount invested in the company, both by shareholders and lenders. In order to be consistent, the figure for return must show the total amount generated on behalf of these investors. That is why interest has been added back.

The second formula defines equity capital employed, in terms of the amount invested by shareholders only. In order to be consistent, interest is excluded in the denominator as this is return for bondholders, not shareholders.

The important thing is consistency between denominator and numerator. The two main rules to obey are:

- (i) if, and only if, an asset is included in the denominator, should the income it gives rise to be included in the numerator.
- (ii) if a liability is deducted from the denominator the income paid to it should be deducted from the numerator.

## Comments on definition

This ratio is normally expressed as a percentage.

The term 'before interest' means before interest payable but *after* interest receivable.

The denominator (often called 'capital employed') is virtually the same figure as is used when calculating asset cover. The definition above uses 'share capital plus reserves plus long-term debt' which equals 'total assets less current liabilities'. Ignoring any intangibles, the two definitions are the same.

The ratio is dependent upon the value placed on the assets. Assets revalued upwards might lead to a higher denominator *and* a lower numerator, since the depreciation charge would probably increase in future years.

## Purpose

**The ratio can be used to indicate how efficiently managers of different firms are using the funds at their disposal.**

**It is therefore useful when comparing companies for investment.**

A decrease in the ratio would be cause for concern and further investigation *eg* to determine whether profit margins have fallen, sales have fallen or capital has increased without any increase in profits. Return on capital employed is likely to decrease during recessions, and increase during booms.

**The ratio can be compared with the cost of borrowing.**

Return on capital employed can be calculated for parts of a business. If a particular branch activity produces a very low (high) return on capital employed, then funds should be diverted away from (towards) that activity.

**The ROCE can be broken down into two 'secondary' ratios:**

(i) **asset utilisation ratio**

$$\frac{\text{revenue (turnover)}}{\text{share capital + reserves + long-term debt}}$$

**reflecting the intensity with which assets are employed and:**

(ii) **profit margin (or return on sales ratio)**

$$\frac{\text{profit before tax and interest}}{\text{revenue (turnover)}}$$

**This is an attempt to look at the profits made per unit of sales. It is normal to multiply the answer by 100 to express it as a percentage.**

ROCE is the product of these two ratios as follows:

$$\begin{aligned} \text{ROCE} &= \frac{\text{profit before tax and interest}}{\text{share capital} + \text{reserves} + \text{long-term debt}} \\ &= \frac{\text{revenue}}{\text{share capital} + \text{reserves} + \text{long-term debt}} \times \frac{\text{profit before tax and interest}}{\text{revenue}} \\ &= \text{asset utilisation ratio} \times \text{profit margin} \end{aligned}$$

This shows that a fall in the ROCE can result from two main sources:

- a fall in the profit per unit of sales (measured by the profit margin)
- or a fall in the sales generated by the assets (measured by the asset utilisation ratio).

Once management has identified the general cause, more ratios can be examined, such as administration costs per unit of sales, or sales generated by the fixed assets.

Having identified the cause, management can suggest a number of policies, *eg* pricing policy, advertising, cost control.

## 4.2 Profit margin

### Variations

We have seen one definition of profit margin above. It is also possible to calculate other sorts of profit margin, *eg* the gross profit margin or the operating profit margin.

**Operating profit is sometimes called trading profit.**

Remember that operating profit does *not* include interest receivable. This means that the operating profit margin is of limited use for most *financial* companies.

Some analysts look at operating profit *before* depreciation has been deducted.

### Purpose

Profit margins are useful when analysing the profit made per unit of sale. The difference between the gross profit margin and the operating profit margin is accounted for by expenses as a percentage of revenue.

Different industries exhibit vastly different profit margins. In the retailing industry, turnover can be high and profit margins will often be narrow. However in the drug industry, the margin on a successful patented drug is much higher.



**Low margins relative to other firms in the industry may indicate a wide range of things, for example:**

- a more down market product range
- a 'low margin high volume' marketing strategy
- an attempt to increase market share
- poor management/excessive costs
- temporarily low profits and/or high costs (*eg* as a new product is launched)
- subnormal profits are being made, so that the firm will exit the industry in the long run.

**Changes in the profit margin from year to year will also be of interest to analysts. Such changes could indicate changes in any of the items mentioned above.**

**Clearly, it is impossible to tell whether a high ratio is good or bad without some further information to provide context. A higher ratio could be achieved by increasing selling prices. Unfortunately, that could also have the effect of over-pricing the company's products relative to its competition.**

It is also important to bear in mind that different accounting policies can lead to different profitability ratios.

For example, in the IT software industry, one company can seem very much more profitable than another simply because the latter is prudently writing off unsuccessful or out-of-date software development costs on software it believes to be out of date.

Many analysts use the profit margin and an estimate of future sales to derive a profits forecast:

$$\text{Operating profit margin} \times \text{estimated revenue} = \text{estimated operating profit.}$$

### 4.3 Asset utilisation ratio

This is defined as: 
$$\frac{\text{revenue}}{\text{share capital} + \text{reserves} + \text{long-term debt}}$$

#### Purpose

This measures the revenue that has been generated by the company's assets. If this has fallen, the company should investigate the reasons, perhaps:

- the company has increased its assets but has not used them efficiently
- the company has encountered production problems
- revenue has fallen due to a rise in price, a fall in advertising, increased competition or a recession.

This ratio should be investigated alongside the profit margin. A company might adopt a 'low margin high volume' strategy which would give the company a high asset utilisation ratio but a low profit margin.

## 5 Liquidity ratios

While it is important for a business to be profitable, profit is not sufficient on its own to guarantee survival. There must be sufficient liquid assets available to ensure that short-term commitments can be met. Otherwise the company could be forced into liquidation.

### 5.1 Current ratio

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

#### Purpose

This ratio is used to assess whether the company will be able to pay its bills over the next few months.

It provides a comparison of an estimate of the amount of money due to be received in the short term with an estimate of the amount of money to be paid.

Liquidity is important. Many profitable firms have:

- had to go to their shareholders to raise extra cash when liquidity has become a problem
- been wound up because they have had insufficient cash to meet their short-term liabilities.

**Normally, a low ratio might indicate that a company may have problems paying its creditors. An excessively high ratio may indicate that the management has too much money tied up in unproductive short-term assets.**

Unproductive assets could include assets such as excessive stocks or idle cash balances. 'Too high' will vary according to the nature of the industry, *eg* whether large stocks are needed or what the normal credit terms are for doing business with suppliers and customers.

**It is difficult to know exactly what a low or high figure is for any given company. Different industries can have very different 'normal' levels. In general, a ratio of 2:1 is considered to be optimal.**

**This could, however, be excessive for businesses which have rapid turnover of inventory and steady cash inflow (a supermarket being the classic example). By the same token, a ratio of 2:1 might be inadequate for a business which has irregular cash inflows.**

**Because of this, many analysts use the ratio to look at trends over a number of years. A sudden change would be cause for further investigation.**

The company's creditors may also be very interested in using the current ratio to assess a firm's short-term solvency.

#### Comments on definition

The accounts are usually only available several weeks or months after the date at which they are completed and so short-term figures such as current asset and liabilities may be out of date by the time the accounts are published.

A key liquidity factor for many companies is the size of their unused overdraft limit. However, this is something that only a few companies choose to report. The current ratio is therefore a very crude indicator of a company's ability to meet its short-term debts.

**The term 'current liabilities' will usually be taken to mean 'creditors falling due within one year'.**

The figures in the statement of financial position will only include those assets and liabilities which exist at that date.

There is no guarantee that the time span of the current assets is the same as the time span of the current liabilities. So a company with an apparently satisfactory current ratio might still have trouble paying a liability due tomorrow. In particular, inventories are included in the numerator, but it may take some time to complete and sell the finished product, and then await payment.

As with all ratios, usefulness depends upon the reliability of the values shown in the accounts. In particular, the value placed on inventories will depend upon the accounting methods used. The current ratio may therefore be slightly misleading when used to compare different firms.

## 5.2 Quick ratio

$$\text{quick ratio} = \frac{\text{current assets} - \text{inventories}}{\text{current liabilities}}$$

**The quick ratio is also known as the acid test, or the liquidity ratio.**

### Purpose

**This is another ratio aimed at looking at short-term liquidity.**

**The quick ratio considers what would happen if all creditor and debtor accounts were settled immediately. It focuses on readily realisable cash.**

The idea is that only cash and trade receivables (debtors) can be quickly turned into cash, but any of the current liabilities could become payable within a few months.

**A quick ratio of much less than one *might* be a sign that the company may struggle to pay its creditors. However some companies are able to survive with a ratio of much less than one.**

This is because their customers pay in cash, but they agree and continually roll-over, say, 90-day credit terms with their suppliers without any problems.

**Again, it is often departures from the normal level of the ratio rather than the absolute level of the ratio which will interest analysts.**

And again, true liquidity is often more dependent upon agreements with bankers, than on the ratio.

### Variations

Any marketable investments could be included in the numerator. However, these are often ignored in practice (and in exams) since the information to decide on the marketability of an investment may not be available.

## 6 Efficiency ratios

The efficiency ratios are related to the liquidity ratios.

They give an insight into the effectiveness of the company's management of the components of working capital (current assets less current liabilities).

These ratios tend to be multiplied by 365 and so expressed as a period of time.

Most of the ratios below assume we are examining *annual* accounts and hence include a '×365' factor. If we are examining *monthly* accounts (*eg* internal management accounts) we should adjust accordingly for the different day count, *eg* replace the '×365' by '×365/12' or '×31'. Chapter 16 builds on these ratios and considers a company's working capital management in more detail.

### 6.1 Inventory turnover period

The inventory turnover period is defined as:

$$\text{Inventory turnover period} = \frac{\text{inventories}}{\text{cost of sales}} \times 365$$

#### Purpose

This is an attempt to assess how much inventory the company holds in relation to the scale of the company's operations. The ratio attempts to show how long inventory is held for on average.

Inventory turnover period of, say, 1/12 of 365 days would suggest that the average item of inventory is held for one month.

**An inventory turnover period that is less rapid than other companies in the same industry might indicate an inefficiently large inventory holding.**

An *increasing* ratio might indicate that slow sales and stockpiling of unsold goods.

**This ratio will vary enormously between businesses.**

The inventory turnover ratios of a ship builder and a fresh fish retailer, for example, are likely to be very different.

Inventory turnover is meaningless when considering a financial institution such as a bank.

#### Comments on definition

**Inventories include finished goods, work-in-progress and raw materials.**

**One difficulty with the ratio is that the figure for inventories may be subject to seasonal variation.**

So using end-year statement of financial position values is potentially misleading. There is very little that an analyst can do about this.

**Also, the value placed on inventories will depend upon the accounting method used.**

The figure for inventories comes from the statement of financial position, and the revenue figure from the statement of profit or loss. Some analysts will use the latest available figure for inventories, others will use an average of the start and end-year figures.



### Question

Explain why it is a good idea to use an average of the start and end-year statement of financial position figures for inventories when calculating the inventory turnover period.

### Solution

Stock turnover is one of the accounting ratios that use a combination of figures from the statement of financial position and figures from the statement of profit or loss.

The statement of financial position is a set of figures that are correct on a particular date, whereas the statement of profit or loss covers a period of time (normally a year).

Some analysts therefore use an average figure for this item in the statement of financial position in order to attempt to reconcile this discrepancy in timing between the two sets of accounts.



### Question

Explain what the inverse of the inventory turnover period (multiplied by 365) tells the analyst.

### Solution

The inverse of the inventory turnover period tells the analyst how many times the inventory is turned over in an accounting period.

A variation on the definition of inventory turnover period is to use sales revenue as the denominator, *ie*:

$$\text{inventory turnover period} = \frac{\text{inventories}}{\text{sales revenue (turnover)}} \times 365$$

## 6.2 Trade receivables turnover period

$$\text{trade receivables turnover period} = \frac{\text{trade receivables}}{\text{credit sales}} \times 365$$

### Purpose

This is a measure of the average length of time taken for trade receivables to settle their balance.

Again, it is desirable for this period to be as short as possible. It will be better for the company's cashflow if those owing the company money pay as quickly as possible. It can, however, be difficult to press for speedier payment. Doing so could damage the company's relationship with its customers.

## Comments on definition

This ratio indicates the average number of days credit that is extended to customers paying by credit.

'Credit sales' refers only to that part of the total sales of the company which were transacted on credit, excluding the sales for cash.

**If the company sells goods for cash and for credit then it is important to divide the trade receivables figure by credit sales only.**

The split between sales for credit and sales for cash is not often published.

**If you are analysing a real set of financial statements then many companies will have sales that are generally either all on credit or all for cash (in which case the ratio would not apply).**

Where it is realistic to assume that all sales are on credit, the ratio can be simplified to:

$$\text{trade receivables turnover period} = \frac{\text{trade receivables}}{\text{sales}} \times 365$$

**If sales cannot be broken down then the ratio will be distorted.**

However if the proportion of cash versus credit sales remains constant from year to year, the figures for different years can be compared, even if there is a theoretical distortion.

## 6.3 Trade payables turnover period

**A similar ratio can be used to assess trade payables:**

$$\text{trade payables turnover period} = \frac{\text{trade payables}}{\text{credit purchases}} \times 365$$

This ratio indicates the average number of days credit that a company has from its suppliers. A high ratio indicates that the company is taking a long time to pay its bills. This may be because it has been able to obtain a long credit period from its suppliers, which will be of benefit to its cashflow.

## Comments on definition

**It can be difficult to calculate this ratio in the real world because companies do not disclose their purchases figure.**

In some cases it will be reasonable to assume that all purchases involve some form of credit and so use total purchases (*ie* inventory used plus increase in stock over the year) instead.

**It is possible to obtain a crude estimate of the period by using cost of sales as a surrogate for purchases.**

Another commonly used variation is to use sales revenue as the denominator. This results in sales revenue potentially being used as the denominator in each of the three efficiency ratios, even though it is not the ideal choice for any of the three when other figures are available.




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**Question**


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- (i) Calculate the following for Cover-up Ltd:
- net asset value per share
  - current ratio
  - quick ratio
  - inventory turnover period
  - profit margin
  - return on capital employed
  - trade receivables turnover period (assume 80% of the sales are for credit)
  - trade payables turnover period (assume all purchases are for credit).
- (ii) Interpret each of the figures for each ratio.

---

**Solution**


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- (i)(a) net asset value per share:

$$\text{NAV per share (using £000)} = \frac{70,000 - 20,000}{160,000} = 31p$$

(i)(b) current ratio =  $\frac{116,000}{41,000} = 2.8$

(i)(c) quick ratio =  $\frac{116,000 - 42,000}{41,000} = 1.8$

(i)(d) inventory turnover period =  $\frac{42,000}{132,000} \times 365 = 116$  days

(i)(e) profit margin =  $\frac{35,000}{250,000} = 14\%$

(i)(f) return on capital employed =  $\frac{35,000}{170,000} = 20.6\%$

(i)(g) trade receivables turnover period =  $\frac{60,000}{0.8 \times 250,000} \times 365 = 110$  days

(i)(h) trade payables turnover period =  $\frac{32,000}{95,000} \times 365 = 123$  days

- (ii)(a) This could be compared with the share price, to determine whether investment in Cover-up seems good value.
- (ii)(b) The current ratio gives an estimate of the company's liquidity. It compares money due to be received soon with money due to be paid soon. The figure of 2.8 indicates that Cover-up is able to cover its short-term debt.
- (ii)(c) The quick ratio also gives a measure of liquidity. It uses only the cash or near-cash items in the statement of financial position (as stocks may take a while to sell). A ratio of 1.8 indicates that the company is solvent in the short term.
- (ii)(d) The inventory turnover period shows how quickly the company is selling its output. The figure indicates that the company is turning over its inventory every 116 days *ie* approximately every four months.
- (ii)(e) The profit margin looks at profits per unit of sales. The figure of 14% can be compared with other firms in the same industry.
- (ii)(f) Return on capital employed represents how efficiently the firm's capital is being used to make profits. It can be compared with the opportunity cost of the capital, and also with other firms in the same industry. A ROCE of 20.6% would seem to cover the cost of capital.
- (ii)(g) The trade receivables turnover period indicates the number of days credit that is extended to customers who request payment on credit. The ratio of 110 days is quite high, indicating that the company is not operating its credit control function effectively.
- (ii)(h) The trade payables turnover period is also quite high at 123 days. Cover-up may have been able to negotiate good credit terms from its suppliers.

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A typical long (20-mark) examination question might give accounting information for two companies or for one company for two years and require an evaluation of the relative performance of the company (or companies) with the help of ratio analysis. Remember to *comment* on the ratios as well as *calculate* them!



## Chapter 14 Summary

### Ratios involving debt

$$\text{Interest cover} = \frac{\text{profit on ordinary activities before interest and taxation}}{\text{annual interest payments due on that issue of loan stock + all prior loan stock}}$$

*Interest priority percentages* show the slice of profit on ordinary activities before interest and tax which covers the annual interest payments due on each issue of loan capital.

$$\text{Asset cover} = \frac{\text{total assets less current liabilities less intangible assets}}{\text{loan capital plus prior ranking debt}}$$

*Asset priority percentages* show the slice of total assets less current liabilities less intangible assets which is available to cover the nominal value of each issue of loan capital.

$$\text{Asset gearing} = \frac{\text{borrowings}}{\text{equity}} \text{ or } \frac{\text{borrowings}}{\text{borrowings + equity}}$$

$$\text{Shareholders' equity ratio} = \frac{\text{shareholders' equity} - \text{intangibles}}{\text{total assets} - \text{current liabilities} - \text{intangibles}}$$

$$\text{Income gearing} = \frac{\text{interest on borrowings}}{\text{profit on ordinary activities before interest and tax}}$$

### Ratios involving share information

$$\text{Earnings per share} = \frac{\text{earnings on ordinary activities}}{\text{number of issued ordinary shares}}$$

$$\text{Price earnings ratio} = \frac{\text{market price of an ordinary share}}{\text{earnings per share}}$$

$$\text{Dividend yield} = \frac{\text{dividends per share}}{\text{market price of an ordinary share}}$$

$$\text{Dividend cover} = \frac{\text{earnings per share}}{\text{dividends per share}}$$

$$\text{Payout ratio} = \frac{\text{dividends per share}}{\text{earnings per share}} = \frac{1}{\text{dividend cover}}$$

$$\text{Net asset value per share} = \frac{\text{ordinary shareholders' equity} - \text{intangible assets}}{\text{number of issued ordinary shares}}$$

### Profitability ratios

$$\text{Return on capital employed} = \frac{\text{profit before tax and interest}}{\text{share capital} + \text{reserves} + \text{long-term debt}}$$

$$\text{Asset utilisation ratio} = \frac{\text{revenue (turnover)}}{\text{share capital} + \text{reserves} + \text{long-term debt}}$$

$$\text{Profit margin} = \frac{\text{profit before tax and interest}}{\text{revenue (turnover)}}$$

$$\text{Gross profit margin} = \frac{\text{gross profit}}{\text{revenue (turnover)}}$$

### Liquidity ratios

$$\text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

$$\text{Quick ratio} = \frac{\text{current assets} - \text{inventories}}{\text{current liabilities}}$$

### Efficiency ratios

$$\text{Inventory turnover period} = \frac{\text{inventories}}{\text{cost of sales}} \times 365 \text{ or } \frac{\text{inventories}}{\text{revenue}} \times 365$$

$$\text{Trade receivables turnover period} = \frac{\text{trade receivables}}{\text{creditsales}} \times 365$$

$$\text{Payables turnover period} = \frac{\text{payables}}{\text{credit purchases}} \times 365$$

For monthly accounts, replace '×365' by '×365/12'.



## Chapter 14 Practice Questions

Exam style

All of the questions that follow are exam style.

The next three questions are based on the following figures from ABC Ltd's accounts. Unless stated otherwise the figures are as at the end of the financial year:

	£ 000
Sales	200
Inventories at the beginning of the year	30
Inventories at the end of the year	20
Purchases	130
Administrative expenses	15
Trade receivables	40
Prepayments	3
Cash	17
Bank overdraft	12
Trade payables	10
Accruals	2

ABC Ltd has issued 200,000 50p ordinary shares. During the year, it paid a dividend of 4.5p.

14.1 The average inventory turnover period of ABC Ltd in days is:

- A 36 days
  - B 46 days
  - C 65 days
  - D 78 days
- [2]

14.2 ABC Ltd's current ratio is:

- A 2.5 : 1
  - B 3.3 : 1
  - C 3.5 : 1
  - D 4.0 : 1
- [2]

14.3 ABC Ltd's dividend cover (ignoring taxation) is:

- A 2.5 times
  - B 3.1 times
  - C 5.0 times
  - D 6.7 times
- [2]

14.4 Which of the following would NOT explain why the PE ratio of a particular company may stand above the average PE ratio of other companies?

- A the company's shares are overvalued
- B earnings are perceived to be relatively risky
- C historical earnings are unusually low
- D potential earnings growth is very high [2]

The next three questions refer to PRP Ltd. The following details were extracted from the company's accounting records:

Pre-tax profit	57,000
Tax paid	1,200
Depreciation	2,100
Inventories held at the beginning of the year	42,100
Inventories held at the end of the year	46,500
12% Loan stock	15,000
Revenue	103,250
Share capital and reserves	425,000
Non-current assets	55,000

14.5 PRP's return on capital employed was:

- A 12.68%
- B 12.95%
- C 13.36%
- D 13.84% [2]

14.6 Relative to its revenue, PRP's average inventory turnover period was:

- A 149 days
- B 154 days
- C 157 days
- D 160 days [2]

14.7 The figure for 'net cash generated from operating activities' shown in PRP's cashflow statement was:

- A £51,700
- B £53,500
- C £56,500
- D £58,800 [2]

- 14.8 Shown below is the statement of financial position for 31 December 20X4 of Kwaint Kitchens, a chain of cookshops.

*Statement of financial position for Kwaint Kountry Kitchens for 31 December 20X4*

	£
<b>ASSETS</b>	
<b>Non-current assets</b>	
Land and buildings	800,000
<b>Current assets</b>	
Inventories	425,000
Cash	125,000
Trade receivables	<u>28,000</u>
	578,000
<b>Total assets</b>	<b>1,378,000</b>
<b>EQUITY AND LIABILITIES</b>	
Share capital (£1 par value)	700,000
Other reserves	200,000
Retained earnings	<u>225,500</u>
<b>Total equity</b>	<b>1,125,500</b>
<b>Non-current liabilities</b>	
12% Unsecured Loan Stock 20X9	150,000
<b>Current liabilities</b>	
Trade payables	51,000
Tax due	26,500
Overdraft	<u>25,000</u>
	102,500
<b>Total liabilities</b>	<b>252,500</b>
<b>Total equity and liabilities</b>	<b>1,378,000</b>

During 20X5, the following events occurred:

- In January, the company bought shares in *Calvin's Cookware* for a consideration of £400,000. This was financed by the issue of £200,000 nominal of 8% Convertible Unsecured Loan Stock 20X8, and £100,000 nominal of 10% Debentures 20X7. The loan stock were issued at par. The remaining £100,000 was paid for out of cash.
  - In January, the company also acquired the exclusive rights to sell the new '*Muesli Meadow*' design of kitchenware, for a price of £100,000. It proposes to show these rights as an asset in its statement of financial position, and to depreciate these rights by the straight line method over 10 years.
  - The company's operating profit for 20X4 was £243,000, on revenue of £1,215,000. Revenue increased by 3% in 20X5, and operating profit was £120,000. The company paid the interest on its loan stocks in full.
  - The company's total tax charge for 20X5 was £18,000. It paid tax of £32,000 during the year. The dividends it paid amounted to £32,000.
  - Inventories increased by £4,500 and trade receivables increased by £10,000. Trade payables increased by £17,000. The company reduced its overdraft by £15,000 and reduced its cash balance by £90,500.
  - The company's non-current assets consist of shops and land. The land was valued in 20X0 at £200,000 and is not subject to depreciation. The shops were purchased previously for £1 million and are being depreciated using the straight line method over 10 years.
- (i) Prepare the statement of financial position for 31 December 20X5. [9]
- (ii) Comment on the company's performance in terms of profitability, liquidity and efficiency during 20X4 and 20X5, using appropriate supporting ratios. [11]
- [Total 20]

14.9 Drummer plc is a manufacturing company. Extracts from Drummer plc's financial statements for 20Y1 and 20Y2 are shown below. Over 20Y2 there has been a restructuring of the distribution network and a large marketing initiative to increase sales. The sales director has reported that the project has been a great success overall and that sales have risen by 25%.

- (i) Discuss the sales director's conclusion, using appropriate supporting ratios. [16]
- (ii) Following the announcement of the 20Y2 financial results, the share price of Drummer Limited is 145p. A year before, the price was 141p. Briefly discuss the market's reaction to the company's performance. [4]

[Total 20]

**Drummer plc**

**Statement of profit or loss**

	20Y2	20Y1
	£000	£000
Revenue	56,000	45,000
Cost of sales	46,750	37,400
Gross profit	9,250	7,600
Expenses	6,200	4,700
Operating profit	3,050	2,900
Interest received	3	15
Interest payable	560	140
Profit before taxation	2,493	2,775
Taxation	748	833
Profit attributable to equity holders	1,745	1,942

A dividend of £486,000 was paid to ordinary shareholders during 20Y2 in respect of the 20Y1 financial year.

**Drummer plc**  
**Statements of financial position**

	31 Dec 20Y2		31 Dec 20Y1	
	£000	£000	£000	£000
<b>ASSETS</b>				
Non-current assets		30,250		24,000
Current assets				
Inventories	4,250		2,000	
Trade receivables	7,350		5,550	
Bank	-		600	
		<u>11,600</u>		<u>8,150</u>
<b>Total assets</b>		<b><u>41,850</u></b>		<b><u>32,150</u></b>
<b>EQUITY AND LIABILITIES</b>				
<b>Equity</b>				
Share capital (25p shares)		3,000		3,000
Reserves		<u>24,141</u>		<u>22,832</u>
<b>Total equity</b>		<b><u>27,141</u></b>		<b><u>25,832</u></b>
Non-current liabilities				
Long-term loan		8,000		2,000
Current liabilities				
Bank overdraft	25		-	
Trade payables	5,936		3,485	
Taxation	748		833	
		<u>6,709</u>		<u>4,318</u>
<b>Total liabilities</b>		<b><u>14,709</u></b>		<b><u>6,318</u></b>
<b>Total equity and liabilities</b>		<b><u>41,850</u></b>		<b><u>32,150</u></b>





## Chapter 14 Solutions

14.1 Answer = C

The question asks for the *average* inventory turnover period. This means that the value of inventories should be the average of the start and end year figures (*ie* 25)

The cost of sales = opening inventory + purchases – closing inventory = 30 + 130 – 20 = 140

The inventory turnover period in days is therefore:

$$= \frac{\text{inventories}}{\text{cost of sales}} = \frac{25}{140} \times 365 = 65 \text{ days}$$

14.2 Answer = B

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

In this case current assets consist of closing inventories, trade receivables, prepayments (*ie* payments made for goods that have not yet been received) and cash.

In this case current liabilities (*ie* creditors falling due within one year) consist of overdrafts, trade payables and accruals (expenses which have been incurred in the period but which will be paid for in a later period, *eg* gas bills).

$$\text{So, the current ratio is: } \frac{20 + 40 + 3 + 17}{12 + 10 + 2} = 3.33$$

14.3 Answer = C

$$\text{Dividend cover} = \frac{\text{earnings per share}}{\text{dividend per share}} = \frac{\text{profit after tax}}{\text{dividend per share}}$$

Profits are:

sales	200
cost of goods sold (as above)	(140)
administrative expenses	<u>(15)</u>
	<u>45</u>

$$\text{Dividend cover is therefore: } \frac{45}{200 \times 0.045} = 5$$

This ignores items on which we have no information. For example, production expenses (other than purchases), distribution expenses and interest paid/receivable as well as taxation.

14.4 Answer = B

B would lead to a low price and hence a low PE ratio.

14.5 Answer = C

Return on capital employed is :  $\frac{\text{profit before tax and interest}}{\text{long-term debt and equity}}$  or  $\frac{\text{profit before tax}}{\text{equity}}$

To find the figure for profit before tax and interest, we need to add the loan stock interest back onto the pre-tax profit.

The calculation is then  $\frac{57,000 + (15,000 \times 0.12)}{425,000 + 15,000} = 13.36\%$

The other definition of return on capital employed, *ie* profit before tax/ equity, is not offered as an option.

14.6 Answer = C

Average inventories =  $0.5 \times (42.1 + 46.5) = 44.3$

Average inventory turnover period using revenue as the denominator:

$$= \frac{\text{average inventories}}{\text{revenue}} \times 365 = \frac{44.3}{103.25} \times 365 = 157 \text{ days}$$

14.7 Answer = B

We want to find *net* cash generated from operations, which is:

Cash generated from operations  
*less* interest paid  
*less* tax paid

where cash generated from operations is:

operating profit  
*plus* depreciation  
*less* increase in working capital (inventories)

Operating profit (*ie* profit before interest paid) =  $57,000 + 0.12 \times 15,000 = 58,800$

So cash generated from operations is  $58,800 + 2,100 - (46,500 - 42,100) = 56,500$

and *net* cash generated from operating activities is  $56,500 - 1,800 - 1,200 = 53,500$

As pre-tax profit was given (*ie* after the deduction of interest), net cash generated from operating activities can be calculated as  $57,000 + 2,100 - 4,400 - 1,200 = 53,500$ .

14.8 (i) **Kwaint Kitchens**

In order to draw up the 31 December 20X5 statement of financial position, we first need to draft the income statement for 20X5:

Operating profit	120,000	
Interest on loan stock	<u>44,000</u>	$12\% \times 150,000 + 8\% \times 200,000 + 10\% \times 100,000$
Pre-tax profit	76,000	
Tax	<u>18,000</u>	
Profit for 20X5 attributable to equity holders	<u>58,000</u>	

[2]

During the year dividends totalling £32,000 were paid to ordinary shareholders.

We can now go ahead with the statement of financial position.

Non-current assets: the shops are being depreciated over a period of 10 years, *ie* at the rate of  $\frac{1,000,000}{10} = £100,000$  per year. Similarly, the trademark is also being depreciated over 10 years, at a rate of £10,000 per year.

[1]

**Statement of financial position for Kwaint Kitchens for 31 December 20X5**

ASSETS	£	
Non-current assets		
Land and buildings	700,000	800,000 – 100,000
Trademark	90,000	100,000 – 10,000
Investments	<u>400,000</u>	
	1,190,000	[1]
Current assets		
Inventories	429,500	425,000 + 4,500
Cash	34,500	125,000 – 90,500
Trade receivables	<u>38,000</u>	28,000 + 10,000
	502,000	[2]
Total assets	1,692,000	
EQUITY AND LIABILITIES		
Share capital (£1 par value)	700,000	
Other reserves	200,000	
Retained earnings	<u>251,500</u>	225,500+58,000-32,000
Total equity	1,151,500	[1]
Non-current liabilities		
8% Convertible unsecured loan 20X8	200,000	
10% Debenture 20X7	100,000	
12% Unsecured Loan Stock 20X9	<u>150,000</u>	
	450,000	
Current liabilities		
Trade payables	68,000	51,000 + 17,000
Tax due	12,500	26,500 – 32,000 + 18,000
Overdraft	<u>10,000</u>	25,000 – 15,000
	90,500	[2]
Total liabilities	540,500	
Total equity and liabilities	1,692,000	
		[Total 9]

(ii) **Company performance in 20X5****Profitability:**

To examine profitability, we will look at the return on capital employed and the profit margin. As we have the information from 20X4, we will compare the ratios for the two years.

$$\text{Profit margin 20X4: } \frac{\text{profit before tax and interest}}{\text{revenue}} = \frac{243,000}{1,215,000} = 20\%$$

$$\text{Profit margin 20X5: } \frac{120,000}{1,215,000 \times 1.03} = 9.6\% \quad [1]$$

$$\text{ROCE 20X4: } \frac{\text{profit before tax and interest}}{\text{long-term debt + equity}} = \frac{243,000}{1,275,000} = 19.1\%$$

$$\text{ROCE 20X5: } \frac{120,000}{1,601,500} = 7.5\% \quad [1]$$

**Comments:**

The profit margin has fallen from 20% to 9.6%. This is mostly because trading profit has halved over the year. We do not have any information to say why this has happened, but it is a matter that requires further investigation. [1]

The return on capital employed has fallen even further, from 19.1% to 7.5%. The fall in operating profits is exacerbated in this case by the increase in the capital employed (share capital and reserves plus debt). [1]

This increase comes from the new loan stocks which were issued in order to finance the purchase of the subsidiary. [1]

The new ROCE is lower than the cost of borrowing on the new debentures (10%), so investors in the company will be concerned that the money raised is not being used efficiently. [1]

**Efficiency:**

Inventory turnover period (in days, based on revenue as cost of sales is not available).

$$\text{20X4: } \frac{\text{inventories}}{\text{revenue}} \times 365 = \frac{425,000}{1,215,000} \times 365 = 128 \text{ days}$$

$$\text{20X5: } \frac{429,500}{1,251,450} \times 365 = 125 \text{ days} \quad [1]$$

Comments: This has remained reasonably constant over the two years, so there does not appear to be any improvement or deterioration in efficiency. However, we need to know the equivalent period for other firms in the same line of business, to see how *Kwaint Kitchens* compares. [1]

*Liquidity:*

$$\text{Current ratio 20X4: } \frac{\text{current assets}}{\text{current liabilities}} = \frac{578,000}{102,500} = 5.6$$

$$\text{Current ratio 20X5: } \frac{502,000}{90,500} = 5.5 \quad [1]$$

$$\text{Quick ratio 20X4: } \frac{\text{current assets} - \text{inventories}}{\text{current liabilities}} = \frac{153,000}{102,500} = 1.49$$

$$\text{Quick ratio 20X5: } \frac{72,500}{90,500} = 0.80 \quad [1]$$

Comments: Both the current ratio and the quick ratio have decreased over the year. The current ratio was at 5.6, and has dropped slightly to 5.5. [1]

At first glance these look like high figures for this ratio, but we would need to compare with other firms in the same industry to make a judgement about this. [1]

The quick ratio has fallen from 1.49 to 0.80. This indicates that if the company were required to settle its short-term debts in a hurry, it would not be able to do so. [1]

Investors in the company may be concerned about this. The company would need to check its banking facilities – whether it would be able to increase its overdraft to cover a ‘cash crisis’. [1]

The reduction in the quick ratio is largely due to the cash cost of acquiring the trademark and the holding in the subsidiary, but may be temporary if these assets generate cash in the future. [1]

The difference between the current ratio and the quick ratio highlights the fact that the company holds a large quantity of inventory. Indeed, in 20X5, over 85% of its current assets were in the form of unsold inventory. [1]

Investors in the company might question whether the company needs to change (a) its policy on buying inventory and (b) its pricing policy, in order to reduce this high level of inventory. [1]

However, in order to make a more informed comment, we would need to look at the levels of inventory held by similar companies. [1]

[Maximum 11]

14.9 (i) **Analysis of Drummer plc's performance***Profitability*

Return on capital employed (ROCE) =  $\frac{\text{profit before interest and tax}}{\text{share capital} + \text{reserves} + \text{debt}}$

$$20Y2 \text{ figures: } \frac{3,053}{27,141 + 8,000} = 8.7\% \quad 20Y1 \text{ figures: } \frac{2,915}{25,832 + 2,000} = 10.5\%$$

Profit margin =  $\frac{\text{profit before tax and interest}}{\text{revenue}}$

$$20Y2 \text{ figures: } \frac{3,053}{56,000} = 5.5\% \quad 20Y1 \text{ figures: } \frac{2,915}{45,000} = 6.5\%$$

Asset utilisation ratio =  $\frac{\text{revenue}}{\text{share capital} + \text{reserves} + \text{debt}}$

$$20Y2 \text{ figures: } \frac{56,000}{27,141 + 8,000} = 1.59 \quad 20Y1 \text{ figures: } \frac{45,000}{25,832 + 2,000} = 1.62$$

Gross profit margin =  $\frac{\text{gross profit}}{\text{revenue}}$

$$20Y2 \text{ figures: } \frac{9,250}{56,000} = 16.5\% \quad 20Y1 \text{ figures: } \frac{7,600}{45,000} = 6.9\%$$

[3 for ratios]

*Comments on profitability*

Return on capital employed (ROCE) has fallen from 10.5% to 8.7%. The very small additional profit in 20Y2 is not sufficient to offset the impact of the higher capital employed coming from the increased borrowing. [1]

The fall in the ROCE can be examined by looking at its two components: the profit margin and the asset utilisation ratio, the first showing the profit generated by sales, and the second, the sales generated by the assets. [1]

Although gross profit and profit have risen as a result of the increased sales volumes, both the gross profit margin and the profit margin have fallen in 20Y2. This is because the cost of sales and, in particular, expenses have risen proportionately more than sales. [1]

The asset utilisation ratio has fallen very slightly, suggesting that the company is generating slightly less revenue per £ of assets. Although sales revenue has risen by 24%, capital employed has risen by 26%. [1]

*Liquidity ratios*

$$\text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

$$\text{20Y2 figures: } \frac{11,600}{6,709} = 1.73 \times \quad \text{20Y1 figures: } \frac{8,150}{4,318} = 1.89 \times$$

$$\text{Quick ratio} = \frac{\text{current assets} - \text{inventories}}{\text{current liabilities}}$$

$$\text{20Y2 figures: } \frac{11,600 - 4,250}{6,709} = 1.10 \times \quad \text{20Y1 figures: } \frac{8,150 - 2,000}{4,318} = 1.42 \times$$

[2 for ratios]

*Comments on liquidity:*

Both the current and quick ratio have fallen over 20Y2. The current ratio looks a little on the low side (against a benchmark of 2), but the quick ratio still looks reasonable (vs a benchmark of 1). [1]

The cash balance has fallen from £600,000 to £25,000 overdrawn, suggesting some cashflow problems have arisen with the increased sales volumes. This may be a concern if the situation continues to deteriorate. [1]

*Efficiency ratios*

$$\text{Inventory turnover (1)} = \frac{\text{inventories}}{\text{cost of sales}} \times 365$$

$$\text{20Y2 figures: } \frac{4,250}{46,750} \times 365 \text{ days} = 33 \text{ days} \quad \text{20Y1 figures: } \frac{2,000}{37,400} \times 365 \text{ days} = 20 \text{ days}$$

$$\text{Inventory turnover (2)} = \frac{\text{inventories}}{\text{revenue}} \times 365$$

$$\text{20Y2 figures: } \frac{4,250}{56,000} \times 365 \text{ days} = 28 \text{ days} \quad \text{20Y1 figures: } \frac{2,000}{45,000} \times 365 \text{ days} = 16 \text{ days}$$

$$\text{Receivables turnover} = \frac{\text{trade receivables}}{\text{revenue}} \times 365$$

$$\text{20Y2 figures: } \frac{7,350}{56,000} \times 365 \text{ days} = 48 \text{ days} \quad \text{20Y1 figures: } \frac{5,550}{45,000} \times 365 \text{ days} = 45 \text{ days}$$

[2 for ratios]

*Comments on efficiency*

Both the efficiency ratios have worsened in 20Y2, in particular inventory turnover. This suggests that as the size of the business has grown, the existing systems and processes are not working so well. This might explain part of the drop in profitability. [1]



*Gearing*

$$\text{Asset gearing} = \frac{\text{debt}}{\text{debt} + \text{share capital} + \text{reserves}}$$

$$20Y2 \text{ figures: } \frac{8,000}{8,000 + 27,141} = 23\% \quad 20Y1 \text{ figures: } \frac{2,000}{2,000 + 25,832} = 7\%$$

$$\text{Interest cover} = \frac{\text{profit before tax and interest}}{\text{interest payments}}$$

$$20Y2 \text{ figures: } \frac{3,050 + 3}{560} = 5.5 \times \quad 20Y1 \text{ figures: } \frac{2,900 + 15}{140} = 20.8 \times$$

[2 for ratios]

*Comments on gearing*

Both asset and gearing have increased as a result of the higher level of debt. However the gearing is still within reasonable limits. [1]

*Overall comment*

Sales have indeed increased by almost 25%. However, the increase in sales has reduced the overall profitability of the company and caused potential cashflow problems. [1]

More expense control is needed to return the ROCE to its 20Y1 levels. [1]

[Maximum 16]

(ii) **Market reaction**

$$\text{Earnings per share (EPS)} = \frac{\text{earnings}}{\text{number of ordinary shares}}$$

$$20Y2 \text{ figures: } \frac{1,745}{(3,000 / 0.25)} = 14.5p \quad 20Y1 \text{ figures: } \frac{1,942}{(3,000 / 0.25)} = 16.2p$$

[1]

$$\text{Price earnings (PE) ratio} = \frac{\text{share price}}{\text{earnings per share}}$$

$$20Y2 \text{ figures: } \frac{145}{14.5} = 10 \times \quad 20Y1 \text{ figures: } \frac{141}{16.2} = 8.7 \times$$

[1]

Over 20Y2, earnings per share have fallen from 16.2p to 14.5p, but the price has actually risen from 141p to 145p. This corresponds to an increase in the PE ratio from 8.7 to 10.0. [1]

This suggests that the share is rated more highly than a year ago, . This may be because investors believe that sales growth may continue and/or the management will bring the profitability back up. [1 for reasonable comment]

[Total 4]

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# 15

## Limitations of accounts and alternative reporting

### Syllabus objectives

- 4.1 Describe the basic construction of accounts of different types and the role and principal features of the accounts of a company.
  2. Explain the value of financial reporting on environmental, social and economic sustainability.
  3. Describe alternatives to traditional financial reporting.
- 4.2 Assess the accounts of a company or a group of companies and discuss the limitations of such assessment.
  7. Discuss the shortcomings of historical cost accounting.
  8. Discuss the limitations in the interpretation of company accounts.
  9. Discuss the ways that reported figures can be manipulated to create a false impression of a company's financial position.

## 0 Introduction

In the previous chapter, we learned how to interpret accounts with the help of accounting ratios. In this chapter we consider some of the difficulties of using and interpreting accounting information.

We also look at some more recent alternatives to the financial reports and accounts we have been considering up until this point.

# 1 The shortcomings of historical cost accounting

Historical cost accounting tends to distort profits during times of inflation.

## 1.1 Valuation of inventories

**Increase in inventory values: the time lag between the purchase of an item of inventory and its eventual sale means that companies are constantly understating costs of sales. If, for example, an item is purchased for £1 and sold for £1.50 the company will record a profit of £0.50. If, however, the cost of replacing that item of inventory has increased to £1.30 then the 'real' profit on the transaction is only £0.20. This will tend to overstate profits.**

Looked at another way, part of the cost of selling a good is the reduction in the remaining inventories. This reduction will be calculated on a historical cost basis – understating the true cost of replacing the item used up *ie* profits will be overstated.

## 1.2 Depreciation

**The depreciation charge will be calculated using the historical cost of the assets. This will tend to overstate profits.**

If inflation is positive, straight line depreciation over the useful life of a machine purchased, say, seven years ago will be less than on an identical machine purchased, say, two years ago. The difference will be particularly significant when inflation is high. In both cases the amount charged will be less than 10% of the cost of replacing the asset today.

## 1.3 Interest payments

**A company may receive interest on its investments, and pay interest on its loan capital. In times of inflation, part of the interest payment is really compensation for the erosion of the real value of capital.**

**For a company that pays out more interest than it receives, profits will tend to be understated in times of high inflation.**

For a company that pays out less interest than it receives, profits will tend to be overstated in times of high inflation.

In inflationary times, the real value of a loan with fixed payments decreases, so the borrower pays back less in real terms. Therefore the borrower gains and the lender loses in inflationary times.

## 1.4 Consistency over time

**Profits and asset values might be increasing in money terms, but it would not be immediately obvious how much was due to a real increase in the scale of a company's operations and how much was simply due to inflation.**

**Comparison between years is therefore difficult when using historical cost accounts because inflation will affect different figures in the financial statements in a different way.**

This sort of criticism applies to many items where values have to be compared over time.

## 2 Limitations in the interpretation of accounts

The limitations of accounts will, in part, depend upon the way that the accounts are to be used.

Almost every number in a set of accounts may be suspect in some respect. We will discuss the main limitations under the following (to an extent overlapping) subheadings:

- subjectivity – whether the numbers are correct
- appropriateness – whether the numbers are ‘correct’ for their purpose
- comparison between firms
- some limitations of ratio analysis
- accuracy of figures.

### 2.1 Subjectivity

**Although regulations give a lot of guidance as to what are acceptable accounting principles, firms still use a range of different methods to arrive at the figures to put in their accounts. For example:**

#### Inventory valuation

**Inventory can be valued in a number of ways, eg first-in-first-out or weighted average.**

It seems unlikely that every firm chooses the ‘best’ method of valuing their stock. The choice of methods for valuing inventories an example of the subjective decisions required when constructing accounts.

#### Depreciation

**Firms have a large choice as to the depreciation method used. Any method will at best approximate the true pattern of the reduction in the value of a firm’s non-current assets.**

#### Revaluation of assets

**Some firms revalue their assets when the asset values increase, others do not.**

Again this is an area where there is scope for judgement, and so subjectivity.

In the UK, the directors’ report does have to disclose the market value of land if this differs significantly from the balance sheet value.

**Arguably firms that do not revalue assets are showing the wrong figure.**

On the other hand, companies can claim that according to the concept of prudence, they should only take account of any revaluation when the asset is sold, so again there is subjectivity.

#### Intangible assets

**Intangible assets are often particularly hard to value.**

A great deal of subjectivity is involved in putting a value on a brand name, for example. Many companies don't even try to value intangible assets.

## 2.2 Appropriateness of the figures used

**The figures presented in the accounts may not be the most appropriate for the purposes of a user of the accounts.**

### Going concern

**The value of many assets would be much lower on a wind-up basis than on the on-going basis usually assumed.**

It is not appropriate to prepare the accounts on a going concern basis if the company is in serious financial trouble.

### Present values

**The amounts shown for trade receivables and payables (debtors and creditors) are their face values, not their true present values.**

This may not be appropriate if the company will not be paid for some time or interest rates are very high.

### Depreciated cost not economic value

**Non-current (fixed) assets are shown at their (depreciated) historical cost. Arguably, the value to a firm of an asset should be the (discounted) value of the *future* profit stream that the asset is expected to produce.**

### Accuracy

**Giving a true and fair view does not mean that the accounts are absolutely accurate. Many items in the accounts will be estimated.**

### End-year values

**The statement of financial position shows end of year values, but for many purposes it is more meaningful to use average values.**

For example, average values may be more appropriate when looking at the level of inventory a firm holds.

## 2.3 Differences between firms

**Many users of accounts wish to compare different firms:**

### Comparability

**Many of the problems above are worrying not just because the figures may be wrong, but also different firms use different methods. This makes reliable comparisons between firms very difficult.**

## **Creative accounting**

**A few firms may deliberately set out to mislead by choosing the accounting policies that will maximise reported profits.**

## **Formats**

**The choice of accounting formats can mean that different firms can produce sets of accounts which are difficult to compare.**

## **Level of aggregation**

**Some firms show more detailed splits of items than other firms.**

For example, one firm might give a detailed split of profits by country and by industry sector, where another simply gives the overall profit figure.

**When making comparisons between firms, the least disaggregated item across all firms will be the lowest level at which the accounts can be analysed.**

## **2.4 Some limitations of ratio analysis**

**Ratio analysis is a very useful technique for the interpretation of financial statements. It does, however, have its limitations. Some of these are outlined below:**

### **Diverts attention**

**It diverts attention from the figures and statements themselves.**

**It is important to look at aspects such as the sheer size of the company under consideration. A larger company will have more bargaining power and may be able to enjoy economies of scale.**

**It is also important to look at information in the notes which is not usually reflected in the ratios. If someone is suing the company for damages this will be disclosed in a note stating the amount claimed and possibly giving an indication of the expected outcome. There will not be any mention of the matter in the statement of financial position itself.**

### **Appropriate comparison**

**Comparisons can be affected by different accounting policies or by other external factors.**

**If, for example, two haulage companies use different methods for the calculation of depreciation then any ratios based on their financial statements might not be comparable.**

**Similarly, two similar businesses could be affected to different extents by currency movements. A vehicle distributor selling Japanese cars will be exposed to movements in the value of Yen to a much greater extent than a distributor of British cars.**



## Different industries

There could be peculiarities of the trade which make it difficult to interpret certain ratios.

A property company, say, might appear to have a very low return on capital employed. One reason for this is that the value of the properties shown in the statement of financial position will be updated on a regular basis, thus increasing capital employed. This will make it difficult to compare results with a business whose assets have not been revalued.

## Creative accounting

The statements could have been deliberately distorted by so called creative accounting. This involves the deliberate abuse of the subjectivity inherent in accounting to select accounting policies or make assumptions which tend to bias the figures in the direction chosen by management.

## 2.5 Accuracy of the figures

### Out of date

The figures reported will necessarily be out of date by the time they come to be published and read.

### Window dressing

Some firms have been known to delay transactions so that they occur just after the year end, or to advance other transactions so that they are included in the end-year accounts.

This then means that the company's accounts can give an accurate view of the underlying figures, yet still mislead when compared with other firms or over different periods.

### Forecasting

The accounts are intended primarily as a historical record. However, in practice they are not used solely for reviewing past performance.

**Accounts are widely used as a means of predicting the future.**

But past performance is unlikely to be an accurate guide to the future.

**Interpreting accounts for this purpose is full of problems. For example:**

- no indication is given of the firm's plans for the future
- no real idea is given of how sustainable the existing profit figures are.

### 3 Manipulation of reported figures

Accounting methods can be used to enhance the image of a firm and make it look better than it is. Such practice will make the current reported profitability a poor indicator of future profitability.

The manipulation may involve

- ***inflating* current operating income (via an increase in booked sales or a decrease in expenses) or**
- ***reducing* current operating income (in order to increase future earnings).**

The latter may be encouraged by the use of executive incentives linked to future performance.

In theory, one of the reasons why the audit process is in place is to prevent such manipulation occurring.

However, given the level of subjectivity permitted in accounts, sometimes manipulation of figures can take place whilst still complying with accounting policies and standards.

**Accounting practices that can lead to such misstatements include:**

- **inappropriate depreciation of tangible assets**
- **inappropriate amortisation of intangible assets**
- **inappropriate valuation of inventories**
- **inappropriate valuation of future liabilities (including pension provisions)**
- **unwarranted revaluation of tangible assets**
- **creating intangible assets of questionable true worth**
- **omitting contingent liabilities**
- **'prebooking' of anticipated sales revenues.**

Scrutiny of the trends shown by items in the accounts may assist to identify manipulation, as will consideration of the status of the company (and, therefore, the need to manipulate the reported financial position).

**It must be stressed that such manipulation of reported figures may be illegal and certainly would be contrary to the professional standards expected of accountants and auditors.**



#### Question

Comment on the following statement:

'The use of company accounts in investment decision making is fundamentally flawed.

In particular, the market value of the company's assets may bear no relationship to the historical balance sheet values.

Therefore there is little useful information to be gained from either the accounts or the ratios derived from them.'

---

## Solution

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### *Historical cost accounting vs market value*

The statement is correct in that company accounts are prepared on a historical cost basis, and so take no account of inflation. Companies may from time to time revalue their assets, and show the new values in their balance sheets, but they are not usually obliged to do so. Similarly, companies' depreciation charges will be based on the historical cost of their assets. These charges are likely to underestimate the true cost of using non-current assets.

### *Useful information from the accounts*

However, company accounts contain (at least) the following items:

- statement of financial position
- statement of comprehensive income
- cashflow statement
- directors' report
- auditors' report.

Each of these items can be useful in generating a picture of the company.

### *Useful information from accounting ratios*

Accounting ratios are useful for making comparisons:

- of the company over time
- with other companies.

Because of the variations in accounts from one company to another, ratios cannot be expected to give definitive answers. They do, however, give valuable indicators as to aspects which may need further investigation.

Finally, it is worth asking whether there is any better source of quantitative information, however imperfect the accounts may be.

---

An exam question on the limitations of accounts might be asked at the end of a long ratio analysis question. Here, the subjectivity in the accounts, the difficulties of making comparisons between companies, and the important matters that are not revealed in the accounts may need to be discussed.

Exam questions may also ask for a discussion of the potential for producing misleading accounts, along with the regulatory, legal and ethical issues that would serve to safeguard the accounts.

## 4 Reporting on environmental, social and economic sustainability

The accounts and reports we have considered up until this point have been *financial* reports, focused on profitability, capital, liquidity and associated financial measures. Financial reporting is long-established.

More recent developments are *sustainability* reporting and *integrated* reporting (*ie* taking a holistic view of both financial and non-financial aspects of a company's performance in reporting).

### 4.1 Sustainability reporting

#### Description

Most definitions of *sustainability* are based on the following definition used in the 1987 Brundtland Report by the UN:

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

This definition recognises the interdependence of economic, social and environmental factors, and the importance of intergenerational timescales.



Sustainability reporting enables organisations to measure, understand and communicate the economic, social and environmental effects of their activities. A sustainability report also presents the organisation's goals, values and model of governance.

A sustainability report can be produced:

- as a non-financial report (other reports under this category would include corporate responsibility reports, environmental reports, social reports and strategic reports), or
- as an intrinsic element of integrated reporting, a more recent development that combines the analysis of financial and non-financial performance. (See Section 4.2 for more details.)

There is a wide variety of potential content for a sustainability report. Exactly which aspects are relevant varies between companies. Some examples of aspects that might be reported on are:

- environmental *eg* energy supplies, water supplies, emissions, effluents and waste disposal
- social *eg* workforce health and safety, workforce diversity, workforce training, product marketing and labelling, customer privacy
- economic *eg* procurement policies, anti-corruption, anti-competitive behaviour.

## Advantages and disadvantages of sustainability reporting

Sustainability reporting is advocated because it:

- **compels organisations to recognise that actions taken now have implications for the future**
- **helps organisations to consider and communicate their sustainability vision and strategy in the context of their overall goals**
- **recognises the variety of stakeholders that are involved in the organisation and encourages businesses to consider the overall public interest in the decision-making process**
- **demands greater transparency, which then enables and empowers businesses, governments, consumers and citizens to make informed decisions.**

The major contributor to the development of international standards is the Global Reporting Initiative (GRI), an international independent organisation, which provides the world's most widely used standards on sustainability reporting.

Its guidelines, first reported in 2000, are broken down into three categories

- **economic**
- **social**
- **environmental**

with various 'aspects' under each category.

For example, under the environmental category, different aspects are related to emissions; water; and effluents and waste.

Some companies have been producing sustainability reports for many years – in fact, according to the Global Reporting Initiative 2017, 92% of the world's largest 250 corporations currently report on their sustainability performance. Companies do so because it:

- **enhances the company's image and reputation**
- **attracts and retains employees**
- **encourages stakeholder involvement**
- **creates competition within the industry.**

However, there are many potential problems of sustainability reporting, including:

- **The difficulties of measurement and projection, eg estimating the effect of water pollution and projecting these effects into the future.**
- **There is a danger that companies report the good news and hide the bad. Such behaviour leads to a lack of credibility in the reports.**

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### Question

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Suggest ways in which the potential problem of companies reporting only good news may be addressed.

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## Solution

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Possibilities include:

- companies reporting comparisons with any external benchmarks or industry standards, not just their own internal performance measures
  - consistency over time in what information companies report
  - companies always including areas requiring improvement in their reports.
- 

**The accountancy profession believes that, although sustainability reporting is challenging, it is a challenge that provides opportunities to develop the strengths of the profession in an important area.**

## 4.2 Alternatives to traditional financial reporting

**There are two main alternatives: non-financial reporting and integrated reporting.**

Non-financial reporting developed first. Non-financial reports are supplementary to existing financial reports. Integrated reporting is a more recent development and aims to combine financial and non-financial aspects.

### Non-financial reporting

**Non-financial reports, such as sustainability reports, are sometimes required in addition to financial statements.**

**There is an increasing trend for companies to produce such additional voluntary reports relating to matters of significant public interest. For example:**

- **in the UK, companies are now required by law to publish a directors' report and a strategic report**
- **international accounting standards offer guidance on the preparation of a management discussion and analysis (MDA) report.**

**Currently the UK strategic report requires companies to explain their strategic plans, business models and the main business risks they face, as well as provide information on policies and practices on prescribed matters, such as the environment and employment.**

### Integrated reporting

**The aim of integrated reporting is to communicate a rounded picture of an organisation's performance and prospects, so in an integrated report, the organisation needs to present not only its financial numbers but to place those numbers in a more holistic context.**

**As the name suggests, integrated reporting is not about financial reporting supplemented by non-financial reporting; it aims to produce a snapshot of the company that reflects how the company is affected by and manages the full range of influences on its performance and prospects.**

**The report will therefore cover issues such as:**

- **stakeholder relationships**
- **quality of governance**
- **use of natural resources**
- **quality of risk management.**

**In this holistic picture, the financials are still an important element but they are not the sole measure of performance.**

A holistic picture of a company is one that tries to capture the whole of a company's impacts, both financial and non-financial rather than seeing it as a series of unconnected parts.

As well as financial capital, a company's integrated report will evaluate other areas too, eg human capital, social capital, intellectual capital.

Performing well against non-financial measures may also help a company to ultimately improve its financial performance.

**Integrated reporting is being led by the International Integrated Reporting Council (IIRC). Its mission is to establish integrated reporting and thinking within mainstream business practice as the norm.**

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.



## Chapter 15 Summary

### Limitations of accounts

#### *Historical cost accounting*

- Time lag between purchase and sale means firms underestimate their cost of sales.
- Depreciation charges calculated using historical cost tend to overstate profits.
- For a company that pays more (less) interest than it receives, profits will be under (over)stated in times of high inflation.
- Comparison between years is difficult because inflation will affect different figures in the accounts in different ways.

#### *Subjectivity*

- Inventories can be valued in a number of ways.
- There is a wide choice of methods of calculating depreciation.
- Some firms revalue their non-current assets periodically; others do not.
- Intangible assets may or may not be included in a company's accounts and their true value is difficult to determine.

#### *Appropriateness of the figures*

- Whether the assets are valued on a going-concern or a wind-up basis.
- The amounts shown for trade receivables and payables are their face values, not their true present values.
- Whether the assets should be shown at historical cost or at their long-term economic value to the company.
- Some items in the accounts will be estimated.
- Average values are more appropriate than end-year values for some purposes.

#### *Comparisons between firms*

- It is difficult to compare between firms when they use different calculation methods.
- Creative accounting may be a problem with some firms.
- Choice of accounting formats makes it difficult to compare companies' accounts.
- Different companies will show different levels of detail.

*Ratio analysis*

- Diverts attention from the figures and statements themselves.
- Comparisons can be affected by policies or other external factors.
- May be peculiarities of the industry which make it difficult to interpret certain ratios.
- Statements could have been deliberately distorted by creative accounting.

*Accuracy of figures*

- The figures in the accounts will be out of date by the time they are published.
- Firms can delay or advance transactions to 'window dress' the accounts.
- Accounts are often used for forecasting even though are an historical record.

*Manipulation*

Accounting practices that can lead to manipulation include:

- inappropriate depreciation of tangible assets
- inappropriate amortisation of intangible assets
- inappropriate valuation of inventories
- inappropriate valuation of future liabilities (including pension provisions)
- unwarranted revaluation of tangible assets
- creating intangible assets of questionable true worth
- omitting contingent liabilities
- 'prebooking' of anticipated sales revenues.

**Alternatives to financial reporting**

*Sustainability reporting* enables organisations to measure, understand and communicate the economic, social and environmental effects of their activities. A sustainability report also presents the organisation's goals, values and model of governance.

It is advocated because it:

- compels organisations to recognise that current actions have implications for the future`
- helps organisations to communicate their sustainability vision and strategy
- recognises the variety of stakeholders involved and encourages businesses to consider the overall public interest in the decision-making process
- demands greater transparency, enabling informed decisions.

Potential problems include difficulties of measurement and projection and that companies may report only good news and hide the bad.

Non-financial reports, such as sustainability reports, are sometimes in addition to financial statements. An alternative approach is 'integrated reporting'.



## Chapter 15 Practice Questions

Exam style

*All of the questions that follow are exam style.*

- 15.1 Which of the following is NOT a category in the Global Reporting Initiative (GRI) international standards on sustainability reporting?
- A economic
  - B social
  - C environmental
  - D governance. [2]
- 15.2 Explain the main weaknesses of historical cost accounts in times of high inflation. [5]
- 15.3 Discuss the main limitations of ratio analysis. [5]
- 15.4 Explain why the net asset value per share ratio and the current ratio might be misleading or meaningless as far as shareholders are concerned. [5]
- 15.5 Explain why the profit margin ratio and the return on capital employed ratio might be misleading or meaningless as far as shareholders are concerned. [5]

The solutions start on the next page so that you can separate the questions and solutions.



## Chapter 15 Solutions

15.1 Answer = D

15.2 The main weaknesses of historical cost accounts in times of high inflation are:

- The cost of sales is underestimated and therefore profit is overstated. [1]
  - If, for example, an item is purchased for £10 and sold for £15 the company will record a profit of £5. If, however, the cost of replacing that item of inventory has increased to £12 then the 'real' profit on the transaction is only £3. [1]
  - If depreciation is calculated using the historical cost of the assets, the depreciation charge will be inadequate and thus again, profit will be overstated. [1]
  - A company that pays out more interest than it receives will find that its profits will tend to be understated in times of high inflation because interest rates tend to be linked to the level of inflation. [1]
  - Accounting figures are not comparable between years, so profits and asset values might increase in money terms but it is not clear how much of the increase is a real increase and how much is simply due to inflation. [1]
- [Total 5]

15.3 The main limitations of ratio analysis are:

- It diverts attention from the figures themselves. The scale of the figures is lost when looking at ratios and scale is important when analysing a company's performance, *eg* a large company can benefit from economies of scale. [1]
  - Ratio analysis also diverts attention from the notes to the accounts. It is important to look at information in the notes to the accounts and the Directors' Report to gain a fuller view of the conditions in which the company is operating and its overall performance. [1]
  - Ratios are calculated from the figures in the financial statements and can therefore be affected by the accounting policies used to calculate the basic accounting figures. [1]
  - If, for example, two companies use different policies for depreciation or revaluation then any ratios based on their financial statements might not be comparable. [1]
  - The financial statements on which the ratios are based could have been deliberately distorted by so-called creative accounting. Management could select accounting policies and assumptions that tend to bias the figures. [1]
  - Ratios alone should not be to compare businesses, as for example companies might use different policies or be exposed to different market conditions. [1]
  - When using ratios to make comparisons between businesses it is important to take into account any special conditions that occur in a particular trade. For example, stock turnover would be expected to be lower for an antique shop than a supermarket. [1]
- [Maximum 5]

15.4 The net asset value per share ratio may be misleading or meaningless:

- where values in the statement of financial position have not been revalued recently [1]
- if the assets contain a large proportion of worthless items (*eg* half-made widgets) [1]
- if the property market is in steep decline [1]
- if the assets are not marketable [1]
- where the value of the company is not related to the assets (*eg* 'people' businesses). [1]

The current ratio may be misleading or meaningless:

- in isolation, *eg* it is hard to differentiate between the 'efficient' 0.8 from a stable company and the worrying 0.8 from a company with severe liquidity problems [1]
  - because current assets and current liabilities can change rapidly over time, and the accounts only show a snapshot as at one particular date [1]
  - because no indication is given of the company's ability to borrow more if it needs to. [1]
- [Maximum 5]

15.5 The profit margin ratio may be misleading or meaningless:

- for banks or insurance companies where the idea of 'profit' is not clear cut. [1]
- for businesses with large contracts that spread over several years (*eg* construction). [1]

The ratio for return on capital employed may be misleading or meaningless:

- where the capital employed is low (or not a major factor of production) [1]
- where profits are volatile (one year's results should not be used) [1]
- where the entries in the statement of financial position do not produce a realistic value of the actual capital being used (*eg* when asset values are out of date, or capital has been raised during the year). [1]

[Total 5]

## End of Part 2

### What next?

1. Briefly **review** the key areas of Part 2 and/or re-read the **summaries** at the end of Chapters 9 to 15.
2. Ensure you have attempted some of the **Practice Questions** at the end of each chapter in Part 2. If you don't have time to do them all, you could save the remainder for use as part of your revision.
3. Attempt **Assignment X2**.

### Time to consider ...

#### ... 'revision' and 'revision and rehearsal' products

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# 16

## Evaluation of working capital

### Syllabus objectives

- 5.1 Determine the working capital position of a company.
1. Analyse accounts receivables, accounts payables and inventory ratios.
  2. Evaluate policies for working capital management, including its individual elements.
  3. Discuss methods for financing working capital.
  4. Analyse the short-term cash position of a company.
  5. Discuss measures to manage the short-term cash position of a company.
  6. Discuss dividend sustainability.

## 0 Introduction

**The efficient operation of any business requires that management should be constantly looking forward and planning ahead. This chapter discusses the need to manage working capital, which requires constant attention, before the next chapter looks at the issues associated with longer-term forecasting and budgeting.**

Working capital, *ie* current assets less current liabilities, was mentioned in [Chapter 10](#) and some associated ratios were introduced in [Chapter 14](#). Section 1 of this chapter draws some of these ideas together.

The remainder of the chapter builds on this material to consider how companies manage working capital, *ie* the practical decisions they might take in running their businesses.

# 1 Working capital



**Working capital comprises current assets, less current liabilities.**

**Current assets are assets that are either cash or will be converted into cash in the normal course of business and consist of short-term investments including cash, trade receivables and inventory.**

**Current liabilities are liabilities that are due for payment within one year. Typical examples would be short-term loans, overdrafts and trade payables, all of which provide funds to finance current assets.**

**Working capital management is an important aspect of a company's financing activities. Companies need to select the optimal level of current assets and the optimal combination of long-term and short-term funds to finance those assets.**

**Insufficient liquidity (*ie* insufficient cash to meet the company's liabilities) could lead to:**

- **deterioration of credit rating**
- **forced sale of assets**
- **bankruptcy, or**
- **liquidation.**

**For example, if wage bills are not settled then the workforce will strike and if trade payables are not settled on time then the business will be unable to buy further goods on credit. On the other hand, excessive investment in cash and liquid assets would tie up funds in assets that generally offer little or nothing in the way of return. A company needs to have sufficient current assets available to meet immediate commitments, but it is inefficient to have excessive working capital.**

**Companies meet their current liabilities as they fall due mainly by using cash received from the settlement of trade receivables. In the longer term, the sale of inventories will create further trade receivables and that will eventually create further cash inflows.**

Inventories are raw materials and part-completed work in progress. The sale of inventories refers to the point at which these become completed goods and are sold on to customers.

**If necessary, any imbalance between inflows and outflows can be met from cash balances and from the sale of marketable securities.**

**Increasing working capital reduces the risk of running out of cash, although it also creates the possibility of inefficient and unnecessary holdings. Insufficient working capital can lead to a major crisis, whereas excessive working capital raises the cost of funding short-term activities, so it is generally safer to risk having too much working capital than too little.**

**Accounting ratios can be used to measure a company's liquidity and effectiveness of the management of its assets. (Refer to [Chapter 14](#) for a reminder of accounting ratios.)**

**The current and quick ratios give us a valuable insight into the relationship between current assets and current liabilities.**

You will remember that:

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

$$\text{quick ratio} = \frac{\text{current assets} - \text{inventories}}{\text{current liabilities}}$$

Three other accounting ratios are also relevant; each measures the time taken to dispose of, or settle, an element of working capital.

Accounting ratio	Time taken to perform function	Turnover period
Inventory turnover period	The average time taken to sell an item of inventory after it has been purchased	<p>As an asset management/turnover ratio, shows how current assets are managed over time.</p> <p>Inventory turnover period depends on the production cycle of the industry.</p>
Trade receivables turnover period	The time taken to collect payment from a credit customer	<p>As an asset management/turnover ratio, shows how current assets are managed over time.</p> <p>Trade receivables turnover period is determined by credit terms offered by the firm.</p>
Trade payables turnover period	The time that the company takes to pay for goods after their purchase	The number of days of payables shows how effectively payment of bills is arranged.

Suppose we have calculated these ratios and have obtained the following results:

- inventory turnover period = 32 days
- trade receivables turnover period = 44 days
- trade payables turnover period = 39 days.

This suggests that we take 32 days to sell any given item of inventory after we acquire it.

This will then result in a trade receivable, if we sell it on credit.

The resulting trade receivable will then take an average of 44 days for settlement.

That means that it takes a total of  $32 + 44 = 76$  days from the acquisition of an item of inventory until there is cash flowing in from its subsequent sale and the customer's settlement.

The good news is that we do not normally pay for goods until 39 days after purchase. That means that we do not have cash tied up in this sequence until day 39 and so we have cash committed for a total of  $76 - 39 = 37$  days.

**The working capital cycle (or net operating cycle) of the firm is the time from payment to suppliers for the materials to receiving cash from the sale of goods produced from the materials.**



**The working capital cycle is equal to:**

- inventory turnover period**
- + trade receivables turnover period**
- trade payables turnover period.**

**Shorter operating cycles enable the company to generate cash faster and reduce the need for liquid assets and external financing.**

The working capital cycle can be negative.

- This means that the company is selling stock and getting paid for it more quickly than it is paying for the goods it buys on credit.
- This may indicate the business is running efficiently.
- However, it could lead to strained relationships with suppliers, who are being used as a source of finance.

**Looking at financial ratios over time or comparing the ratios with those of a peer group will provide a good indication of company's performance.**

However, the uses of ratios described above are limited for working capital by the fact that short-term figures may fluctuate quickly and be out-of-date by the time the accounts are published.

## 2 Working capital management

### 2.1 Introduction

Unlike fixed assets where the initial investment is recovered over several years, the investment in working capital is recovered during the firm's normal operating cycle when inventories are sold and receivables are collected.

The working capital cycle is a measure of performance in this area.

Working capital often constitutes a large proportion of a company's assets so its management is important for the company's survival and long-term growth and ultimately has an impact on maximisation of shareholder wealth.

Working capital thus creates a dilemma for management because:

- insufficient working capital creates the risk of insolvency
- excessive working capital is also harmful because current assets are unproductive while they are waiting for sale or for settlement – a business with excessive working capital will appear to have an inefficient management team.

There is no single correct solution to this problem, but generally companies will aim to have just slightly more working capital than they need.

A company's liquidity position, as represented by cash, trade receivables, marketable securities and inventories, could affect its ability to borrow.

To maintain liquidity, companies rely on cash balances, short-term funds including trade credit and short-term investments, and cashflow management which determines the collection and payment processes.



The key to successfully managing working capital is to keep the inventory turnover and trade receivables turnover as rapid as possible while delaying payment so that the trade payables turnover is as long as possible.

The key phrase is knowing what 'as possible' means in the context of any given business.

### 2.2 Managing inventory

Inventories can take the form of raw materials, work-in-progress and/or finished goods for resale. Companies hold inventories of raw material and work-in-progress to support the production process and finished goods to serve customer needs. Running out of inventory can disrupt production or lead to lost sales.

There are other benefits to holding each of the forms of inventories:

- Holding supplies of raw materials enables a company to buy them in larger quantities and so take advantage of bulk discounts.  
It also reduces the risk of facing shortages of certain raw materials or of price rises.
- Holding works-in-progress might ease the production process by making different stages of the process more independent and so giving some flexibility in the scheduling of the different stages.
- Holding stocks of finished goods, in addition to improving the ability to meet customer demand, may allow the company to benefit from economies of scale of producing its product in larger production runs.

However, there are also costs to holding inventories.

**Firms need accurate forecasts to keep inventory at a minimum and to minimise inventory holding costs. If forecasts are not reliable, firms need to keep inventory in reserve to bridge the gap between actual inventory needed and that forecast.**

**Firms sometimes choose to hold additional inventory because they expect the price to increase or if there is uncertainty about the availability of supplies.**

**A business that holds excessive inventory is tying up cash in an asset that yields no interest or explicit return during the holding period but also incurs increased costs of holding the inventory.**

Depending on the nature of the business, the costs of holding inventory might include:

- ordering costs, *eg* placing the orders, making payments, inspecting deliveries
- warehouse costs, *eg* rent, utilities, warehouse staff wages
- insurance costs
- deterioration, *eg* food becoming out-of-date, or breakages
- obsolescence, *eg* of technology or design.

**However, most businesses that sell goods must hold sufficient inventory to meet customer demand, otherwise long delays in delivery, lost sales and a reduction in liquidity will result. The management team must weigh up the costs of holding inventory against the risks associated with holding too little.**

The level of inventory held depends on:

- lead times *ie* how quickly supplies of materials can be obtained
- how long the delivery of the final product takes
- the funds available for inventory.

**If lead times are short, it may be possible to reduce inventory because goods can be obtained quickly in order to meet customer demand. However, that might be offset by additional ordering costs, such as delivery charges and the administrative task of processing goods received.**

**Some industries manage inventory in a sophisticated and highly efficient manner. Mathematical techniques can be used to minimise the total cost of ordering and holding inventory.**

For example, a very simple mathematical technique to minimise these costs might assume that:

- annual demand,  $D$ , is certain and uniform
- lead times and delivery times are zero
- there are no bulk-buying discounts.

Suppose that the cost of placing each order is  $O$  and the annual costs of holding a unit of inventory are  $C$ . A company is considering what quantity of inventory,  $Q$ , to order each time it places an order.

$$\begin{aligned} \text{Total annual costs of ordering} &= \text{number of orders per year} \times O \\ &= \frac{D}{Q} \times O \end{aligned}$$

$$\begin{aligned} \text{Total annual costs of holding inventory} &= \text{average amount of inventory} \times C \\ &= \frac{Q}{2} \times C \end{aligned}$$

So the company chooses  $Q$  in order to minimise  $\frac{D}{Q} \times O + \frac{Q}{2} \times C$

This modelling can become more sophisticated, *eg* by assuming demand is seasonal rather than uniform and that lead times and delivery times are non-zero. A further degree of sophistication would be to allow for uncertainty in some of these variables by modelling them stochastically as probability distributions.

**Other methods, such as just-in-time (JIT), enable firms to minimise the level of inventory needed to support sales.**

The production of some goods requires hundreds, if not thousands, of different component parts. Efficient inventory management will typically require a company to:

- identify the small number of perhaps high value, critically important parts, and to use its most sophisticated approaches for these (*eg* a JIT approach)
- not to get distracted by the large number of lower value parts, as long as there is a sufficient number in stock, where a less sophisticated approach to inventory management might be appropriate.

**For example, the just-in-time (JIT) approach is used in car making and other businesses. It involves parts arriving and going straight on to the production line for immediate use. A car factory might have a continuous flow of parts and materials in constant motion with items arriving just as they are needed to complete the next phase of production and completed cars being driven out of the factory for immediate despatch to customers.**



**Such a system will minimise inventory holding, but it requires careful management because any delay could disrupt production. It will also require a significant investment in systems.**

A system that deals with the logistics of a production process is likely to be complex and so be expensive and require skilled staff to operate it.

**At the other extreme, there may be items that are not worth managing in such a detailed manner because the costs of doing so would outweigh the benefits.**

**For example, the two-bin method involves having two bins (or containers) for each inexpensive part. The production staff take items from one bin only. When that is emptied an order is placed for a replenishment and staff switch to the other bin while awaiting delivery.**

**This approach will almost certainly mean that some inventory takes a long time to turn over, but it avoids the cost of monitoring and managing inventory of those items in real time. For example, it will not cost a great deal to hold two boxes of washers, even if each box lasts for several weeks.**

## 2.3 Managing trade receivables

The same need to balance different considerations also applies to the management of trade receivables.

It would be ideal to make only cash sales for immediate settlement, but many buyers would find that unacceptable.

**Businesses generally give their customers one month to settle their debts and many customers take a little longer than that to pay because there are unlikely to be any adverse consequences for doing so.**

**On the other hand, the firm has to consider the trade-off between increasing sales and uncollectable accounts in allowing trade credit to its customers.**

Managing trade credit and trade receivables involves balancing benefits against costs. The benefits of more trade receivables are the increased profits produced by increased sales from offering credit terms.




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### Question

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The Core Reading above mentions one cost of trade credit as being uncollectable accounts. Give other examples of costs of trade credit.

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### Solution

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Other costs of trade credit include:

- checking new credit account customers
  - collecting payments and chasing late payments
  - opportunity cost of capital tied up in trade receivables.
-

In managing trade receivables, the firm needs to establish:

- criteria to evaluate customers' creditworthiness, eg high bank balances
- terms on which credit is granted to customers, eg cash on delivery or periodic payments
- methods of payment collection
- systems to monitor receivables and collections.




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### Question

---

Suggest other criteria a firm could use to evaluate customers' creditworthiness.

---

### Solution

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Other possible criteria include:

- passing a 'credit check' by a credit rating agency
  - (for existing customers) good prior experience in paying the firm.
- 

**The methods that a company uses for cash collection depends on the type of the firm's customers and the payment methods they use. For example electronic payment systems are used increasingly by firms and direct debit arrangements are used by utility companies.**

**Ideally, every business that makes credit sales should have systems in place to monitor customer balances and cash inflow. Companies use number of days receivables as well as a breakdown of accounts into categories based on the number of days outstanding for each category.**

A breakdown of accounts into categories could show, for example, the proportions of accounts that are 'not yet due', 1-week late, 2-weeks late, 3-weeks late *etc.* Comparing these breakdowns over time will help a company monitor any changes in the quality of its trade receivables and take appropriate action.

**Where a customer's account becomes overdue, the company can press for payment. That could be as simple as emailing or telephoning customers as soon as a payment becomes late.**

Gradually more severe and costly steps could be to employ a collection agency and ultimately to take legal action.

**Further pressure can be imposed by setting a credit limit for each customer and refusing to fulfil any further orders once the customer reaches that limit.**

**There are sometimes concerns that the business will lose revenue if it pesters its customers for payment. While that may be true, the staff in the customer's accounts payable department will be unlikely to have a great deal of influence over purchasing decisions. In other words, it is unlikely that customers will stop buying just because they are pressed for payment.**

**Some businesses pay their customers cash discounts for prompt payment. In general, such discounts have two main drawbacks.**

- **The discount itself is generally very expensive.**  
 Suppose a company's terms allow 30 days to pay, but customers take an average of 40 days. If the company offers a 1% discount for timely payment then that is equivalent to offering an interest rate of 1% for 10 days, which is quite a significant discount when compounded over a year (it can be calculated as  $1.01^{36.5} = 1.44$  or 44%).
- **Many customers continue to pay late but take the discount anyway because they feel that they are unlikely to be chased for it.**

The main advantage of offering cash discounts for prompt payments is to speed up the collection of trade receivables and so reduce the amount of capital tied up in this asset. A company may therefore compare the cost of the discount with the benefit (eg the cost of any borrowing to support trade receivables).

There may also be secondary benefits of offering cash discounts to customers for prompt payment, eg it may increase sales as (more) customers may be prepared to buy more at the perceived 'lower' price.

## 2.4 Managing trade payables

**Managing trade payables is the opposite of managing trade receivables. Taking longer to pay will delay the outflow of cash, reduce the need to pay interest on overdrafts or short-term borrowing and shorten the working capital cycle. The value of the number of additional days that the payment is delayed can be determined by the opportunity cost of holding the payment amount for the additional days.**

### Example

**Assume that the company has a payable of £200,000 that can be stretched for an additional 10 days beyond the due date. Assuming the cost to the firm of short-term funds to be 6%pa (0.01643 percent daily), the value of stretching the payable for 10 extra days would be £328.76.**

This is calculated as  $£200,000 \times \frac{0.06}{365} \times 10 = £328.76$

This benefit of delaying payments will be evaluated against the 'costs' of delaying payments to suppliers.

**Taking an excessive time to pay may affect the company's credit worthiness and so threaten the credit facilities offered by suppliers. There are credit rating agencies that offer reports on business credit histories. A business that has been reported for making late payments or, worse, defaulting altogether may find it difficult to obtain trade credit in the future.**

There are some elements to this evaluation which will be extremely difficult to quantify, in particular the importance of the relationship to each party. For example, how important the supplier is to the company, perhaps in the light of the company's inventory management – they may supply a key component in a just-in-time approach.

## Trade discount

The company may have the opportunity to delay payment but is offered a discount for early payment.

For example a 2% discount is offered to the company if the amount is paid within 10 days, otherwise the company has 30 days to pay. This is expressed as '2/10, net 30'. The company needs to decide whether it should pay within the discount period or pay by due date.

Suppose a company has purchased items worth £100,000 on these terms and is considering when to pay. The company is comparing the alternatives of either:

- paying £98,000 on day 10, or
- paying £100,000 on day 30.

If it chooses to pay on day 30 rather than day 10, it is effectively borrowing £98,000 for 20 days and paying £2,000 in interest. The cost of trade credit is therefore:

$$= \left( 1 + \frac{2,000}{98,000} \right)^{\left( \frac{365}{20} \right)} - 1 = 44.6\% \text{ pa}$$

So, the value of the discount can be calculated using the formula:

$$\text{cost of trade credit} = \left( 1 + \frac{\text{discount}}{1 - \text{discount}} \right)^{\left( \frac{365}{\text{payment day} - \text{discount period}} \right)} - 1 \text{ pa}$$

## Example

A company is offered credit terms of 0.5/10 net 30, so that the company will have a 0.5% discount if it pays within 10 days, otherwise it has to pay within 30 days.



### Question

Suppose a company has £1,000 to pay on these credit terms and is considering when to pay. Calculate the effective annual cost of the trade credit if the company chooses to pay on day 30 rather than day 10.

### Solution

The effective annual cost of the trade credit is:

$$= \left( 1 + \frac{5}{995} \right)^{\left( \frac{365}{20} \right)} - 1 = 9.6\% \text{ pa} \quad \text{or} \quad = \left( 1 + \frac{0.005}{1 - 0.005} \right)^{\left( \frac{365}{20} \right)} - 1 = 9.6\% \text{ pa}$$

There will be a cost associated with not using the discount.

The cost of not using the discount is highest if the company pays just after the discount period. If the company does not pay during the discount period, the cost of trade credit is lowest (9.6% *pa* in this case) if does not pay until the final payment due date. If it pays earlier than this, it will have effectively borrowed the same amount of money over a shorter period of time but paid the same amount of interest, therefore the percentage cost of the borrowing will be higher.

**For example, assume the account is paid within 20 days, the cost of credit will be:**

$$\text{cost of credit} = \left(1 + \frac{0.005}{1 - 0.005}\right)^{\left(\frac{365}{20-10}\right)} - 1 = 20\% \text{ pa}$$

Considering some sample cashflows might help to explain this further:

**Assume that the company has to pay £1000 on the above credit terms. If the company pays on day 20, it would keep £1,000 – £1,000 × 0.05 = £995 for 10 days.**

**So the cost of keeping £995 for 10 days is £5, or  $\frac{5}{995}$  expressed as interest.**

The cost would be  $\frac{5}{995 \times 10}$  per day and  $\frac{5 \times 365}{995 \times 10} = 18.34\%$  per year.

If the company keeps paying on day 20, the cost of credit will be the effective annual rate (EAR) and can be calculated by compounding the above rate where the number of compounding periods in a year is  $\frac{365}{10} = 36.5$

$$\text{cost of credit} = \left(1 + \frac{0.1834}{36.5}\right)^{(36.5)} - 1 = 20\%$$

**If the company does not use the discount and pays on the due date, the cost will be:**

$$\text{cost of credit} = \left(1 + \frac{0.005}{1 - 0.005}\right)^{\left(\frac{365}{30-10}\right)} - 1 = 9.6\%$$

The cost of not taking the discount is 9.6%.

**After the discount period the cost of credit increases sharply but falls as the due date approaches reaching its lowest value on the net day.**

**If the cost of borrowing short-term funds is lower than the cost of credit given above, the company should pay within the discount period.**

The next section looks at calculating the cost of various forms of short-term borrowing.

## 3 Sources of short-term finance

### 3.1 Main sources of short-term finance

Trade credit is a spontaneous source of short-term finance. This section goes on to consider some pre-planned, negotiated sources of short-term finance. These might typically be used to finance inventories and trade receivables. You should recognise these sources from earlier in the course.

**Bank loans or money market sources are the main sources of short-term finance for a company. (Refer to [Chapter 6](#) for further discussion regarding bank loans and commercial paper.)**

#### Single bank loan

Where a company needs to meet a particular expense, it would have an arrangement with a bank to take out a single loan, usually for one to three months. The interest on a single loan would depend on the company's creditworthiness and, depending on the arrangement, the interest could be paid at maturity or deducted from the loan when the loan is taken out.

#### Line of credit

A company could enter into an agreement with a bank whereby it can borrow up to an agreed amount at any time during the period of agreement. The line of credit provides more flexibility for the company with regards to the timing of the loan. The duration of the line of credit is usually one year and the interest charged is based on LIBOR plus a premium that reflects the company's creditworthiness.

In some line of credit agreements, the bank has no commitment to lend, although unless the company's credit position worsens, the banks would normally be prepared to lend. In other types of line of credit agreement, the bank has a commitment to lend but the borrower has to pay a commitment fee as a percentage (usually ½%) of the total amount or the unused amount of the loan.

#### Secured lending

Where a company is not able to take an unsecured loan, it could borrow a loan secured on the inventory or the account receivable. The loan is paid when the inventory is sold or collection of accounts receivable is made.

A company can also factor its accounts receivables. (Refer to [Chapter 6](#) for further discussion of factoring.)

### 3.2 Calculating the financing costs

Companies need to compare the effective cost of various types of short-term finance and select the most cost effective method of borrowing.

The effective cost of various types of borrowing can generally be calculated by adding the interest and any other expenses that the type of borrowing involves and dividing the result by the total amount that the borrower receives.



$$\text{financing cost} = \frac{\text{interest costs} + \text{fees}}{\text{usable funds}}$$

The examples below all use this formula. The critical step in any such example is to be clear what cashflow amounts are paid and when, *ie* at the time of borrowing or at the end of the borrowing period.

### Example 1: Single bank loan

**A company needs to raise £4,000,000 for 3 months and is considering a single loan at 7.5% *pa* with the interest deducted from the loan at the time of borrowing.**

$$\text{financing cost} = \frac{\text{interest}}{\text{usable funds}}$$

There are no explicit fees in this case. If the 7.5% is an annual rate of interest, then the amount of interest payable on the 3-month loan will be:

$$£4,000,000 \times 0.075 \times \frac{3}{12} = £75,000$$

If the interest was paid at the end of the 3 months of the loan, then the rate would be 7.5% *pa*. However, as the interest is deducted from the loan at the time of borrowing, effectively the company is paying interest on borrowings it does not receive, and the annual finance cost is slightly higher:

$$\text{annual financing cost} = \frac{\left( £4,000,000 \times 0.075 \times \frac{3}{12} \right)}{\left( £4,000,000 - \left( £4,000,000 \times 0.075 \times \frac{3}{12} \right) \right)} \times \frac{12}{3} = 7.64\%$$

### Example 2: Line of credit

**A company has a £500,000 line of credit at 7.25% *pa* with 0.5% *pa* commitment fee on the full amount drawn down. The company draws down £400,000 for 3 months.**

As the interest is paid at the end of the 3 months and the commitment fee is paid on the amount actually borrowed in this example, we might expect the cost of financing to be 7.25% + 0.5% = 7.75% *pa*.

The 0.5% commitment fee is also being treated as being expressed as an annual fee, in other words the company pays 0.5% *pa* to access this line of credit for the whole year.

$$\begin{aligned} \text{annual financing cost} &= \frac{\text{interest} + \text{commitment fee}}{\text{usable funds}} \\ &= \frac{\left( £400,000 \times 0.0725 \times \frac{3}{12} \right) + \left( £400,000 \times 0.005 \times \frac{3}{12} \right)}{£400,000} \times \frac{12}{3} \\ &= 7.75\% \end{aligned}$$



## Question

A company has a £500,000 line of credit at 7.25% with ½% commitment fee on the *unused* amount (*ie* the commitment fee will not be paid on any loan that is actually taken out). The company draws down £400,000 for 3 months. Calculate the annual financing cost in this case.

## Solution

$$\begin{aligned} \text{annual financing cost} &= \frac{\text{interest} + \text{commitment fee}}{\text{usable funds}} \\ &= \frac{\left(£400,000 \times 0.0725 \times \frac{3}{12}\right) + \left(£100,000 \times 0.005 \times \frac{3}{12}\right)}{£400,000} \times \frac{12}{3} \\ &= 7.38\% \end{aligned}$$

### Example 3: Commercial paper

A company issues £4,000,000 of commercial paper at 7% *pa*. The dealer's commission on a 90 day issue is 1/8<sup>th</sup> percent of the issue.

Both interest and dealer's commission are deducted from the loan at the time of borrowing. The 0.125% fee is treated as an annual rate in the calculation below.

Commercial paper is issued at a discount and redeemed at par. As a result, we see a similar effect to that for the simple bank loan when we calculate the finance costs, *ie* the issuing company is effectively paying interest based on £4,000,000 but actually receiving less than £4,000,000. The actual cost is therefore higher than 7%.

$$\begin{aligned} \text{financing costs} &= \frac{\text{interest} + \text{dealer's commission}}{\text{usable funds}} \\ \text{usable funds} &= £4,000,000 - \text{interest} - \text{dealer's commission} \\ \text{annual financing costs} &= \frac{\left(£4,000,000 \times 0.07 \times \frac{3}{12}\right) + \left(£4,000,000 \times 0.00125 \times \frac{3}{12}\right)}{£4,000,000 - \left(£4,000,000 \times 0.07 \times \frac{3}{12}\right) - \left(£4,000,000 \times 0.00125 \times \frac{3}{12}\right)} \times \frac{12}{3} \\ &= 7.25\% \end{aligned}$$



## 4 Managing cashflows

The company treasurer is responsible for managing cash balances and must monitor cashflows on a real-time basis in order to do so. In addition to tracking the immediate cash position, the treasurer must constantly forecast cashflows.

Companies must balance their cash inflows and outflows and the key to managing a business' liquidity is to predict future cashflows with a view to predicting problems.

The biggest concern would be an excessive deficit. So companies keep cash balances to meet the various expenses and to avoid having to resort to costly finance methods such as an overdraft or debt issue. But excessive cash surplus should be invested in short-term investments in marketable securities that earn interest, have low risk and are highly liquid.

If the assets are highly liquid, this means that if a cashflow deficit arises, the asset can be sold to raise cash without having to resort to more expensive forms of short-term finance.

The company's risk tolerance and liquidity position will determine the type of investment it selects.

Money market instruments such as treasury bills and other government short-term securities, commercial paper, certificates of deposit and repo agreements are usually used for this purpose.

Treasury bills and other government short-term securities have the lowest default risk and are highly liquid and so tend to offer the lowest rate of interest.

A 'repo agreement' is an agreement to buy assets (eg government bonds) from another party with a simultaneous agreement made to sell the assets back to the other party at a fixed price at a fixed date a short time later. It is therefore effectively a short-term investment with the interest being the difference between the buying and selling prices.

The process of managing cashflows is no different for a business as for an individual. It is a matter of making a realistic estimate of the timing and amount of any inflows and outflows.

### 4.1 Example

For example, the following cashflow forecast has been prepared for the next six months (January to June) for a small consultancy. The forecast was based on the following assumptions:

- Annual billings will be £5,040,000, with monthly billings being 1/12 of the annual total and trade receivables being paid two months after the billing. This is unchanged from last year.
- Annual salaries will be £3,000,000 and other expenses will be £1,680,000 for the year, with monthly payables being paid one month after the billing.
- A tax bill of £80,000 is due for payment in March and IT equipment costing £90,000 will be purchased in February.

The overdraft limit is £20,000. Overdraft interest is 2% of any overdrawn balance, rounded to the nearest £000. The company has £25,000 in the bank at the start of the period.



## Question

Based on this information, prepare the cashflow forecast for the next six months and comment on the forecast.

## Solution

We get the January receipts from trade receivables by taking the billings from November, which are  $\frac{£5,040,000}{12} = £420,000$ .

The same logic applies to the other figures in the forecast.

$$\text{monthly salaries} = \frac{£3,000,000}{12} = £250,000, \text{ monthly expenses} = \frac{£1,680,000}{12} = £140,000.$$

We can prepare the following cashflow forecast:

	Jan	Feb	Mar	Apr	May	Jun
Cash inflow:	£000	£000	£000	£000	£000	£000
Receipts from trade receivables	420	420	420	420	420	420
Cash outflow:						
Payments to suppliers	(140)	(140)	(140)	(140)	(140)	(140)
Salaries	(250)	(250)	(250)	(250)	(250)	(250)
Tax			(80)			
IT hardware purchase		(90)				
Overdraft interest				(1)	(1)	
	(390)	(480)	(470)	(391)	(391)	(390)
<b>Net cashflow</b>	<b>30</b>	<b>(60)</b>	<b>(50)</b>	<b>29</b>	<b>29</b>	<b>30</b>
<b>Balance at start of month</b>	<b>25</b>	<b>55</b>	<b>(5)</b>	<b>(55)</b>	<b>(26)</b>	<b>3</b>
<b>Balance at end of month</b>	<b>55</b>	<b>(5)</b>	<b>(55)</b>	<b>(26)</b>	<b>3</b>	<b>33</b>

The overdraft bill for March would be rounded down to zero. The April overdraft interest is calculated as 2% of £55,000 = £1,100, ie £1,000 when rounded. The May overdraft interest is calculated as 2% of £26,000 = £520, ie £1,000 when rounded.

**The most striking aspect of the forecast is that the bank will be overdrawn in February and the overdraft will exceed the limit in March.**

**On that basis, we have predicted that the company will collapse in March because the bank will not permit us to carry on making payments once the overdraft reaches £20,000 and so we will be unable to pay salaries and settle bills.**

We can see that the issue is not that the company has an ongoing problem with cash because the excessive overdraft is a temporary matter, so we need to look for ways in which to speed up cash receipts or delay payments.

The simplest response would be to delay the purchase of the IT hardware until May, which would reorganise the cashflows in a manner that will avert the crisis:

	Jan	Feb	Mar	Apr	May	Jun
Cash inflow	£000	£000	£000	£000	£000	£000
<b>Receipts from trade receivables</b>	<b>420</b>	<b>420</b>	<b>420</b>	<b>420</b>	<b>420</b>	<b>420</b>
Cash outflow						
<b>Payments to suppliers</b>	<b>(140)</b>	<b>(140)</b>	<b>(140)</b>	<b>(140)</b>	<b>(140)</b>	<b>(140)</b>
<b>Salaries</b>	<b>(250)</b>	<b>(250)</b>	<b>(250)</b>	<b>(250)</b>	<b>(250)</b>	<b>(250)</b>
<b>Tax</b>			<b>(80)</b>			
<b>IT hardware purchase</b>					<b>(90)</b>	
<b>Overdraft interest</b>						
	<b>(390)</b>	<b>(390)</b>	<b>(470)</b>	<b>(390)</b>	<b>(480)</b>	<b>(390)</b>
<b>Net cashflow</b>	<b>30</b>	<b>30</b>	<b>(50)</b>	<b>30</b>	<b>(60)</b>	<b>30</b>
<b>Balance at start of month</b>	<b>25</b>	<b>55</b>	<b>85</b>	<b>35</b>	<b>65</b>	<b>5</b>
<b>Balance at end of month</b>	<b>55</b>	<b>85</b>	<b>35</b>	<b>65</b>	<b>5</b>	<b>35</b>

The same effect could have been had from delaying the tax payment, although the tax authorities might then charge penalties.

If the IT hardware is needed in February then there might be another way to deal with the problem. It might be possible to persuade the clients to pay their bills after one and a half months instead of two.

The ability to do this is likely to depend on what are the standard payment terms in the industry concerned, and so whether this is in line with other suppliers.

Pursuing clients too aggressively for payment may result in them moving their future business elsewhere. It would be easier to persuade clients to pay their bills more quickly if there was an incentive offered for doing so, eg a discount for earlier payment. The following projections assume there is no such discount.

If we could persuade them to do so from February onwards then we would collect an additional half month's billing that month, in addition to the usual receipt:

	Jan	Feb	Mar	Apr	May	Jun
Cash inflow	£000	£000	£000	£000	£000	£000
<b>Receipts from trade receivables</b>	<b>420</b>	<b>630</b>	<b>420</b>	<b>420</b>	<b>420</b>	<b>420</b>
Cash outflow						
<b>Payments to suppliers</b>	<b>(140)</b>	<b>(140)</b>	<b>(140)</b>	<b>(140)</b>	<b>(140)</b>	<b>(140)</b>
<b>Salaries</b>	<b>(250)</b>	<b>(250)</b>	<b>(250)</b>	<b>(250)</b>	<b>(250)</b>	<b>(250)</b>
<b>Tax</b>			<b>(80)</b>			
<b>IT hardware purchase</b>		<b>(90)</b>				
<b>Overdraft interest</b>						
	<b>(390)</b>	<b>(480)</b>	<b>(470)</b>	<b>(390)</b>	<b>(390)</b>	<b>(390)</b>
<b>Net cashflow</b>	<b>30</b>	<b>150</b>	<b>(50)</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Balance at start of month</b>	<b>25</b>	<b>55</b>	<b>205</b>	<b>155</b>	<b>185</b>	<b>215</b>
<b>Balance at end of month</b>	<b>55</b>	<b>205</b>	<b>155</b>	<b>185</b>	<b>215</b>	<b>245</b>

There may be further alternatives.

Taking the original cashflow forecast to the bank in plenty of time would provide a basis for negotiating some financial support. The bank might be willing to increase the overdraft limit temporarily for the months of March and April because the business appears to be managing itself responsibly and the large deficit is expected to resolve itself.

If the deficit is too large to address through an increase in the overdraft limit or through juggling receipts and payments then the business might take more drastic measures, such as seeking a longer-term loan or through selling additional shares. The cash raised would then go to working capital to ensure that the business remains solvent.

This avoids the phenomenon of 'overtrading' in which a business cannot maintain its solvency because it has insufficient working capital.

Overtrading is particularly associated with growth because the business has to tie up more cash in inventory and trade receivables in order to make these sales. It is unlikely to be possible for these additional assets to be financed using trade credit and so there is often an outflow of cash. In this situation, it may be necessary to seek a more permanent cash injection, perhaps by taking out a bank loan or even expanding equity by selling additional shares.

## 5 Cash, dividends and dividend sustainability

Dividend policy is discussed in [Chapter 20](#). This subsection will briefly introduce the concept of dividend sustainability.

The primary function of any business is to generate wealth for its owners. That wealth is generally reflected in the form of a stream of cash payments.

Simpler business forms such as sole traders and partnerships generally make these payments directly from the business bank account to the owner or owners. If the business has been incorporated as a limited company then it will generally pay its owners dividends.

The payment of dividends is generally restricted by two factors:

1. The law generally forbids the payment of dividends that will create a deficit on retained earnings.

**Essentially, the company must have made a profit before any dividend can be paid. Every dividend payment will reduce retained earnings and so the legal cap on future dividends will fall.**

This means that it is legal to pay a dividend in a year that the company does not make any profits, provided that the retained earnings reserve has a sufficient balance to pay the dividend without going in to negative territory. The retained earnings reserve will contain all of the accumulated retained profits that have been earned by the company in the past.

2. It is also necessary to have sufficient cash available to pay the dividend.

**Earlier in the course, we have seen that profit and cashflow are not necessarily the same in the short term. From year to year, companies can have cash inflows despite making losses and cash outflows despite being profitable. Over the longer term, though, profits and cashflows start to fall more into line. One implication of that is that a company's ability to sustain dividend payments is more a function of its ability to earn profits.**

An example of this might be a company buying a building. The cash implication is severe at the point of purchase. However, if the company decides to depreciate the cost over perhaps 20 years, then the impact on the expenses in the P&L will be spread over a long period.

**Cash can flow in:**

- from the disposal of assets
- by borrowing
- by the sale of shares.

These sources of cash can be received 'in the short-term' but are clearly different from the normal short-term sources of cash, primarily sales of the company's products or services.

**Using cash from such sources to pay a dividend may be viewed as somewhat irresponsible because such cash inflows are not sustainable.**

Over the longer term, it is generally expected that a profitable business can generate surplus cash from operations. That means that profit will create both the retained earnings that are necessary to make a dividend legal and the cash balances that must be drawn on to make the actual payments to shareholders.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.

## Chapter 16 Summary

### Working capital

Working capital comprises current assets, less current liabilities.

Working capital cycle

- = inventory turnover period (the average time taken to sell an item of inventory)
- + trade receivables turnover period (time taken to collect payment from a credit customer)
- trade payable turnover period (time that the company takes to pay for their purchase)

### Working capital management

The key to successfully managing working capital is to keep the inventory turnover and trade receivables turnover as rapid as possible while delaying payment so that the trade payables turnover is as long as possible.

Insufficient working capital creates the risk of insolvency and insufficient liquidity. Excessive working capital is also harmful because current assets are unproductive.

Inventory management involves comparing the costs of holding inventory with the risks of holding too little.

Sophisticating forecasting and modelling might be used for forecasting critical items. Adopting a just-in-time approach with suppliers can also help inventory management. Simpler approaches might be used for more minor inventory items.

*Trade receivables management* involves firms considering:

- criteria to evaluate customers' creditworthiness
- terms on which credit is granted to customers
- methods of payment collection
- systems to monitor receivables and collections.

Firms weigh the benefits of offering trade credit to attract customers with the downsides of the delay in payment, the costs of monitoring and the problems of uncollectable accounts.

A firm may offer cash discounts for prompt payment, but these are generally expensive.

*Trade payables management* involves firms comparing the benefits of delaying outflow of cash (saving interest on overdrafts or the cost of other short-term borrowing) with the downsides of any damage to credit rating and relationships with suppliers.

$$\text{Cost of trade credit} = \left( 1 + \frac{\text{discount}}{1 - \text{discount}} \right)^{\left( \frac{365}{\text{payment day} - \text{discount period}} \right)} - 1$$

## Sources of short-term finance

Sources of short-term finance include:

- single bank loans
- lines of credit
- secured lending
- money market instruments, *eg* commercial paper.

The effective cost of various types of borrowing can generally be calculated by adding the interest and any other expenses that the particular type of borrowing involves and dividing the result by the total amount that the borrower receives.

$$\text{financing cost} = \frac{\text{interest costs} + \text{fees}}{\text{usable funds}}$$

## Managing cashflows

The company treasurer is responsible for managing cash balances and must monitor cashflows on a real-time basis as well as forecasting cashflows to predict problems.

Excessive cash surplus should be invested in short-term investments that:

- earn interest
- have low risk
- are highly liquid.

The cashflow position can be improved by, for example:

- chasing payment of trade receivables
- deferring payment of trade payables
- increasing overdraft limit
- disposing of an asset
- seeking alternative short-term finance *eg* through money market instruments such as treasury bills, commercial paper, certificates of deposit and repos.

If cashflow problems continue for an extended period, it may be more appropriate to issue additional long-term equity or loan capital.

## Cash, dividends and dividend sustainability

The payment of dividends is generally restricted by two factors:

1. The law generally forbids the payment of dividends that will create a deficit on retained earnings.
2. It is necessary to have sufficient cash available to pay the dividend.





## Chapter 16 Practice Questions

Exam style

All of the questions that follow are exam style.

16.1 The following were calculated from the financial statements of a manufacturing company:

- inventory turnover period                      15 days
- trade receivables turnover period            45 days
- payables turnover period                        50 days

For how long, on average, does the company have cash tied up in any particular piece of stock?

- A      10 days
  - B      15 days
  - C      60 days
  - D      110 days
- [2]

16.2 A company has a £100,000 line of credit at 6.0% *pa* with a 0.5% *pa* commitment fee on the full amount available. The company draws down £40,000 for 6 months.

The annual financing cost of this arrangement is:

- A      0.5%
  - B      6.0%
  - C      6.5%
  - D      7.25%
- [2]

16.3 Outline the advantages and disadvantages of the just-in-time approach to inventory management. [5]

16.4 A furniture retailer is using a simple mathematical technique to minimise the total cost of ordering and holding certain items of inventory.

In particular it is considering a certain type of table that it sells. It estimates that it sells 5,000 of these tables each year and that demand is spread evenly throughout the year. It also assumes that lead times and delivery times are zero.

Suppose that the cost to the retailer of placing and receiving an order for a delivery of tables from its supplier is \$70 and that the annual cost of holding each table in stock is \$2.

Calculate the number of tables the furniture retailer should order in each order from its supplier in order to minimise the total cost of ordering the tables and holding them in stock. [5]

16.5 A company makes annual sales of £3,000,000 and incurs costs of £2,700,000, both of which are spread evenly over the year. Assume that:

- a tax bill of £150,000 is due to be paid in April
- the company begins the year with a cash balance of £10,000
- a large customer has informed the company that a £100,000 payment expected in January will only be paid in February.

Draw up a table to help the company forecast its cash resources over the months of January to April inclusive, and comment on the company's circumstances. [5]



## Chapter 16 Solutions

16.1 Answer = A

The working capital cycle, which is the number of days the company has cash tied up in stock

$$= 15 + 45 - 50 = 10 \text{ days}$$

16.2 Answer = D

The commitment fee is paid on the full £100,000 available, not just the £40,000 used, and so:

$$\begin{aligned} \text{annual financing cost} &= \frac{\text{interest} + \text{commitment fee}}{\text{usable funds}} \\ &= \frac{\left(£40,000 \times 0.06 \times \frac{6}{12}\right) + \left(£100,000 \times 0.005 \times \frac{6}{12}\right)}{£40,000} \times \frac{12}{6} \\ &= 7.25\% \end{aligned}$$

16.3 *Advantages*

Just-in-time (JIT) minimises the amount of inventory held. [1]

This avoids the costs associated with holding stocks and the risks of stock becoming damaged, obsolete or reducing in value. [1]

Avoiding these costs should free up funds to be used elsewhere in the business and/or reduce the need for short-term financing. [1]

Freeing up the space required for stock may enable it to be used for other purposes, *eg* a shop could have a smaller warehouse and more retail space. [1]

*Disadvantages*

JIT requires careful monitoring and management to ensure there are no delays that could disrupt production. [1]

Such disruptions could lead to being unable to fulfil customer orders with resultant damage to reputation and the possible loss of future customer orders. [1]

JIT therefore requires significant time and money to be invested in systems to monitor sales and predict demand, *eg* during peak season, sales periods. [1]

There are more frequent delivery costs to be incurred and the company may lose out on purchasing economies of scale if buying more frequently but in smaller quantities. [1]

JIT relies on good reliable relationships with suppliers. [1]

[Maximum 5]

16.4 Total annual costs of ordering = number of order per year  $\times$  \$70

$$= \frac{5,000}{Q} \times \$70 = \frac{\$350,000}{Q} \quad [1]$$

where Q is the number of tables in each order.

Total annual costs of holding tables in stock = average number of tables in stock  $\times$  \$2

$$= \frac{Q}{2} \times \$2 = \$Q \quad [1]$$

So the company chooses Q in order to minimise  $C = \frac{\$350,000}{Q} + \$Q$  [1]

Differentiating with respect to Q and equating to 0 to find the minimum value gives:

$$\frac{dC}{dQ} = -\frac{350,000}{Q^2} + 1 = 0 \quad [1]$$

$$Q^2 = 350,000$$

$$Q = 592 \text{ tables} \quad [1]$$

$$\text{The number of orders per year} = \frac{5,000}{592} = 8 \quad [1]$$

[Maximum 5]

16.5 A table forecasting cashflows would look as follows:

	Jan	Feb	Mar	Apr
Cash inflow	£000	£000	£000	£000
Receipts from trade receivables	250	250	250	250
Large customer impact	(100)	100		
Cash outflow				
Monthly costs	(225)	(225)	(225)	(225)
Tax				(150)
Net cashflow	(75)	125	25	(125)
Balance at start of month	10	(65)	60	85
Balance at end of month	(65)	60	85	(40)

[3 for table]

*Company's circumstances*

The large customer's decision means that the company will need to draw on its overdraft significantly in January. If the overdraft limit is not sufficient the company could be threatened with liquidation. [1]

The tax bill will also push the company into overdraft, even if the large customer had not made the late payment decision. It is unlikely that the tax authorities will be able or willing to delay the payment, and the company may have to consider paying interest on the tax. [1]

The company should review its sources of borrowing, such as bank loans, or factoring in order to survive the coming few months. [1]

It may also try to encourage some customers to pay early, or ask some suppliers if it can delay its trade payables for a month. [1]

[Maximum 5]

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# 17

## Constructing management information

### Syllabus objectives

- 5.2 Describe the function of forecasts and budgets as sources of management information.
1. Explain the purpose of forecasts and budgets.
  2. Prepare basic examples of forecasts and budgets.

## 0 Introduction

Forecasts are predictions of future events. They do not try to influence those future events, *ie* forecasts are passive.

In contrast, budgets are active. They are plans, expressed in monetary term, for the future.

**Forecasts and budgets are important elements of the process of implementing company strategies.**

**Strategies involve the pursuit of a long-term direction for the company, which requires looking to the future and developing both forecasts and budgets to inform management decisions and assist with implementation.**



# 1 The purpose of forecasts and budgets

## 1.1 Forecasts



The Chartered Institute of Management Accountants (CIMA) defines a forecast as 'a prediction of future events and their quantification for planning purposes'.

Clearly, knowing what will happen in the future will be of enormous value to any manager.

Forecasts can take many forms and can use a host of techniques.

Examples of forecasts include:

- business forecasts of future sales revenues and expenses
- industry forecasts of innovations and developments in a particular industry
- economic forecasts of inflation, interest rates and economic growth in a country
- demographic forecasts of birth rates and mortality rates.

**The one thing that they all have in common is that there are very few situations in which the future can be predicted with any certainty and, even then, the predictions are likely to be short-term in nature.**

Reasonably reliable forecasts may be developed when an environment is stable and predictable. It is much harder to forecast confidently when the environment is unpredictable. Consider a business forecasting its future sales revenues. This is more difficult if there are:

- competitors who might launch new products or change their prices
- new competitors who might enter the market
- technological or other changes that might make the company's products more attractive or obsolete.

### Statistical techniques

**One common approach to forecasting is to use statistical techniques, generally based on regression, to identify trends in past data. Those trends can then be extrapolated into the future.**

**These techniques assume that past trends will continue. In its simplest form, the regression may show that revenues have increased at an average of, say, 8% per annum in the past and so a case can be made that they will continue to increase at that rate into the future.**

**Time series analysis involves the identification of seasonal and other factors in past data. For example, the same data might be analysed to determine the effects of seasonal variations within an annual cycle so that the longer-term annual trend can be identified. Such extensions to the basic regression may improve the reliability of the forecast.**

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## Question

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Give examples of potential problems with using statistical techniques for forecasting.

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## Solution

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Potential problems include:

- Past trends may not continue in the future and so past relationships between variables will not necessarily hold in the future.
- Relationships between variables may only hold over a certain range of values.
- Such forecasts don't allow for unusual events, *eg* a war, a market shock, a major new competitor.
- Data can be mis-interpreted.

---

**Clearly, the assumption that past trends will continue is potentially naïve because they can be disrupted by factors that can be difficult to foresee.**

**For example, diesel-powered cars were once relatively unpopular until improved designs made them more pleasant to drive. That, combined with lower fuel consumption, led to growing demand for diesels. That trend was disrupted when new medical evidence indicated that growth in the use of diesel fuel was causing an increase in respiratory problems and some governments threatened curbs on the use of diesel cars in cities.**

**Forecasts can also draw upon observations that can be put into models.**

**For example, in the financial markets there are links between economic variables such as interest rates and expected currency movements. This makes it possible to observe the market's expectations of currency movements, as implied by differences in interest rates in different countries. Those expectations are not guaranteed to prove accurate, but they may provide the most realistic and reliable estimate of future changes.**

## Intuitive or judgement techniques

**Finally, forecasts can be prepared using intuitive techniques that are generally associated with gathering a consensus view. For example, the Delphi technique involves gathering the thoughts of a number of experts in a particular area.**

**That could involve asking, for example, experts on pensions to offer their thoughts on how pension regulations are likely to change over the medium-term future.**

**Drawing together a consensus of their views may offer some worthwhile insights into how things will develop.**

**The logic is:**

- partly that the experts will be studying their industry and can interpret all available information
- partly that these experts may be able to influence the direction of any changes.

Seeking a consensus view from a number of experts, rather than the opinion of one person, should reduce bias in the forecast and benefit from a wider range of expertise and views than a single individual may possess.

A possible downside is that the group may dilute the best forecasts, *eg* a group may consist of one good forecaster and several poor ones.

The Delphi technique is a particular structured approach to gathering the views of a number of experts. It is an iterative approach in which:

- The organiser sends a survey or set of questions to each expert. The participating experts are anonymous and known only to the organiser.
- The organiser collates and analyses the responses and returns a summary of the responses and the analysis to each expert.
- The experts then respond to the survey again, having seen the summarised opinions of the other experts.
- The process is repeated, *eg* for a given number of iterations or until a consensus emerges.

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### Question

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Suggest possible advantages of the Delphi technique compared to bringing the same experts together in a meeting and asking them to discuss and agree on a forecast.

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### Solution

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Possible advantages of the Delphi technique are:

- The anonymity of the experts may improve the process by encouraging open expression of views and making it easier for participants to admit mistakes and revise their estimates.
- The potential problems and biases introduced by the group dynamics of a meeting are avoided, *eg* more forceful or confident personalities dominating the discussion.
- The structured nature of the survey may avoid some of the irrelevant discussions of a meeting of experts, *eg* a meeting might move beyond the forecasting remit to begin discussing other issues.
- The iterations may allow more easily for the refinement of an expert's views in the light of the opinions of others.

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**In a business context, forecasts will be intended to inform and underpin decisions.**

**There are many forecasting techniques, a detailed discussion of which would be beyond the CB1 syllabus. These techniques generally permit forecasts to be made in a systematic and organised manner.**

**That may be reassuring if only because it permits a decision maker to argue that the forecasts were prepared using recognised techniques and so any forecasting errors were unforeseeable. Having a valid technique to justify a forecast offers a sense of legitimacy.**

## 1.2 Budgets



**CIMA defines a budget as 'a plan expressed in money. It is prepared and approved prior to the budget period and may show income, expenditure and the capital to be employed'.**

**Budgets should not be confused with forecasts.**

**A forecast is essentially a *passive* prediction of what will happen in the future.**

**A budget is an *active* statement of intent.**

**Forecasts and budgets are often confused, but they are very different.**

**For example, a forecast of the cost of heating and lighting an actuarial consultancy's offices would be useful information to have in planning its operations.**

**A budget for heating and lighting may well start with a forecast of the cost, but a budget would differ in two crucial respects.**

- **Firstly, it may be decided that the forecast expenditure is not optimal.**  
Senior management might decide that the cost of heating and lighting is too high and ways in which the cost could be reduced might be considered.
- **Secondly, expenditure on heating and lighting might be considered in terms of a wider plan for the organisation.**  
If the consultancy is expanding and employing more staff then it may be necessary (and ultimately beneficial) to spend more on heating and lighting.

**A budget is essentially a planning tool that gives all managers a set of targets that are mutually supportive and consistent.**

**For example, there is no point in a company's marketing department selling more units than its factories can make. A budget would provide every manager with a target that is optimal for the business.**

**Forecasting is an important element of budgeting, but the budget will actively engage with forecasts rather than simply taking them for granted. For example, if the marketing department forecasts that the market will buy more units than the factory can make, management might consider whether there is any scope for expanding production in response to that.**

The purposes of budgeting are:

- It adds precision and focus to a company's plans, quantifying how the company's resources will be used to achieve the company's strategy.
- It considers the relationships between different parts of a company and co-ordinates their operations.
- It clearly communicates plans and responsibilities to those responsible for putting them into practice.
- Budgets can be used to motivate staff, *eg* in appraisals and remuneration schemes.

## Planning horizons

Budgets are plans and there are usually two planning horizons in operation.

Typically, a company will be setting *long-term* plans with a view to implementing corporate strategies. That might mean setting an outline budget for the next *five years*, for example. The five-year budget would set out intentions for investments, financing, product development and so on.

As part of the implementation of the five-year budget there will usually be an *annual budget* that communicates plans and targets for the year ahead, often broken down on a monthly basis so that progress can be monitored throughout the year.

## Motivation

Budgets are often used as part of a company's appraisal system. A target performance against budget may be a key appraisal objective of individuals accountable for elements of performance.

**Budgeting involves a number of motivational issues. One major question is whether the budget should be 'top-down' or 'bottom-up'.**

Budgeting approach	In summary	Advantages	Disadvantages
Top-down	Corporate targets (eg budgeted revenue) form the basis of budgets for smaller units, such as divisions, and finally to individual departments.	Starts with a set of targets that the board of directors believes is in the company's interests.	Line managers may resent having targets imposed on them and may believe that they cannot achieve the targets that have been set.
Bottom-up	Junior managers set their own targets, which can then be collated and integrated into an overall budget.	Involves junior managers in forming company policy / less likely to demotivate managers.	The board may feel that junior managers will have little incentive to set demanding targets.

A top-down approach may involve a *one-way* flow of budgets, eg from the board of directors, through senior management, to more junior managers.

A bottom-up approach is more likely to involve negotiation (with initial budget submissions perhaps being rejected and negotiated before being re-submitted). The flow may therefore be *two-way* as budgets are submitted and agreed from junior managers, to more senior management, to the board and then, once finally accepted, cascaded back from the board through the levels of management.

**Another motivational issue is the question of *budget stretch*.**

If managers are set slack targets that are easily achievable then they may be reluctant to exceed expectations because that will probably lead to more demanding targets in the future. A stretching budget may motivate staff to excel, although they may become demotivated if the target is clearly unrealistic, especially if feedback does not allow for the possibility that the targets were unachievable.

## Budgeting process

The budgetary process has several stages.

1. The starting point is the identification of the *limiting factor*, which limits the scale of operations.

In many companies, the limiting factor is sales. For example, an actuarial consultancy may believe that the market for its services could not exceed 84,000 chargeable hours per year. In that case, there is no point in setting a budget that would require billing 100,000 hours.

The limiting factor need not be sales. For example, our consultancy's activities could be limited by the number of specialist actuaries available to serve client needs or the availability of office space.

2. Once the limiting factor has been identified, decide how that will be managed.

If the maximum annual billing is 84,000 hours the board needs to decide whether it will set that as a rather ambitious target or whether it should aim to achieve, say, 90% of that.

The target should be stretching but not demotivating.

3. Set the other operational budgets in a logical sequence.

If, for example, the consultancy budgets for 80,000 billable hours then it has to decide how many professional staff need to be in post in order to achieve that figure. Setting a budget for professional staff should then lead on to budgets for the administrative staff who will be required to support them and for the provision of office space, travel and expenses, and so on.

It is important that the budgets are mutually consistent.

4. The various operational budgets will then be combined, with a view to seeing what the budgeted figures for the year will look like.

If management is disappointed then it will be necessary to study the budgets more closely to see whether further revenues can be generated or costs can be cut.

For example, tasks some tasks may be reallocated to be performed by less costly staff.

It may be that the limiting factor can be reviewed with a view to relaxing the constraint. It may be possible to increase the availability of expert consultants by training more, for example.

5. Once the budget has been decided, implement it.

Basically, that involves comparing actual results with budget and preparing reports that feed back to individual managers on their performance. The budgetary reports can also assist senior managers to prioritise their time by highlighting departments which are underperforming in terms of actual versus budget.

## 2 Examples of forecasts and budgets

### 2.1 Preparation

The preparation of a budget requires a great deal of administrative effort as well as an understanding of the business' industry and its strategy. It also involves an ability to generate realistic forecasts.

For example, a manufacturing company might start by identifying sales revenue as the limiting factor. It would do so on the basis that it is capable of manufacturing sufficiently to meet any realistic level of demand, and so sales limits overall activity levels.

The first step would then be for the sales staff to be set targets for the year ahead. That might require an understanding of the economy to allow for factors that could affect demand. If interest rates are expected to increase, then consumers may have to spend more on their monthly mortgage payments, and so they cannot be expected to spend as much of 'non-essentials'.

Once the sales budget has been established, there will be a sequence of associated budgets to allow for those plans.

For example, the production budget will follow on from the sales budget, with a view to ensuring that goods are produced in time to meet customer demand, but not so early as to tie up cash unnecessarily in inventory.

The budgets trickle down further. The production budget will require further thought to be given to budgeting for the purchase of parts and materials, for production staff, for any expansion to plant and equipment and so on.

Once the budgets have been set, they are added together to create a 'master budget' that shows the budgeted profit for the period and the financial position that can be expected at the end. This may require aspects of the budget to be revisited.

For example, it may be that the board is disappointed with the budgeted profits and that may lead to some further thought about the targets. It may be possible to stimulate additional sales by changing the marketing strategy or to reduce costs by changing production methods.

### 2.2 Feedback

Once the budget has been accepted and finalised, it will then be broken down into a coherent set of targets for managers and supervisors at every level in the organisation.

For example, divisional sales managers will be told what their divisions' targets are on a monthly basis and individual sales staff will be given their own personal targets.

Finally, performance will be measured against budgets. Differences between actual and budget are called *variances* and variances can be classified as 'adverse' or 'favourable'.

Managers at each level will receive feedback on their performance and attempts will be made to rectify problems as they arise.

One advantage of budgets is that the senior management can use budget reports to identify areas that are most in need of their attention. Small variances suggest that everything is proceeding according to plan, while large variances may call for more attention.

As long as each individual division / team meets their targets, the budget should be met overall.

More realistically, it is likely that some will fall short of their targets, and others will exceed them.

## Budget flex

A static budget does not change after it has been accepted and finalised.

Identifying variances between actual and budget is made easier if the budget is static, but may offer little insight if the actual level of output or other conditions is very different from that assumed in the budget.

A static budget may be suitable where there is relative certainty about the level of output or when most costs are fixed.

**One matter that requires a little thought is the question of flexing budgets.**

**If, for example, the factory had to increase production because sales revenue exceeded the budget then it is very likely that some costs will increase as a result. It is almost certain that the cost of materials consumed will exceed the budget.**

**Treating the variance on materials as adverse might demotivate the factory manager because the additional cost was unavoidable.**

As an alternative to a static budget therefore, a budget might be flexed to reflect different levels of activity.

In a flexed budget, variable costs might be varied in line with actual output while maintaining fixed costs at the original budget levels.

**The danger is that automatically flexing all of the budgeted production costs will reduce the incentive to minimise costs overall. For example, it may not be necessary to spend more on wages if the additional output could be achieved through more efficient working patterns.**

## 2.3 Limitations of budgets

**While budgetary control is almost certainly vital to ensure that businesses operate in an efficient and coordinated manner, there have been concerns that budgets can harm performance.**

Budgets might be dismissed or undervalued if they are produced by the finance team (rather than by business units) and focus solely on accounting numbers, *eg* sales revenue and costs, rather than customers, products and business strategy.

Critics argue that budgets may lead to a focus on cost reduction and not value creation, if it is easier to cut costs than generate sales.



Practical limitations of budgets include:

- the difficulty of producing them as they involve assumptions and subjective forecasts
- they may also be developed and updated too infrequently, and so not sufficiently responsive to changes in a company's operating environment.

Budgets might also be unpopular because of the resources spent producing and negotiating them and then, once implemented, measuring performance against them and explaining variances.

**One concern with budgets is that they limit performance and encourage incremental thinking on the part of senior management.**

Budgets may reduce flexibility and act as a barrier to change in a company, leading to missed opportunities for growth.

**Budgets can also raise motivational issues.**

**Sometimes senior managers set demanding targets to offset the natural reluctance of more junior managers to set difficult targets for themselves.**

**There is evidence that the best performance is encouraged by a budget that is demanding, but still achievable. Slack budgets discourage effort. Unduly stretching budgets may be rejected as impossible, although there is also evidence that staff internalise such targets even if they know that they cannot be achieved. There is still a sense of failure when the target is not met. That can make budgetary control a source of stress and conflict within organisations.**

Budget setting can be contentious and political. Budgets can increase barriers between different parts of an organisation, *eg* where one department seeks to meet its budget, but its actions in doing so are detrimental to another department and the organisation overall.

**Budget holders may be unwilling to exceed their targets because they do not wish to see future targets made more demanding.**

**A salesperson who has a monthly sales target of \$800,000 may start to slow down if close to that target early in the month. It could be possible to sell twice that amount in a good month, but doing so might lead to an unattainable target overall, or a target that would be attainable but stressful to achieve.**

Budgets can therefore lead to the opposite of the behaviour they are intended to encourage.

Budget holders may 'game' their budgets in other ways, *eg*:

- needlessly spend their capital expenditure budget at the end of the financial year in order to avoid cuts to the budget for the following year
- deferring reporting some sales revenue, in case sales revenue falls in future.

**This concern leads on to the suggestion that annual budgets simply start with the previous year and make minor adjustments to reflect actual performance. The board rarely, if ever, starts with a blank sheet and sets targets that are not affected by past performance. That can lead to budgeted costs increasing year on year without any consideration for whether they are even necessary.**

Zero-based budgeting aims to correct this problem.

## Zero-based budgeting (ZBB)

There have been attempts to develop alternatives to incremental budgeting.

Zero-based budgeting (ZBB) literally does start with a blank sheet and everything has to be determined from the beginning.

For example, the initial budget for electricity to power the factory is zero until a case can be made for spending a particular amount. That case must be justified, and cannot be based on the argument that nothing will be produced unless the lights are on and the machinery is plugged in.

ZBB is rarely used in practice because of the significant time that it involves, but there can be value in considering whether certain costs might be dispensed with or significantly reduced.

## Beyond Budgeting

'Beyond Budgeting' is another alternative, which basically means that individual branches do not receive budgets. Instead, each branch manager is measured on their branch's performance.

This approach is often associated with a Scandinavian bank that stopped setting targets for the number of new customer accounts and the amount of business done. It then ranked its branches based on actual results. This effectively put the branch managers in competition with one another.

The Swedish bank Svenska Handelsbanken is the mentioned example of an early Beyond Budgeting approach, adopting the system in the 1970s. The approach has subsequently been adopted by companies in a wide range of industries.

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### Question

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Suggest possible advantages of the Beyond Budgeting approach.

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## Solution

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Advocates of Beyond Budgeting claim that its advantages are:

- motivating employees by treating companies as a network of teams, without the hierarchy assumed in top-down or bottom-up budgeting
- being based on trusting staff and teams to make good decisions, rather than micromanaging them
- rewarding based on competition and relative performance rather than meeting of fixed targets.

This may be advantageous in a rapidly changing environment, when fixed targets may become inappropriate, and also avoids some of the motivational issues, *eg* managers slackening their efforts after a fixed target is met or negotiating a budget target that is easily met

- decisions are based on information that is fed back to senior management on a regular and timely basis, rather than infrequent variance analysis against a budget.

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**The Beyond Budgeting approach may work in some situations, but it could prove chaotic in a business that requires decisions to be taken in an integrated manner.**

**For example, it could lead to the sales staff selling more than the factory can manufacture.**

This lack of an overall framework is a disadvantage not just for co-ordinating activities but also for planning for the future of the business and aiding cost control.

Not all businesses suit organisation as a decentralised network of comparable teams that underlies the Beyond Budgeting approach. Most businesses do still produce budgets, despite their limitations.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.

## Chapter 17 Summary

### Forecasts

A forecast is a passive prediction of future events and their quantification for planning purposes.

Approaches to forecasting include:

- statistical techniques, *eg* regression, time series analysis
- drawing upon observations that can be put into models, *eg* financial models
- intuitive techniques, *eg* Delphi technique.

### Budgets

A budget is an active plan expressed in monetary terms. It is prepared and approved prior to the budget period and may show income, expenditure and the capital to be employed.

A budget is essentially a planning tool that gives all managers a set of targets that are mutually supportive and consistent. There are usually two planning horizons in operation, longer-term (*eg* five years) and annual.

Budgets can be top-down or bottom-up.

### Budgeting process

The preparation of a budget requires a great deal of administrative effort as well as an understanding of the business' industry and its strategy.

Generally the process is as follows:

1. Identify the limiting factor, *eg* sales.
2. Decide how to manage that factor and set a target for it.
3. Set operational budgets to reach that target in a logical sequence.
4. Combine operational budgets to see budgeted figures, *eg* revenues, costs, profits. If necessary, see whether further revenues can be generated or costs can be cut.
5. Implement the budgets and measure performance against them. Differences between actual and budget are called 'variances'.

## Limitations of budgets

One concern is that budgets limit performance and encourage incremental thinking. Budget holders may be unwilling to exceed their targets because they do not wish to see future targets made more demanding.

Annual budgets may simply start with the previous year and make minor adjustments. This can lead, for example, to budgeted costs increasing year on year without any consideration for whether they are even necessary.

Budgets can also raise motivational issues, *eg* being imposed from the top-down.

- Slack budgets discourage effort, exceeding targets may lead to ever higher targets.
- Unduly stretching budgets may be rejected as impossible and cause stress.

Zero-based budgeting (ZBB) and Beyond Budgeting approaches might be used to try and avoid these limitations.

- ZBB begins with a zero budget, and insists that any increase can be justified.
- Beyond Budgeting does not set budgets, but instead ranks teams based on results, setting different teams within the organisation as competing units, and gives each team freedom over its operations.



## Chapter 17 Practice Questions

Exam style

All of the questions that follow are exam style.

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- 17.1 Which of the following is NOT an approach to forecasting?
- A time series analysis
  - B seeking an expert's opinion
  - C Delphi technique
  - D zero-based approach
- [2]
- 17.2 Which of the following is NOT an advantage of top-down budgets compared to bottom-up budgets?
- A Junior managers are likely to be more motivated by a target set by senior management.
  - B They enhance co-ordination and consistency between departments.
  - C They may shorten the time taken to produce the budgets.
  - D They can more easily incorporate strategic plans.
- [2]
- 17.3 Which of the following best describes a zero-based budgeting approach?
- A an approach that attempts to get all overhead costs down to zero
  - B an approach where the budgeted revenues less costs for each business unit is set equal to zero
  - C an approach where each activity is re-evaluated each time a budget is produced
  - D an approach that leads to zero variances between actual results and flexed budgets
- [2]
- 17.4 Compare statistical approaches to forecasting with intuitive approaches such as the Delphi technique.
- [5]

17.5 A company had the following budget and actual results over a particular quarter:

	<b>Budget</b>	<b>Actual</b>
Number of units sold	1,000	1,400
	\$	\$
Sales revenue	120,000	160,000
Raw materials	40,000	54,500
Production staff salaries	20,000	30,000
Other variable costs	15,000	21,000
Fixed costs	25,000	26,500
Profit	20,000	28,000

The company flexes its original budget by adjusting sales revenues and all variable costs in line with the number of units sold. Prepare the company's flexed budget for the quarter and suggest possible reasons for the variances between the flexed budget and the actual results. [5]

17.6 A manufacturing company uses an incremental approach to setting its annual budget. Describe an incremental approach to budget setting and the possible disadvantages to the company of using an incremental approach. [5]





## Chapter 17 Solutions

17.1 Answer = D

Zero-based budgeting approach is an approach to budgets. Although intuitive forecasts would *typically* involve the consensus view of more than one expert, asking a single expert is still a possible approach.

17.2 Answer = A

People tend to be less motivated by targets imposed by someone else. Junior management may feel that top-down targets are unreasonable and do not reflect their local operating environment.

17.3 Answer = C

17.4 Statistical approaches assume the continuation of established patterns and do not allow for changes in the environment being considered. [1]

Intuitive forecasts use judgement and so can allow for future changes (although they won't necessarily do so). [1]

In particular, the experts involved in the forecasts may also have some role in shaping future changes and can bring this to bear in their forecasts. [1]

Statistical approaches may be quicker and cheaper. Involving experts and getting them together or going through the iterations of the Delphi technique is likely to be both costly and time-consuming. [1]

Statistical techniques may offer more rigour than judgement forecasts. [1]

In particular, they may use all relevant available past data, whereas intuitive forecasts may place more emphasis on recent events than longer-term statistical trends. [1]

Statistical techniques may be less open to individuals' biases than judgement techniques ... [1]

... although the Delphi technique remove some of the biases that may exist in other forms of experts' opinions, *eg* results of brainstorming meetings. [1]

[Maximum 5]

17.5 Flexed sales revenues and variable costs in the flexed budget are calculated as:

$$\frac{1,400}{1,000} \times \text{original budget figure}$$

This results in a flexed budget of:

	Original budget	Actual	Flexed budget
Number of units sold	1,000	1,400	1,400
	\$	\$	\$
Sales revenue	120,000	160,000	168,000
Raw materials	40,000	54,500	56,000
Production staff salaries	20,000	30,000	28,000
Other variable costs	15,000	21,000	21,000
Fixed costs	25,000	26,500	25,000
Profit	20,000	28,000	38,000

[2 marks for correct flexed budget column]

The total adverse profit variance for the quarter is \$10,000. This is made up of:

- An adverse sales revenue variance of \$8,000. This may be a result of, for example, increased competition in the sector or the company cutting prices in order to boost sales.
- A favourable variance of \$1,500 in the cost of raw materials. This may be a result of, for example, more favourable negotiations with suppliers than was expected or possible discounts for ordering in larger quantities (around 40% more).
- An adverse variance of \$2,000 in production staff salaries. This may be a result of, for example, a higher than expected wage increase agreement or more use of overtime due to higher levels of production.
- An adverse variance of \$1,500 in fixed costs. This may be a result of, for example, a poor initial forecast, inflation higher than expected or an incorrect allocation of direct and overhead costs (*ie* some of the 'fixed' costs may not be truly fixed).

[1 for each valid example]

[Maximum 5]

17.6 An incremental budget takes a previous budget or actual performance as a starting point and adds on incremental amounts for the next budget period. [1]

For example:

- staff costs may be increased in line with agreed or expected salary increases [1]
- raw material costs may be increased with price inflation. [1]

An incremental budget will not take into account changes in the company's circumstances or operating conditions. [1]

Over time this may conceal inefficiencies in processes and production methods. [1]

For example:

- retendering supply contracts may enable savings on raw materials to be made [1]
- investing in new production techniques may enable goods to be produced more efficiently, *eg* with less waste material or by less labour-intensive means. [1]

The incremental approach will allow the company to meet its budget target without considering this. [1]

[Maximum 5]

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# 18

## Growth and restructuring of companies

### Syllabus objectives

- 2.5 Discuss how companies grow and the different ways of company restructuring.
1. Describe why businesses want to grow larger, how companies achieve internal growth and explain the relationship between growth and profitability.
  2. Describe the constraints on a firm's growth.
- 2.6 Outline the motives for mergers and acquisitions.
1. Describe the characteristics of a merger.
  2. Discuss methods of evaluating a target company.
  3. Discuss the steps that a buyer will usually take in a leveraged buyout.

## 0 Introduction

In this chapter we look at how and why companies aim to grow in size and grow their profits.

It seems obvious that companies would aim to grow and make their profits bigger, as shareholders would normally want bigger profits rather than smaller profits. But if the profits grow at the same pace as the number of shareholders grows, the choice becomes less clear. Similarly, if we compare one large company with two smaller companies that undertake the same amount of business, then again the choice is less clear as to whether it is best to own the shares of the two smaller companies or to own shares of one larger company that controls all of the business.

Sections 1, 2 and 3 look at the motivations for growth, the links between growth and profits, and the restrictions on growth.

Section 4 looks at the methods of achieving growth, and Section 5 drills down on the route of 'mergers and acquisitions' to achieve growth. Section 5 is a longer section which looks at the processes and timescales involved in acquisition, and investigates leveraged buyouts in more detail.

As you work through this chapter, ensure that you keep in mind the plus points of growth, *eg*:

- higher sales
- more control and power of the corporate environment
- potentially greater profits

while also considering the negative aspects, *eg*:

- the expenses of the process
- agency issues
- the requirement to raise the finance as debt, cash or as new shares.

Like most things in life, there is a compromise to be made, and many companies that pursue growth can be very successful, while others grow large only to implode and collapse.

There are some lists to be learned in this chapter which will help in generating ideas, and there could be exam questions that describe a specific scenario and ask for ideas consistent with that scenario.

# 1 Motives for growth

Many businesses believe that they need to grow in order to provide a better return for shareholders, which is often vital for a company's survival. The motives for growth can therefore be found in the many ways in which growth can help a company achieve its overall aim, including:

## 1. Increased profitability.

By increasing its output and sales, a business can:

- benefit from economies of scale
  - lower average costs, eg by buying in bulk
  - obtaining better credit terms from suppliers
  - by investing in machinery and techniques that improve productivity
- increase its market share and hence its market power (*ie* its power to increase prices)
- expand into new and growing markets.

It can be easier for larger companies to pursue international opportunities, if, for example many of the fixed overhead costs involved can be absorbed by the company. If a smaller company aims to expand overseas, the fixed costs would be a large proportion of the overall profit and might sink the company.

## 2. Increased security.

A larger business:

- can defend itself against an unwelcome takeover bid
- can overcome barriers to entry in new markets
- can benefit from risk diversification by expanding the product range, especially if the present market seems saturated
- is a greater threat to a potential rival
- might face lower transactions costs, *ie* costs of making contracts with other firms
- might face less uncertainty and/or is in a better position to cope with uncertainty
- will obtain more business as it is seen by customers to be a more reliable and secure source of supplies.

### 3. Increased motivation for managers and employees.

#### A larger business can:

- **provide an environment of increased power, prestige and salary**  
Many ambitious managers would not join a company that did not offer the potential for international opportunities.
- **offer decreased employment risk for managers**  
Managers that have wide-ranging experience are more marketable and find it easier to get promoted or alternative employment if their current job becomes insecure.
- **result in improved staff morale**
- **often attract more able, more ambitious and more productive staff.**




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#### Question

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List the disadvantages for a financial consultancy firm of growing by aggressive domestic and overseas expansion.

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#### Solution

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1. A larger company can lose focus, becoming a 'jack of all trades and master of none'.
2. Management can lose control over parts of the business, leading to inconsistent strategies being pursued in different parts of the business and different parts of the world.
3. Regulatory costs and risks can become unmanageable when the firm operates in many different countries.
4. Reputational issues may impact performance not just in one country but on the entire brand.
5. The company may lose its domestic 'brand' and be seen as just another global utility.
6. The company will be exposed to political measures taken in overseas countries, such as trade barriers, prohibiting the repatriation of profits, exchange rate controls and employment restrictions and controls.

There may be many more that you thought about that are not included on this list.

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## 2 The relationship between profit and growth

Profits fund a large proportion of new investment so, in order to grow, the company needs profits. Even if the company is able to obtain some long-term finance, it will probably have to finance some of its growth by ploughing back some of its profits (ie retaining profit rather than distributing it as dividends to the shareholders).

However, undertaking a growth strategy can be very expensive for the company.

In the short term, as well as the investment in plant and equipment, there will be additional expenses, such as advertising and training costs, which could reduce annual profit.

In the longer run, as the new investment brings results in the form of higher revenue and lower costs, annual profit should increase.

A growing company will run out of office space for its staff and need bigger premises. It may also need more manufacturing facilities, and more plant & machinery to cope with the higher demands. These all require finance, which needs to come either from retained profits, or by raising new finance in the form of debt or equity.



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### Question

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If a company has a payout ratio of 0.5 (or a dividend cover of 2), suggest what this indicates about the finance it will have available to plough back into the business.

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### Solution

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At first glance it looks like the company is paying a half of its profits as dividends, which means that the other half should be available for financing growth in each year.

However, profits do not mean cash. For example, if a company retains half of its profits in a particular year when a bank loan is maturing and requires to be repaid, the company may in fact be cash negative in that year which will mean there is no cash for growth.

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### 3 The constraints on growth

The firm's plans for growth can be constrained for a number of reasons:

- **Difficulties in raising finance.**

**Potential investors (shareholders, venture capitalists, creditors) will consider the expected outlook for the economy in general, and the firm's investment plans, its reputation and its creditworthiness.**

Venture capitalists are investors that specialise in financing smaller or riskier ventures. Venture capital is usually provided by specialist companies that have skills in analysing the prospects for small companies that would not manage to raise finance on the main stockmarket.

- **Fears of a fall in the share price.**

**If a firm does not have the confidence of its shareholders, a fall in dividends because of profit being invested in the business might cause shareholders to sell their shares.**

**The resulting fall in the share price might lead to an unwelcome takeover bid. The lower the valuation ratio (or price to book ratio), which measures the ratio of the stock market value to the book value of the firm, the more vulnerable the firm.**

- **Lack of managerial experience and expertise.**

**Running a large business is more complex, more time-consuming and more expensive than running a small business. It requires skilled managers, clear management structures and delegation.**

**Some owner/managers of small businesses may be reluctant to lose direct control and might resist growth or manage it badly.**

- **Limited time to prepare the workforce including management.**

- **Government policy on monopoly power and mergers.**

Governments may wish to prevent takeovers on the grounds of national security or monopoly, when a domestic company is purchased by an overseas competitor. The competitor may not have the same loyalty to the country so may move jobs/head office functions overseas for efficiency.

However it may be impossible to prevent takeovers, or even to try to prevent them as to do so may breach international trade rules.



#### Question

List the groups of institutions or individuals that might be labelled as 'creditors'.

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## Solution

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- Banks, either retail (which finance smaller companies) or wholesale (which finance larger ventures)
- Bond investors
- Venture capitalists (who usually prefer equity finance, but may also provide debt)
- Peer-to-peer lending organisations
- Suppliers who may grant trade credit or offer hire purchase / credit sale options




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## Question

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Suggest other investment ratios that shareholders and competitors may look at that would be affected by a fall in the share price.

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## Solution

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In addition to the 'price to book', which is defined as  $\frac{\text{price per share}}{\text{NAV per share}}$ , shareholders also look at:

- PE ratio, ie  $\frac{\text{price per share}}{\text{earnings per share}}$ . If the price falls, this ratio will fall, making the company look cheap to a competitor, who may decide to launch a takeover.
  - Dividend yield, ie  $\frac{\text{dividend per share}}{\text{price per share}}$ . If the price falls, and the yield rises, the company seems an attractive investment.
-

## 4 Methods of achieving growth

There are many *methods* of achieving growth, but they can be divided into two main groups:

1. internal (or organic) growth, *ie* expansion of its own operations
2. external growth, *ie* integration with another firm or firms.

### Internal growth

Internal growth might be preferred by firms that wish to:

- retain control
- avoid the disruptive influence of alien business cultures or practices
- avoid the risk of dealing with firms that lack integrity
- avoid unnecessary government intervention.



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### Question

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Explain how internal growth 'retains control'.

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### Solution

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Internal growth means that management can retain control of decisions, such as location, range of products and strategy, because the company is deciding where the growth should take place.

This contrasts with external growth which might involve taking over an existing company, and accepting the business mix of the target company, and bringing some of the managers of the target company into the new expanded company.

Internal growth is also financed by retained profits, debt issues, or share issues to existing shareholders. In these circumstances, voting control of the company does not necessarily change.

External growth may involve merging with another company, usually by offering new shares in the company to the existing shareholders of a *target* company. These shareholders will then have voting influence in the new expanded company, and so the control has diluted.

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## External growth

On the other hand, external growth might offer:

- **an easier and quicker method of growth, especially if the company wishes to expand geographically**  
**the opportunity to acquire assets or experience**
- **the opportunity to share the financial burden and the risk of a project**
- **the opportunity of a good use of spare cash for a mature company.**

In many circumstances, mature companies in mature industries generate lots of profit, but may have few growth opportunities. Shareholders do not really want all profits paid back in the form of dividends, therefore external growth is an essential strategy.



### Question

Explain why it might be a bad idea for a food manufacturer to use its spare cash to expand into the car manufacturing industry.

### Solution

The company has no experience in the car manufacturing business, and is highly likely to make a mess of it!. A lack of expertise and so weak strategy in an already competitive industry is ultimately likely to fail, making losses for shareholders.

Secondly, shareholders that buy shares in the food manufacturer are probably looking to invest in a relatively safe, stable industry. If the business slowly becomes a mixture of food and car manufacturing, it will become much riskier and more cyclical. This may not suit the original investors, who will sell the shares and invest elsewhere.

## 4.1 Methods of internal growth

**Internal growth occurs when a business expands its own operations rather than by operating with other business. This can be achieved in three ways. A firm can expand:**

- **by horizontal expansion, ie by increasing production of goods or services at the same stage of the production process, eg a food manufacturer**  
A food manufacturer expanding its business is a horizontal expansion.
- **by vertical expansion, ie by developing new operations at a different stage of the in the production process, eg a food manufacturer might move backwards into farming or forwards into retailing**
- **by diversification, ie by moving into completely different markets, eg a mail-order business might expand into radio stations, trains, airlines and banking.**

Diversifying expansion projects are often supported by management, because the diversified profits may make the company less exposed to the downturn in one industry. A more stable employer is seen by management as a good thing.

However, a diversified company can be a lot less dynamic than one pursuing a strategy in one field, and the long-term growth can be poor as a result. This is generally bad for shareholders, even if it makes managers feel more comfortable.

## 4.2 Methods of external growth

**External growth occurs when a firm merges with, takes over or works jointly with another firm or firms.**

**This integration can take the same three forms as above:**

- **horizontal integration involves two or more firms at the same stage of the production process in the same industry, eg two car manufacturers**
- **vertical integration involves two or more firms at different stages of the same production process in the same industry, eg a car manufacturer and a supplier of car components, or a car manufacturer and a car retailer**
- **conglomerate integration involves two or more firms in completely different industries, eg a car manufacturer and a hotel chain.**




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### Question

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It is often claimed that giant companies such as Apple, Facebook, Microsoft, Twitter, *etc*, have so much cash and power that they acquire every startup or medium-sized business in their field.

This level of horizontal expansion is deemed to be good for shareholders as it means that the company is at the forefront of technological advance, and is always in touch with the direction of travel in the fast-changing internet/social media world.

Suggest possible negatives of such a strategy of aggressive horizontal expansion.

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### Solution

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Excessive power in an industry comes at the risk of excessive control and dominance.

It can become impossible for other companies to compete with the likes of Facebook, Microsoft and Twitter, and therefore the industry can become monopolistic. This can become negative in the longer term.

In addition, the management of these companies may find it hard to continually merge several hundred new companies into the existing business every year.

Culture, technological and management changes can mean that the new expansion investments fail to reach their true potential (*ie* the potential that they had as stand-alone businesses).

Large companies sometimes buy start-up companies simply to close them down.

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## 5 Mergers and acquisitions

### 5.1 Characteristics of mergers and acquisitions

**A merger occurs when two or more firms agree to combine their business operations into a new legal entity with a new name. It does not necessarily require any finance; and managers from both teams are usually employed in the new business.**

It may seem strange that no finance is required for such mergers. Most large mergers involve shareholders in both companies (say Company A and B, merging into new entity Company C) accepting a share swap. Shareholders in Company A, will accept (say) one share in the new Company C, for every share they currently hold in Company A. At the same time shareholders in Company B will accept (say) one share in new Company C for every two shares they hold in Company B. The proportions will be determined to reflect the size of each of Company A and B, and number of shares that exist in each. No new shares are issued, and no debt or cash is involved.

**An acquisition (or takeover) occurs when one firm (the acquirer) buys sufficient shares in another firm (the target) to take control of that firm. The acquiring firm needs finance in order to buy the shares of the target.**

**The takeover can be friendly, if the target firm's board of directors endorses the offer, or hostile, if it objects.**

**The motives for mergers and acquisitions are the same as those for growth of businesses generally described in Section 1. Specific motives are also covered in the following section.**

### 5.2 Methods of evaluating a target company to merge with or acquire

**When contemplating a merger or an acquisition, the company must first review its corporate strategy. It must understand its strengths and limitations, its opportunities and the threats facing it in the next few years both at home and overseas. This analysis gives a company a direction and a set of priorities.**

This is often known as a SWOT analysis: Strengths, Weaknesses, Opportunities, Threats.

**When evaluating a potential target company, an acquirer might consider the following headings:**

- **Resources**  
the acquisition of additional (perhaps unique) resources, eg technology, raw materials, patents, licences, expertise, experience, reputation in a particular market/location
- **Costs**
  - the ability to reduce costs, eg economies of scale arising from horizontal integration, cheaper raw materials or labour in a different location
  - the ability to produce and sell within another country and thereby avoid trade barriers
  - the possibility of reducing tax if residency is switched to the target's country.

- **Market**  
the potential for extending the market, eg to a new segment or location and/or the ability to serve large clients/customers
- **Security**
  - the potential to increase certainty and reduce transactions costs, eg the greater control of supplies / outlets arising from vertical integration
  - the opportunity to decrease the number of competitors in the market by horizontal integration
  - the ability to spread risk by conglomerate integration.
- **Compatibility**
  - the compatibility of management style
  - culture
  - remuneration packages.

Overall, the acquirer is seeking *synergy* with its existing operations. The target should:

- meet its needs, eg be a reliable supplier
- offer the acquirer the potential to add value, eg by improving management, reorganising the structure, investing in new technology

so that the value and performance of the two companies combined will be greater than the sum of the separate companies.

This will probably be judged by whether the profits of the combined organisation a few years down the road is greater than the sum of the profits from each individual business, had they been left as they were.

It is of course subjective, as no-one knows what the profits and strategies of the individual companies would have been had they not merged or been acquired. However, if there has been an exodus of key staff and managers, and the share price seems to be on the decline, then it is usually judged to have been less than ideal.

**Once a decision has been taken to engage in merger or acquisition activity, a proper assessment of the target company must be conducted.**

**Examples of information collated includes:**

- **financial information**
- **capital structure**
- **employee and management information**

For example, this could include the contracts and terms on which existing management have been hired, pension arrangements, golden handcuffs *etc.*





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## Question

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Give examples of the sort of financial information that might be collected.

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## Solution

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Information might include:

- statement of financial position (or balance sheet) information such as gearing, debt repayment dates, intangible asset valuation, net asset value, working capital
- profit and loss information such as growth in profits, changes in profit margin, cost levels, accounting rules for depreciation and intangible treatment
- cashflow information such as cash from operating activities, and trends over time
- market information such as PE ratios, share price growth in recent years, price to book ratio.

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**In terms of financial criteria, the acquirer would try to estimate the net gain to the acquirer's shareholders, ie the net present value (NPV) of the gains less the losses from the acquisition.**

If the NPV calculation is performed at a reasonable risk-based rate of return, and includes the initial cash outflow as well as all the future cash inflows and outflows, then a positive NPV indicates that the investment is beneficial to shareholders.

**Alternatively, the net gain to the acquirer's shareholders could be seen as the wealth with the acquisition less the wealth without the acquisition.**

Wealth here could be defined as accounting net asset value, or market value of shares, or by some other definition of value.

**The market value of the businesses will change over time depending on the information released and the attitudes of the shareholders of the acquirer and the target towards the proposed acquisition. It is probably impossible to arrive at a single figure for the purchase price of the business. In practice, the environment at the time will play a part, eg:**

- **eagerness of the buyer**
- **the current market conditions**
- **the negotiation skills of the parties.**

In bull markets, when prices are rising and shareholders are confident in the future, it can sometimes be difficult to convince target shareholders to part with their shares for a given price.

When markets are falling and recession seems to be looming, it may be easier to convince shareholders to part with their shares in exchange for either cash or shares in a bigger more stable company.

### 5.3 Steps taken in an acquisition

The buying process is complex and the advice and expertise of an investment bank will usually be sought.

1. **Check government policy and relevant regulations and legislation on acquisitions.**

For example, in the UK a company must make a cash offer when its shareholding reaches 30% of the target's shares.

2. **Obtain shareholders' approval for the purchase of the target's shares.**
3. **Arrange the raising of finance to purchase the target's shares. The funds could be raised by a rights issue or a new debt issue.**
4. **Determine the method of payment for the target firm's shares.**

The acquirer provides cash, loan stock and/or shares of the acquirer's company in exchange for the shares of the target company.

Which method is chosen depends on the capital structure of the acquirer and the extent to which the target's shareholders are likely to want to share risk in the larger company of the acquirer.

5. **Approach the board of directors of the target company and make an offer.**

If the directors are receptive to the approach, a friendly takeover can be negotiated. If not, a hostile bid will be made.

A friendly takeover is usually negotiated behind closed doors in secret, until an agreement is reached between the target board and the acquiring board. Once this is agreed, it is presented to target shareholders, with the recommendation of their board.

If a hostile takeover needs to be carried out, the target board need to make the offer directly to target shareholders through the stock exchange.

6. **If the takeover is friendly, discussions will take place, due diligence will be performed (ie investigations and checks of financial records, tax records and senior management etc), a definitive agreement on financial matters and non-financial matters (such as management structures) will be reached, and shareholders and regulators will be asked to approve.**
7. **In the case of a hostile takeover, the target's board of directors tries to prevent the takeover (possibly even taking action to make the target seem less attractive) so the acquirer either withdraws interest or must make a bid directly to the shareholders.**




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#### Question

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Suggest possible reasons why the UK Stock Exchange insists that an offer for all the shares in the company must be made once an acquiring company owns 30% or more of the shares in the target.

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**Solution**

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There may be other reasons, but one of the major reasons is to make sure that any offer is fair to large and to smaller shareholders.

It is possible that a company could reach 30% and then begin discussions with 3 or 4 large institutional shareholders to gain a further 20%. It could make these large institutions an attractive offer to get a further 20%, at which point it owns 50% of the shares and controls the company. The remaining smaller shareholders become non-controlling interests in the company and may be very annoyed at the loss of control. But without this rule they had no choice in the matter, and they did not have the possibility to participate in the attractive offer that was made to the large institutions.



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**Question**

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Give examples of actions a target board could take to make the company seem less attractive to the acquirer or in other ways to thwart the bid.

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**Solution**

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It is sometimes difficult (or illegal) to make the target less attractive. Since the target board are theoretically there to maximise wealth for the shareholders, it runs counter to this if they seek to make that target company less valuable.

However, if the takeover is largely driven by one key 'jewel', then this jewel can be sold at a market price. If for example, a training company was targeted because of its statutory ability to award degrees in a particular country, then it could sell this right to a subsidiary and float the subsidiary as a stand-alone company, or sell it to a large competitor.

Some management teams insert options into debt instruments, whereby if a takeover bid is made, those debt instruments convert into voting equity shares, making it much harder for the acquirer to attain 50%. Again, these are often frowned upon in the real world.

A more common approach is to find another acquiring company, that may be willing to pay a higher price for the target, and whose plans are more agreeable to the target management (eg the target management might not all be sacked after the takeover). These preferred buyers are sometimes called 'white knights'.

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## 5.4 Leveraged buyouts

A leveraged buyout (LBO) is different from an ordinary acquisition in two ways:

1. **A large part of the funds required to purchase the company is raised by debt.**

The buyer, usually a private equity fund (or sometimes the company's management, in which case the acquisition is called a management buyout (MBO)), only puts up a small amount of money, borrowing the rest.

If a new management team, perhaps with experience in another similar company, raise finance to buy out a company, it is referred to as a management buy-in.

2. **The LBO becomes a private company and ceases to trade on the open market.**

An example of a large LBO in the UK was the previously public quoted company 'Boots' (a major national pharmacy chain). A private equity company raised a lot of finance, much in the form of debt, and bought all the shares of Boots in the stockmarket. The company was then de-listed and run as a private company.




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### Question

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Suggest possible concerns of employees of a company that is subject to an LBO.

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### Solution

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The increased debt may make the company less stable, and more exposed to a downturn in the economy. If that occurs, the company may go bankrupt, and the employees lose their jobs.

(Of course, there is the other side of the coin, whereby the new owners might agree to inject new cash into the business, expand the profits, and secure the long-term prospects for a company that might otherwise have died a slow death anyway!)

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**The main motive for LBOs is profit. The profit might arise from**

- **selling off the assets that are not needed**
- **the tax relief on debt finance**
- **the installation of a new management team that reduces expenses and capital spending.**

However, many private equity funds have been criticised for stripping the firm of its asset and destroying jobs.

The main motive for MBOs is to improve efficiency and hence to save businesses and jobs. In large, diversified companies, small divisions can be ignored and subsequently threatened with closure. However, as a result of a MBO, the new private company can become very successful, driven by the dual incentives of the personal self-interest of the new owners (managers) and the need to generate cash to pay debt interest.

The steps taken in a leveraged buyout are similar to those given in Section 5.3, except that the new private company raises the funds predominantly in the form of debt finance and pays for the target company in cash.

## Chapter 18 Summary

### Motives for growth

The main motives are:

- to increase *profitability* benefiting from economies of scale, increasing market share and expansion into new and growing markets
- to increase *security* in terms of threat to and from other companies, barriers to entry, diversification, lower transaction costs, volatility, reputation
- *motivation* for employees and managers in terms of power, prestige, salary, stability of employment, ambition and morale.

Growth is a trade-off between these benefits and the costs of the expansion.

### Constraints on growth

- Availability of finance
- Effect on the share price if cash is diverted from dividends
- Lack of management experience
- Limited time to prepare the workforce and management for changes
- Government policy on monopoly power and mergers

### Methods of achieving growth

Internal growth involves expansion of existing facilities and production. Advantages:

- retain control
- avoid the disruptive influence of alien business cultures or practices
- avoid the risk of dealing with firms that lack integrity
- avoid unnecessary government intervention.

External growth involves buying existing facilities through takeover or merger. Advantages:

- an easier and quicker method of growth, especially if wish to expand geographically
- the opportunity to acquire assets or experience
- the opportunity to share the financial burden and the risk of a project
- the opportunity of a good use of spare cash for a mature company.

Most growth can be classed as

- horizontal *ie* the same stage in the production cycle
- vertical *ie* different stages in the production process
- conglomerate or diversification *ie* taking over a company in a different industry or expanding into a completely different industry.

## Evaluating a potential target

The following factors would be assessed by the acquiring company:

- resources of the target, *eg* technology, expertise, brand, raw materials, *etc*
- costs that could potentially be saved after the takeover
- market expansion potential using the target's client base and products
- opportunities to increase security of the company's profits by reducing competition, controlling different stages of production and diversifying profits
- compatibility between the two companies in terms of management style, culture and remuneration.

A great deal of information would need to be processed, much of which is financial and can be taken from the accounts, and some of which will relate to employee and management contracts.

## Steps involved in acquisition

1. Check government policy and relevant regulations.
2. Obtain shareholders' approval for the purchase of the target's shares.
3. Arrange the raising of finance (debt / equity) to purchase the target's shares.
4. Determine the payment method (*ie* cash, debt or shares) for the target firm's shares.

An approach will first be made to the target's board, who agree or fight the offer.

If the takeover is *agreed* it is recommended to the target shareholders.

If not the offer is dropped or taken directly to the target's shareholders; a *hostile* takeover.

## Features of leveraged buyouts (LBOs)

- They involve a great deal of debt finance.
- They usually result in the target company being de-listed from the stock exchange.

Profits are often boosted due to:

- selling off the assets that are not needed
- gaining tax relief on the debt finance
- a new management team that focuses on reducing expenses and capital spending.

Management Buyouts (MBOs) are where some capital comes from the existing management team. Together with fresh debt finance it is used to buy out the company.



## Chapter 18 Practice Questions

Exam style

*All of the questions that follow are exam style.*

- 1.1 Which of the following is NOT an advantage for a company that uses mainly internal growth to expand its operations?
- A It is easier and quicker when the company wants to expand geographically
  - B It ensures that shareholders retain control of the company
  - C It avoids government intervention
  - D It avoids the disruption of dealing with alien business cultures and practices. [2]
- 1.2 A company that runs a chain of restaurants has decided to make a takeover bid for a company that sources and processes quality cuts of meat. Both companies are of a similar size, and the restaurant has used the meat processing company on several occasions in the past.
- Explain why the restaurant company might choose to acquire the meat processing company. [5]
- 1.3 Your friend has mentioned to you that the management of the company that he works for have proposed a leveraged buyout of the company. Explain the meaning of the term 'management buyout' and explain what it is likely to mean for your friend. [5]
- 1.4 You work for an investment bank that has been asked by Company A to help it make an acquisition of Company B. Describe, with reasons, what sort of information about Company B you would need before advising Company A. [5]

The solutions start on the next page so that you can separate the questions and solutions.





## Chapter 18 Solutions

1.1 Answer = A

Quickly expanding geographically is an advantage for a company that uses external growth to expand its operations.

1.2 This acquisition is known as a vertical takeover. [1]

It involves two companies that are at different stages in the production cycle. [1]

The main reason for acquiring the meat processing company is likely to be to gain greater control over the supply of meat to the restaurant business ... [1]

... and to gain control over the quality and cost of meat that the restaurant can have. [1]

There are other possible reasons including:

- economies of scale
- benefits of being a bigger company such as defence against unwelcome takeover bids or easier access to finance
- diversification and stability of profits
- increased security of supplies
- may be the best use of available funds
- decreased employment risk for management and staff.

[1 mark for each bullet]

[Maximum 5]

1.3 A leveraged buyout is where a company:

- is acquired using a significant amount of debt finance [1]
- is de-listed after the acquisition (if it was listed prior to the takeover). [1]

A management buyout is where the leveraged buyout involves finance from the management of the company that is being bought out. [1]

### ***What it means for the friend***

The company is unlikely to change much in the short term, as the main changes are to do with ownership, and capital structure. [1]

In order to pay the interest on the large debt pile, the management will be much more focused on cash generation ... [1]

... and therefore assets may begin to be sold to other companies or closed down. [1]

Due to the higher gearing, the company may be more exposed to an economic downturn. [1]

These risks might be bad news for your friend if job security is reduced as a result. [1]

If the management are more motivated after the takeover, the company may perform better in the longer term, and profits may grow ... [1]

... which may mean that there are greater opportunities for employees in the medium and long term. [1]

[Maximum 5]

1.4 The information about Company B that would be required includes:

*Financial information*

- the diversification and spread of profits of the merged company in order to assess the benefits of the merger on stability and security [1]
- resources such as raw materials, patents, and technology that Company B possessed as these may be key assets for the acquisition [1]
- a breakdown of costs to assess the likely reductions achieved after the takeover [1]
- assess whether monopoly considerations are important [1]

*Capital structure information*

- the amount of debt and the dates of repayment of the debt, to ensure that Company A has the cashflow to make the repayments when they fall due [1]
- the gearing, in order to assess the impact on the gearing ratio for the merged company [1]

*Employment and management information*

- the existing contracts of employment for the management and staff to assess how easy it will be to change work allocation and to hire and fire staff [1]

[Maximum 5]

# 19

## Weighted average cost of capital

### Syllabus objectives

- 3.1 Discuss how a company's cost of capital interacts with the nature of the investment projects it undertakes.
1. Define what is meant by a company's cost of capital.
  2. Describe how to calculate a company's weighted average cost of capital.

## 0 Introduction

In this chapter we consider the weighted average cost of capital, which is important and helpful for the management of a company, in particular for the 'chief financial officer' (CFO) whose job it is to appraise different capital projects.

The weighted average cost of capital (WACC) is the average cost of raising finance for the business, allowing for both debt and equity capital. It can be used as the discount rate in net present value calculations and so it is relevant to the investment decision.

The later parts of this chapter use the *capital asset pricing model* (CAPM) to estimate the cost of equity capital. Most of the formulae in this chapter rely on the results of the CAPM.

The examination often tests the *ability to calculate* the WACC and *the ability to analyse* the effect of factors such as gearing and tax on the WACC.

# 1 Overview

## 1.1 The importance of the weighted average cost of capital

The role of the financial manager is to raise finance through an appropriate blend of debt and equity (the financing decision) and to use the funds to invest in suitable projects (the investment decision). The goal of the financial manager is to increase shareholder value. They achieve this by investing in profitable projects.

**It is now generally accepted that discounted cashflow techniques for evaluating projects are far superior to the use of simple payback approaches or accounting rates of return. The shareholder value-added approach enhances these techniques further.**

**However, to use these techniques requires the calculation of the project cost of capital. In the absence of a suitable discount rate NPV and IRR approaches have no meaning.**

**Provided that the project achieves the expected return and that, when adjusted for the risk of that project, the return is more than the company's weighted average cost of capital (WACC), the shareholders are better off than before.**

So, in order to choose appropriate projects, the company must know its weighted average cost of capital since this will usually (but not always) be used as the discount rate in the project appraisal process.

In this chapter, we are going to find out what determines the weighted average cost of capital. In particular, how the financing decision (*ie* the debt/equity balance) affects the cost of capital and the link between the financing decision and the investment decision. Additionally, if the value of the company is regarded as the discounted value of its future profits, then, if the financing decision affects the costs of capital, then it affects the net present value of the company too.

## 1.2 Defining the weighted average cost of capital

**Although there are many methods of financing a company, they broadly fall into just the two camps of equity or debt.**

The WACC is defined as follows:

$$WACC = \frac{\text{Market value of debt}}{\text{Market value of debt} + \text{equity}} \times \text{net cost of debt} \\ + \frac{\text{Market value of equity}}{\text{Market value of debt} + \text{equity}} \times \text{cost of equity}$$

Here we are dealing with the *market value* of the equity and debt rather than the *book or accounting* value, although book values may need to be used where market values are not available.

Remember that the cost of equity is the total return to individuals who invest in the shares, not simply the dividend yield, *ie* the cost of equity needs to allow for capital gain too.

'Gearing' was defined earlier in the course as:

$$\frac{\text{book value of debt}}{\text{book value of debt} + \text{book value of equity}} \quad \text{or} \quad \frac{\text{book value of debt}}{\text{book value of equity}}$$

where the book value of the equity is the accounting value of the share capital plus all equity reserves (such as revaluation, retained earnings, etc).

In this chapter we usually deal with market values. Thus 'gearing' could also be defined as:

$$\frac{\text{market value of debt}}{\text{market value of debt} + \text{market value of equity}} \quad \text{or} \quad \frac{\text{market value of debt}}{\text{market value of equity}}$$

where the market value of the equities and debt (bonds) would be the number of each issued multiplied by the market price of each.

## The cost of debt and the cost of equity

It is the *net* cost of debt that appears in the formula, where:

$$\text{net cost of debt} = \text{gross cost of debt} \times (1 - t)$$

where  $t$  is the rate of corporation tax.

Interest payments on debt finance are tax deductible. They appear before the tax line on the statement of profit or loss.

All of these formulae appear in the Core Reading as we progress through this chapter.

**The cost of equity, which is discussed further below, will tend to be higher than the cost of debt in part due to the more favourable tax treatment of debt. This has led to debate over the correct cost of capital to use because the weighted average cost of capital (WACC) will be very sensitive to the ratio of debt to equity on a company's balance sheet.**




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### Question

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A company's dividend yield is 3% and the gross redemption yield on its debt is 6%. Discuss the expected rate of return for an equity investor and the rate of return for a bond investor.

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### Solution

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The rate of return for a bond investor is relatively clear; it is the redemption yield on the bond, namely 6%.

The expected return for equity investors can't be determined from the information given, as this is equal to dividend yield plus capital growth.

The equity shareholders are accepting a greater risk than the bond investors, and must therefore be expecting a return greater than 6%. This greater return must be expected in the form of capital growth through retained earnings and increasing dividends.

The term 'cost of equity' is the return that the managers of the company have to provide to keep equity capital providers happy, and in a fair world is equal to the expected return on equity.

## Example

Suppose that Growmore plc has:

- debt with a market value of £100m trading at a gross redemption yield (GRY) of 5% in the market
- £100m market value of equity with analysis suggesting equity investors expecting 10% *pa* from their investment.

Growmore's weighted cost of capital, assuming no tax is paid, is 7.5% *pa* (ie weighted average of the cost of equity and the gross cost of debt). If the company can earn 7.5% *pa* return on its assets, it can give a 5% *pa* return to the loan capital providers and a 10% *pa* return to the equity capital providers.

This is the essence of a weighted cost of capital calculation.

## 1.3 Theoretical background

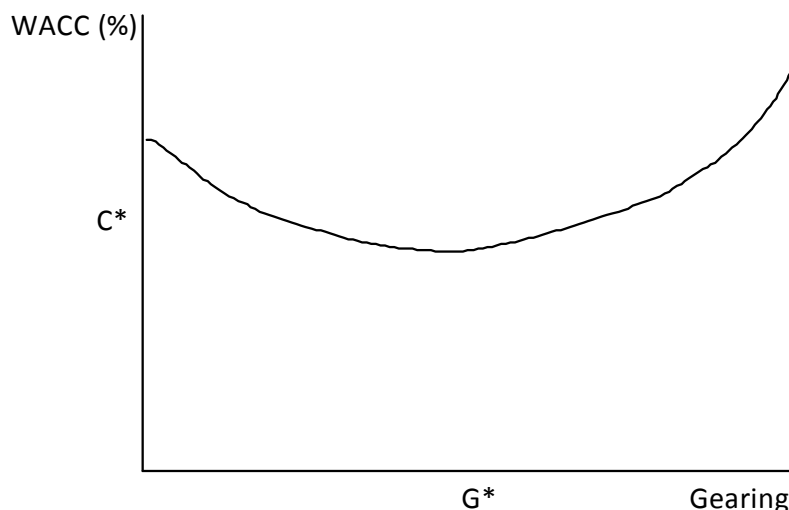
### The traditional view

**In the traditional school the emphasis was on determining the amount of debt a company could safely carry without risking bankruptcy in a severe recession.**

Debt is cheaper than equity finance, so as gearing increases, the WACC should fall.

However, increasing the proportion of debt finance increases the risk to shareholders so shareholders demand a greater return for this increased risk.

Therefore beyond a certain level of gearing, the downward effect on the WACC of increasing the debt finance in the business will be more than offset by the increase in the return required by shareholders. In this case the graph of the WACC against gearing would be U-shaped.



The WACC is lowest at  $C^*$  when gearing is at  $G^*$ .

This is potentially very important. It means that changing the capital structure could change the profitability of investment projects and result in a change in the value of the company.

## Modigliani and Miller

In the late 1950s and early 1960s the traditional school was attacked by Modigliani and Miller (MM) who held that gearing was irrelevant and that each increase in debt carried a compensating increase in the cost of the equity.

A key concept in corporate finance is expressed in Modigliani and Miller's first irrelevance proposition:

1. The market value of any firm is independent of its capital structure.

This is the basis of Modigliani and Miller's second irrelevance proposition:

2. The expected rate of return on the common stock of a leveraged firm increases in proportion to the debt-equity ratio, expressed in market values.

Leverage is the term used in the US for gearing, so a leveraged firm is a geared firm, *ie* one that has some debt finance. Common stock refers to the company's ordinary shares.

Modigliani and Miller argued that, under certain assumptions, gearing has no effect on the value of the company. Their view was that the value of the company lies in its *ability to produce profits*, not in the way that it is financed — in other words, that the market value of a company is determined primarily by its *investment decisions* and not by its *financing decisions*. This proposition allows complete *separation* of investment and financing decisions.

They began with a simple model with the following assumptions:

- there are no taxes
- unlimited personal and company borrowing is possible at the same rate of interest
- debt is risk-free
- there are no agency costs
- there are no information asymmetries.

The arguments in the MM model revolve around the concept of risk and return. When a company is financed by equity alone, the shareholders only face *business* risk. As debt increases in the business, shareholders face increased *financial* risk as returns become more volatile.

If there are two companies with the same business risk and the same annual earnings but with different capital structures and different market values, then by exploiting arbitrage possibilities, the values of the two companies will (according to MM) become equal.




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### Question

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Explain what is meant by 'exploiting arbitrage possibilities'.



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## Solution

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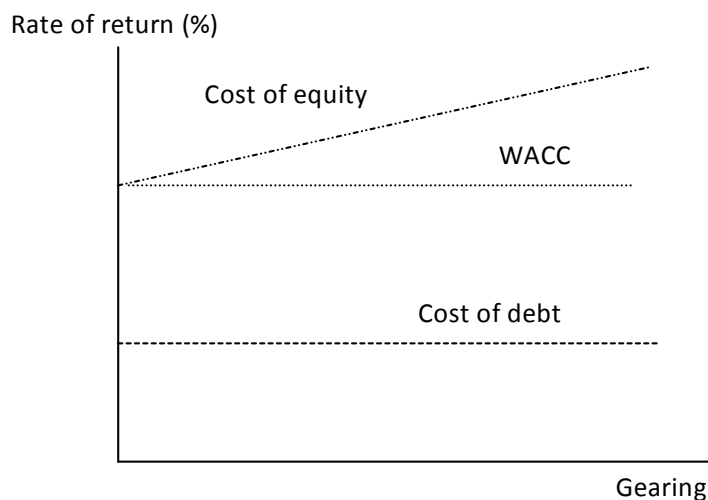
Arbitrage is the buying and selling of financial assets in order to make a risk-free profit from known pricing anomalies.

---

The MM model predicts that for companies with the same business risk and the same earnings, the WACC is the same, regardless of gearing.

Let us now consider the *effect of gearing on the return on equity*.

The following graph shows the rates of return on debt and equity for a single company as its gearing ratio increases.



Modigliani and Miller argued that the WACC remains constant as gearing increases. As gearing increases, the cost of equity increases by just enough to offset the increasing proportion of the cheaper debt.

A more highly geared structure offers a higher return on equity, but it also offers a higher risk. These two features cancel out to leave the price of the shares, the value of the company and the WACC unchanged.

Additionally we can argue that increasing the gearing within a company only gives the shareholders the same increase in returns that they could have achieved themselves by borrowing money from a bank and buying more shares. So gearing up a company adds no value, because shareholders can increase their own risk by borrowing money from a bank and buying more shares.

**This thinking was further developed by the Capital Asset Pricing Model (CAPM) which attempts to provide a coherent framework for understanding the interaction of risk and return.**



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## Question

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Suppose Growmore plc (from page 5) raises a further £50 million of debt finance in order to buy back shares with a value of £50 million.

Explain the impact on Growmore's WACC.

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## Solution

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The obvious conclusion would be that the weighted cost of capital would fall, because the company is now financed by £150 million of 5% debt and £50 million of 10% equity.

However, according to MM, this argument is flawed because the required return of equity investors would not remain constant if the company structure were changed in this way.

The company is now much more highly geared and the returns to equity investors are likely to be much more volatile. In fact so much more, that the equity investors will require a return of 15% in order to hold the shares.

According to MM, the cost of capital is unchanged, being a mixture of £150 million of debt capital providers requiring 5% *pa* and £50 million of equity capital providers requiring a return of 15% *pa*, the weighted average of which is 7.5% *pa*.

---

## Later theories

The MM theorems are a cornerstone of finance. The subsequent development of the theory of corporate finance can be described essentially as exploring the consequences of relaxing the strong MM assumptions.

### ***The effect of tax***

Interest payments on corporate debt are tax deductible, so debt finance for firms is treated more favourably by the tax system than equity finance, thus making debt finance more attractive.

**Whilst the original MM paper argued that the cost of capital should not be dependent on the level of gearing adopted by the company, they subsequently developed an after-tax formulation.**

The after-tax version examined the tax advantages of debt finance. Whereas the initial model suggested that the value of the pie is independent of how the pie is split (between debt and equity), the introduction of tax implies that there is a third slice, *ie* the government's slice.

The tax system provides a debt tax shield (*ie* a reduction in tax) so that the value of the geared firm is the value of the ungeared firm plus the tax shield. This could suggest that firms should become 100% debt financed if we ignore other considerations!

However, MM later found that when personal income taxes as well as corporate taxes are taken into account, the gain from a company increasing its gearing is reduced, eliminated or even negative.

### ***The effect of different borrowing rates***

If we allow for companies being able to borrow at lower rates of interest than individuals, then it means that individuals would not be able to replicate the returns from a more highly geared company by borrowing and buying more shares themselves (as MM assumed).

Firms that borrow could be seen as performing a valuable function for their investors. (This point is enhanced by the fact that companies receive tax relief on their borrowings but individuals do not.)

Also, corporate bond yields (*ie* the cost of debt) tend to vary inversely with the size of the firm.

This implies that the WACC would decrease with increased gearing, particularly for large firms.

### ***The effect of restricted debt capacity***

The MM analysis assumed that increased debt can be raised at the same cost as before, but of course the debt is not risk-free. Loan capital providers would reassess the required return on the company's debt given the new, more highly geared and risky structure, *ie* the credit rating of the company would decrease.




---

### **Question**

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Suppose Growmore plc's existing and new debt are likely to trade on a level of (say) 6% GRY to compensate for the higher risk of default attaching to the company's debt. The equity holders have also increased their required return (to 15%) to reflect the greater risk of default and the greater volatility of the highly geared company. Determine the new WACC.

---

### **Solution**

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The cost of capital for the company would now be:

$$WACC = \frac{150 \times 6\% + 50 \times 15\%}{200} = 8.25\%$$

*ie* higher than before!

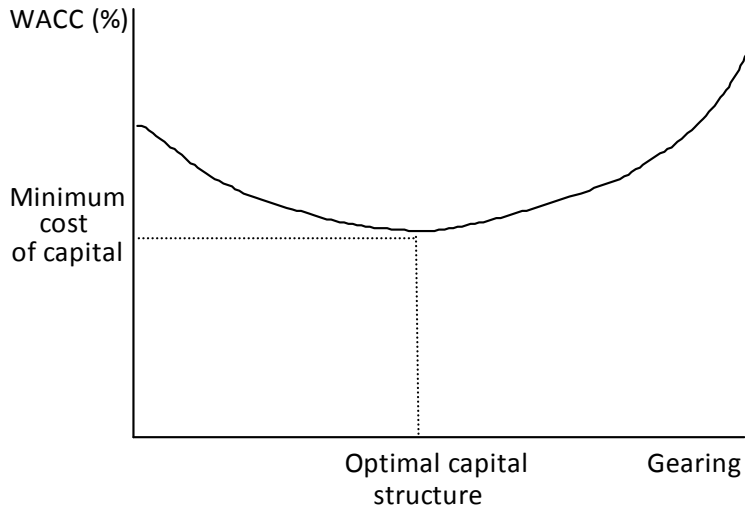
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Therefore, in practice, an increase in gearing, beyond the company's debt capacity, could increase the company's WACC.

### ***Conclusion***

Putting the above arguments together suggests that increasing the level of debt in the business will initially reduce the WACC as the company takes advantage of the lower cost of debt and the tax relief on debt finance.

However, as debt finance increases, both equity holders and debt holders will require a higher rate of return. There will be a point at which the costs of increasing the gearing begin to outweigh the benefits and the WACC begins to increase, *ie* there will be an optimal capital structure.



In 1998, Myers suggested that although an optimal capital structure does exist, there is *no golden rule*: the optimum varies from firm to firm and from industry to industry. We shall study capital structure in more detail in the next chapter.

We shall now study the cost of equity and the cost of debt separately in the next two sections and subsequently put them together to look at the WACC.

## 2 Cost of equity

### 2.1 Introduction

The cost of equity represents the opportunity cost of capital – the rate foregone by shareholders investing in the project rather than investing in alternative securities.

#### Risk and return

It seems reasonable that the market should reward the additional risk being taken by the equity holders. (There are investors who enjoy the gamble and opportunity to make money by beating the odds so there is no guarantee that all prefer a steady return and price to a volatile one.)

What is certain is that there are many investors who are effectively excluded from investment in equities because they cannot afford much in the way of a downside potential.

So one would expect a premium on equities due to supply and demand considerations.



#### Question

Discuss the validity of the following statement:

‘Many investors shy away from equity investment because the risks involved are too high, therefore the expected return from equities is higher than that from debt.’

#### Solution

This statement is correct.

If an investment in equities is more risky than an investment in bonds, but offers the same expected return, then rational investors will not buy equities. If investors do not buy equities the prices will fall. Eventually, at much lower prices, equity investments will offer a much better prospect, and a higher expected return (*ie* they become ‘cheaper’).

At this level the equity and bond markets are in equilibrium, offering a trade-off between risk and return.

#### Formula

The conventional approach to the cost of equity is to state it as:

$$\text{Cost of Equity} = \text{Risk-free rate} + \text{Equity risk premium}$$

The risk-free rate can be regarded as the return required from a risk-free asset such as a government bond. (Government bonds are often known as gilt-edged securities or gilts.)

The equity risk premium is the additional reward required by equity holders to cover the additional risk of holding shares rather than risk-free bonds. Later in the chapter we look at a more sophisticated version of this formula that adds a different risk premium for different types of equity investment, according to the risks involved.

## Evidence

An obvious starting point would be to look back at historic rates of return on securities.

In practice it is usual to use market indices, or bundles of representative securities, for this purpose.

### *Choice of the historical period*

It is a matter of record that equities have performed better than fixed-interest investments over any sufficiently long-term period. This is true of many stock markets worldwide.

However, there is considerable volatility in price levels and on an inflation-adjusted basis there have been occasions where if one bought at a peak, it has taken 15 years for the equity portfolio to have got back to the same position.

In respect of past performance, most commentators would suggest that data taken from as long a period as possible should be used, provided that it is adequately homogenous. Clearly, if the nature of the constituents within the portfolio being analysed have changed substantially, then some sub-set of the data might be more appropriate.

It may be possible to enhance the data available by using results taken more frequently, eg monthly rather than annual returns.

However, it is important to interpret such data with care in order to eliminate explicit bias (such as seasonal elements) as well as statistical factors (such as the measure of volatility).

### *Real and nominal rates*

One source of heterogeneity can be removed if real, rather than nominal, rates are analysed, while the risk-free rate can be defined on a nominal basis (in which case one might use a conventional fixed-interest gilt rate of a term similar in length to the project), alternatively one can work using real returns, in which case the yield on index linked gilts can be used.

However, removing the actual inflation experienced will not address the issue of the inflation risk premium contained in the rates observed.

Remember that the inflation risk premium is the additional return required by investors as compensation for an uncertain inflation rate.

For this reason, it is probably more appropriate to decompose the historical data into two parts:

- the risk-free rate – usually taken as the return on Treasury Bills or other short-term government loans
- the risk premium – the additional return provided by the security or index under consideration.

By establishing the *average* risk premium from historic data, we can estimate the future required opportunity cost as being the current (or expected) risk-free rate plus the expected (average) risk premium.

Even so, many practitioners would adjust the risk premium to reflect their views about the relevance of past experience to future conditions.

Clearly, the choice of a real, rather than a nominal, rate will need to be reflected in the nature of the cashflows projected for discounting. *Real* cashflows should be discounted at a *real* rate of return, while *nominal* cashflows will need a *nominal* rate for discounting.

We shall assume here that we are concerned with the determination of a *real* discount rate which is to be used in conjunction with cashflows determined on the basis of present day money values *excluding* the effects of future price *inflation*.

For some purposes, however, notably when the financing of the project is being considered, it may be more appropriate to allow for future price inflation in the cashflows and (where appropriate) in the financing payments.

In this case a nominal discount rate equal to the real rate compounded with the assumed average rate of price inflation should be used. This may give a different result if some of the cashflows would not increase with price inflation.

### *Typical results*

One of the most accessible studies in the UK is the Barclays Equity Gilt study. Looking at dividend yield and growth, this study calculates the historic return on equity as 5% real. Assuming a risk-free real rate of 1.5–3%, this suggests an equity risk premium of 2–3.5%.

The calculation of 5% referred to above is based on a period from 1899 to the present and it effectively looks at the growth of an index assuming reinvestment of dividends over that period and adjusted for inflation.

If one simply calculates the average return, investing £1 each year and averaging the result, then the apparent return of equities would be higher.

The reason for this is a direct result of the volatility of equities as in an index fund if the market halves then only half the amount is available for investment the following year.

Mathematically, the long-term index return is like a geometric mean and the average annual return like an arithmetic mean. The arithmetic mean will always be greater than the geometric mean.

This discussion is very technical, but is not intended to cause concern. In particular, it is not intending to test understanding of the difference between arithmetic and geometric means, but to illustrate the dangers of spurious accuracy.

**This discussion is to warn against any attempt for extreme accuracy where risk and uncertainty are involved. It is more important to grasp the principles than to follow a mathematical formula.**

Ultimately, the discount rate we use will only need to be roughly right as its main purpose is to help rank projects and not to price them exactly. As in all actuarial work, it will be consistency of approach and application of judgement that are of prime importance.

## 2.2 The capital asset pricing model (CAPM) and risk

### Risk and volatility

Next it is necessary to compare the individual company and the market indices from which the historic returns were computed.

We need to find the cost of equity for a *particular* company.

This cost comprises the two parts: the risk-free return and the equity risk premium for this particular company.

We want to find out what return the shareholders of a particular company require. This will be related to the risk they perceive in the company's shares.

**A market portfolio of equities suffers a relatively high degree of volatility. The standard deviation of annual returns of the UK stock market on a real basis is around 20%.**

**It is equally clear from one day's observation of the stock market that not all shares move in the same direction at the same time and to the same degree.**

**As is well known, diversification reduces risk.**

**Specifically, the variance (or standard deviation) of the returns experienced by individual stocks are different to (and usually greater than) the market as a whole. This is a consequence of the fact that the individual stock returns are, typically, not perfectly correlated.**

**Thus the portfolio variance is given by:**

$$\sum_i \sum_j x_i x_j \rho_{ij} \sigma_i \sigma_j$$

where  $x_i$ ,  $x_j$  are the proportions of stock  $i$  and  $j$  held,  $\sigma_i$  and  $\sigma_j$  are the standard deviations of stock returns and  $\rho_{ij}$  is the correlation coefficient between the returns on stocks  $i$  and  $j$ .

This formula gives the variance of a sum of correlated random variables.

**This begs the question as to what the performance volatility of an individual share is compared to the market average.**

**The CAPM provides a coherent theoretical framework for examining this issue.**

The CAPM is only valid within a special set of assumptions. These include the following:

- investors are rational (they aim to maximise expected satisfaction)
- investors are risk-averse (they would reject a fair gamble)
- investors can borrow or lend unlimited amounts of a risk-free asset at the constant risk-free rate
- the market is efficient (lots of buyers and sellers, perfect information *etc*)
- the volatility of returns is a good measure of risk.

Although these (and other) assumptions are rarely met, CAPM is one of the most frequently used models of risk and return.

**The CAPM divides the volatility of a stock's price into two parts, the specific risk and the systematic risk.**



## Specific risk

The meaning of specific risk can best be described using examples:

- A company in the business of property development on brownfield sites is exposed to problems such as labour shortages, environmental problems and poor project management.
- A retailer might face the risk of damage to the company's reputation if its products are endorsed by a famous personality who becomes the subject of some scandal.

The CAPM theory assumes that all shareholders hold a large, well-diversified portfolio of shares. Some companies might suffer downside risks while others benefit from upside risks.

The specific risk of a portfolio of shares reduces rapidly as the number of shares in a portfolio increases from one to two to three, etc. Eventually by the law of large numbers, the specific risk in the portfolio is diversified away.



Specific risk is risk that can be eliminated by diversification.

Shareholders who hold a diverse portfolio of shares will not therefore be concerned about earning a return to compensate for a company's specific risk.

## Systematic risk

If shareholders hold a fully diversified portfolio of shares, they can remove all of the specific risk. However each company is still exposed to a high degree of systematic risk.

Systematic risk would be the risk of being exposed to the economy in general.

Many events can affect the market as a whole, such as movements in interest rates, inflation or currency fluctuations, and cannot be diversified away by having many shares. These events will influence the success of all of the companies.



Systematic risk or market risk cannot be diversified away.



### Question

The following business deal is being offered:

Throw a fair die a specified number of times (the number of throws is subject to negotiation). Receive (or pay if negative) the difference between 4 and the *average* score,  $x$ , ie  $(4 - x)$  times one dollar for each throw of the dice.

Describe the specific risk if the project involves throwing the die:

- three times
- one million times.

---

## Solution

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If only three throws of the dice are made there is a *specific* risk that the project may yield a loss.

This is a specific risk though, and could be diversified away if many such projects were undertaken (or if the die is thrown many times).

The law of large numbers guarantees that ultimately the thrower will achieve an average score of 3.5 and an average profit of \$0.50 per throw.

---

**In theory, the specific risk can be diversified away on a large well-spread portfolio leaving the systematic risk, which is the volatility of the individual share compared to the market as a whole which cannot be eliminated by diversification.**

Shareholders who hold a diversified portfolio of shares and are considering buying a particular company's shares are therefore only interested in earning a return for that company's systematic risk. We will now look at systematic risk in more detail.

## 2.3 Systematic risk

There are good reasons why we are left with a considerable degree of systematic risk.

### Sources of systematic risk

#### *Business or trade cycle*

There is an underlying cycle of business activity which will tend to affect all businesses at the same time. Different business sectors may be hit earlier or later in the business cycle and so sector diversification is important. Diversification overseas will also help as not all economies move in the same cycle. Even with overseas diversification there is a considerable degree of systematic risk because the whole international economy is highly interdependent today.

#### *Interest rates*

Interest rates are a second economic influence that affects all businesses. They will affect different businesses to different degrees depending on their level of borrowing, creating specific risk. International business will be affected in different ways as interest rates can vary considerably from country to country due to currency uncertainties and the state of the local economy.

#### *Inflation*

Closely linked to interest rates is the rate of inflation. Inflation can affect companies in different ways but generally, rising inflation will depress profits short-term. However, in the long run price rises restore margins and profits have kept pace with inflation. No company can expect to escape the impact of inflation so it is a systematic risk.

#### *Tax*

Tax, especially changes in tax, can have an impact on price levels and affect all companies.

This only applies to taxes that have an impact on all companies. Some taxes, eg a sales tax on beer, will affect only those companies selling beer.

### **Currency**

**Currency movements will affect all companies trading in the affected countries to different degrees.**

### **Freak events**

**International crises, wars, embargoes can all affect the global economy in a way that everyone is affected.**

**One may speculate that natural events or man made events could cause major unpredictable systematic effects. The tsunami in the Indian Ocean in 2004 had a major impact on some countries' economies. Global warming could have a major economic impact.**

**This list is not exhaustive, but it does show that there are strong grounds for saying that there will be risk in equity prices that is systematic and not specific to individual companies.**




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### **Question**

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List two freak events that could be diversifiable, and two that are difficult to diversify away.

---

### **Solution**

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Freak events that are diversifiable include:

- an earthquake in one location (which will be diversified away if our investments are based in hundreds of different locations)
- a sudden spike in the price of copper (which will be diversified away if we invest in companies that use many other raw materials).

Freak events that cannot be diversified away include:

- a banking crisis (which may impact every company that we invest in)
  - the overthrow of a government (which will impact every company in the country).
- 

## **Beta as a measure of systematic risk**

We have said that shareholders only require a return for taking on systematic risk, because they will diversify away the specific risk.

We have also said that all companies are exposed to systematic risk because they are all exposed to the market. However, some companies are more exposed to the market than others and therefore are exposed to a greater proportion of the systematic risk in the market.

**We can compare individual stocks with the overall market by assessing the *beta* ( $\beta$ ) of the stock.**

**Beta can be regarded as a measure of the systematic risk associated with a particular stock.**

For company  $i$ :

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2}$$

where:

- $\sigma_m^2$  is the variance of the market index
- $\sigma_{im}$  the covariance between the individual stock's return and that of the market.

**An alternative expression for beta is:**

$$\beta_i = \rho_{im} \frac{\sigma_i}{\sigma_m}$$

where:

- $\rho_{im}$  is the correlation coefficient between the individual company's stock return and that of the market
- $\sigma_i$  and  $\sigma_m$  are the standard deviations of the company's stock return and the market index respectively.

**A value of beta in excess of 1 indicates a stock that has, historically, amplified the return of the whole market (positive or negative).**

**A beta close to zero would indicate a stock that provided a more stable return than the market as a whole.**

**A negative beta would signify a stock whose performance was counter cyclical, offsetting the overall market experience.**

If a stock has a beta of 2 in CAPM terminology, then:

- for every 1% return achieved by the market above the risk-free rate of return, the stock would be expected to achieve 2% more return
- for every 1% return achieved by the market below the risk-free rate of return, the stock would be expected to achieve 2% less return.

This stock is twice as volatile as the market as a whole.

## Implications for the cost of equity

If the stockmarket prices risk efficiently, then a stock that has a higher standard deviation of return (riskier) should be priced to offer a correspondingly higher return. For each 1% extra return achieved by the market above the risk-free rate, the stock would be expected to return  $\beta_i$  times that extra return.

Remember that the:

$$\text{cost of equity in the market} = \text{risk-free return} + \text{equity risk premium}$$

We can estimate the cost of equity for a particular company as being:

$$r_f + \beta(r_m - r_f)$$

where:

- $r_f$  is the risk-free rate
- $r_m - r_f$  is the market risk premium.

So the cost of equity for company  $i$  is:

$$r_i = r_f + \beta_i(r_m - r_f)$$



The key result of the Capital Asset Pricing Model is that for a single stock:

$$\text{Cost of equity for stock} = \text{Risk-free rate} + \text{Equity risk premium} \times \text{Beta for stock}$$

$r_m - r_f$  is known as the *market risk premium* or the *equity risk premium*.



### Question

If the risk-free rate of return is 3% and the equity risk premium is 5%, calculate the cost of equity for:

- Company A with a beta of 1.7
- Company B with a beta of 1
- Company C with a beta of 0.4.

### Solution

- $r_A = 3\% + 1.7 \times 5\% = 11.5\%$
- $r_B = 3\% + 1 \times 5\% = 8\%$
- $r_C = 3\% + 0.4 \times 5\% = 5\%$

CAPM states that an investor will require a higher return to invest in a more volatile and risky stock ( $\beta > 1$ ) compared to the diversified market portfolio.



## Question

If the risk-free rate of return is 5%, the equity risk premium derived from the market is 7% and Fryday plc, an ungeared company (which pays no tax), has a beta of 1.2, calculate:

- (i) the expected return from the market
- (ii) the expected return from shares in the company
- (iii) the cost of capital used by the management in evaluating projects.

## Solution

- (i) Market return = risk-free return + equity risk premium  
= 5% + 7% = 12%
- (ii) Equity share return = risk-free return + beta × equity risk premium  
= 5% + 1.2 × 7% = 13.4%
- (iii) Cost of capital should be 13.4% as above to meet investors' expectations.

This assumes that no tax is payable and that a project that yields a return of 13.4% would offer the same return to equity shareholders.

## Adjusting beta for gearing

The beta of a company's shares, and hence the cost of equity, is affected by the company's existing gearing. If the gearing were to change, then the volatility of returns would change, and hence the beta would change. In certain situations, we can calculate the effect of changing the gearing on beta by using the following formula:



$$\text{Geared beta} = \text{ungeared beta} \times \{1 + \text{debt:equity ratio} \times (1 - \text{tax rate})\}$$

This involves a formula relating a 'geared' beta with an ungeared beta.

The derivation of this formula is not required.

This formula assumes that all debt issued by the company can be issued at the risk-free rate. This is seldom the case. However, it gives an approximate result where this is not the case.

Further complications arise when we look further down the tax chain, because the formula assumes that investors receiving their returns in the form of bond interest or equity dividends apply the same criteria. Of course these two types of income stream are taxed differently in the hands of investors, so investors apply different criteria and require different returns from each type of asset.

The company's current value of beta incorporates the effect of its current level of gearing.

If the gearing changes, the new beta must be found in two stages:

- find the ungeared beta first
- then find the new beta for the new level of gearing.




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### Question

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Suppose Led plc has debt:equity ratio of 2:3, a beta of 1.2 and is taxed at 30%.

- Calculate the beta of the company's shares if the company repaid all its debt.
  - Calculate the beta if the debt:equity ratio increased to 3:2.
- 

### Solution

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- Ungeared beta**

Using the formula:

$$\beta_g = \beta_u \times \left( 1 + \frac{D}{E}(1-t) \right)$$

and substituting values:

$$\begin{aligned} 1.2 &= \beta_u \times \left( 1 + \frac{2}{3}(1-0.3) \right) \\ &= \beta_u \times 1.4667 \end{aligned}$$

$$\Rightarrow \beta_u = 0.8182$$

- Gearred beta with new debt:equity ratio**

Therefore the new geared beta is:

$$\begin{aligned} \beta_g &= 0.8182 \times \left( 1 + \frac{3}{2}(1-0.3) \right) \\ &= 0.8182 \times 2.05 \\ &= 1.6773 \end{aligned}$$


---

## Measuring beta

### Historical returns

If historical returns are available over a number of periods, we can define:

- $r_i$  to be the actual measured returns for stock  $i$
- $r_m$  to be the market returns over the same periods
- $\tilde{r}_i$  to be the average of the measured returns of stock  $i$
- $\tilde{r}_m$  to be the average of the measured returns of the market
- $\hat{\sigma}_m^2$  to be the estimated standard deviation of the market returns
- $\hat{\sigma}_{i,m}$  to be the estimated covariance between the returns of stock  $i$  and returns of the market

We can then find:

$$\hat{\sigma}_m^2 = \frac{\sum_j (r_{mj} - \tilde{r}_m)^2}{n-1} \quad \text{and} \quad \hat{\sigma}_{i,m} = \frac{\sum_j [(r_{ij} - \tilde{r}_i) \times (r_{mj} - \tilde{r}_m)]}{n-1}$$

And hence estimate  $\hat{\beta}_i = \frac{\hat{\sigma}_{i,m}}{\hat{\sigma}_m^2}$

### Regression

Alternatively we can estimate  $\beta_i$  by regressing the share's returns against returns on the market index. The regression fits the best estimate of beta in the model:  $r_i = r_f + \beta_i (r_m - r_f)$ .

### Quick method

The beta measures the additional return achieved by a stock relative to the market above the risk-free return. However in practice, given the imprecise nature of such analyses, the risk-free return on a short-term basis (daily or weekly) is set equal to zero. So if, over short time periods, the stock is observed on average to change by 60% of the market's change, it is said to have a beta of 0.6.

**However, note that estimates of a company's beta, derived from regressing the company's stock price performance on that of the market, will vary with the period over which the estimation is made. Additionally, an internal estimate for beta will typically span a wide range of values, due to the high standard error associated with the regression.**

### Using an industry beta

**One way of improving the estimate is to use an *industry* beta based on a group of similar companies.**



By 'similar' we mean more than that they are all engaged in similar activities, as the nature of their activities will only affect the *business risk* of the company or industry.

Geographic areas of operation will be important, but we also need to ensure that they face similar *financial risk* – that is, that they have similar capital structures. Crude values of beta derived from historic observations will be influenced by *financial leverage (or gearing)*, and this needs to be allowed for in our calculations.

Different companies have different levels of gearing. Since gearing affects beta, in estimating its own beta, a company will need to adjust the industry beta to allow for any difference in gearing between itself and the industry as a whole.

Betas for different sectors are not necessarily stable over time. By the time the observation period is over, the market, the economic environment and the particular companies being observed have all changed, so the beta estimated using past data will not necessarily be a good estimate of the current or future value of beta.

## 2.4 Market derived real discount rate

**An alternative (approximate) way to calculate the cost of equity is to look at the dividend yield and add this to the forecast future real growth rate of dividends.**

A holder of an equity share receives an income stream and a capital gain caused by growth in the share price. So an investor who paid  $P$  for an equity share will receive an annualised return on this investment

$$= \frac{\text{annual dividend income}}{P} + \frac{\text{expected share price growth per annum}}{P}$$

$$= d + g$$

where  $d$  is the dividend yield and  $g$  is the annual rate of growth in share price.

The price of a share will grow each year in line with the growth in the dividend payable. In other words  $g$  will in fact be the annual rate of growth in dividends.

Thus the total expected return from investing in a share is the dividend yield plus the growth in dividends.

Because this method involves an estimate of the future capital growth rate, it is difficult and potentially subjective to carry out.

If the market as a whole is made up of many rational investors, then the overall expected return from an equity share ( $d + g$ ) will be equal to the overall required return by all the investors. This is one of the basic functions of the market – to find the equilibrium price at which investors' required returns are matched by their expected returns.

## 3 Cost of debt

The cost of equity is only one component of the WACC.

We now need to consider the cost of the debt capital used by the company.

### 3.1 Marginal or average cost?

In deciding the relevant cost one needs to assess whether it is the marginal cost or the average cost that matters.

**Marginal cost adds new complexity. If new debt is being raised to help finance a project then it would be reasonable to use the marginal cost.**

The marginal cost is the cost of raising further debt. The average cost is the cost of the existing plus new debt.

### 3.2 Determinants of the cost of debt

The cost of debt will vary from company to company depending on its credit worthiness, often expressed as a credit rating. The cost of debt will be related to the credit rating. The lower the credit rating the more the company will have to pay for debt.

#### Interest and asset cover

The debt carrier will look at the security provided and the key components of this will be the cover provided in the form of net assets to amount at risk and profits before tax and interest to debt interest.

The credit rating agencies will assess risk of default that will depend on the level of interest cover and the volatility of the profit stream.

An investor in debt securities (a 'debt carrier') will worry about the company's ability to repay the nominal amount of the loan at maturity or earlier in the event of a wind-up, and will worry about the company's ability to pay the interest payments on the debt.

As a reminder, this risk can be measured by looking at:

$$\text{Asset cover} = \frac{\text{total assets} - \text{current liabilities} - \text{intangible assets}}{\text{loan capital} + (\text{all prior ranking loan stocks})}$$

and

$$\text{Interest cover} = \frac{\text{profit before interest and taxation}}{\text{interest payable on loan stock} + \text{all prior ranking loan stocks}}$$

#### Gearing

The marginal cost of debt will increase as the level of debt is pushed up because of the adverse effect on the company's credit rating.

## Beta

The beta can therefore have a direct effect on the credit rating since a high beta will indicate more volatile profits. The level of gearing itself will increase the beta. There comes a point where taking on further debt increases the average cost of capital because of these secondary effects.

## Tax

The cost of debt capital can usually be offset against profits and serves to reduce the effective cost of debt.

When a company pays one pound of debt interest, its profits before tax are reduced by one pound. If the profit before tax is reduced, then the tax is reduced by  $\text{£}1 \times t$  where  $t$  is the corporation tax rate. Paying debt interest reduces the amount the company has to pay to the government and so the 'net cost of debt' is lower than the 'gross cost of debt'.

A new company may not yet be in the position of making profits and so is at a disadvantage. In assessing the cost of debt it is necessary to make an assumption as to when profits will arise. A reduced rate of tax deduction to reflect the deferment may be used.

Thus:

$$\text{Net cost of debt} = \text{Cost of debt depending on rating of company} \times (1 - \text{tax rate})$$



### Question

Fryday plc is ungeared, has a beta of 1.2 and pays corporation tax at 30%.

Calculate the beta of the company's equity shares if Fryday issued debt equal to 50% of its market capitalisation and used the cash raised to repay half of the existing equity shares.

### Solution

The gearing ratio of debt:equity would become 1:1.

$$\begin{aligned} \text{gearing equity beta} &= \text{ungeared Beta} \times [1 + (\text{debt:equity ratio}) \times (1 - t)] \\ &= 1.2 \times [1 + 1 \times 0.7] \\ &= 2.04 \end{aligned}$$



### Question

Calculate Fryday plc's new WACC in a taxed situation, assuming that the new debt:equity ratio is 1:1 and that the gross cost of debt is the risk-free rate of 5% *pa*.

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**Solution**

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The new beta is 2.04.

The new cost of equity is therefore:

$$5\% + 2.04 \times 7\% = 19.28\%$$

The net cost of debt will be:

$$5\% \times (1 - 0.3) = 3.5\%$$

Thus the new WACC will be:

$$\frac{1}{2}(19.28\%) + \frac{1}{2}(3.5\%) = 11.39\%$$

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## 4 Weighted average cost of capital

### 4.1 The calculation of WACC

The **Weighted Average Cost of Capital (WACC)** is calculated by looking at the mix of debt and equity actually employed and so will result in a value below the cost of equity. The relevant formula is:

**Weighted Average Cost of Capital**

$$= \frac{\text{cost of equity} \times \text{equity capital} + \text{net cost of debt} \times \text{debt capital}}{\text{total capital}}$$

The *cost of equity* is the required return by shareholders when they invest in the equity shares. That is

$$\text{cost of equity} = \text{risk-free rate} + \text{geared beta} \times \text{equity risk premium}$$

When using the formula above it is important to remember the effect of gearing on the riskiness (and hence the required return) from an equity share, due to the extra volatility and default risk.

To find out the effect on the cost of equity of increased gearing, first find the effect on beta by the following formula:

$$\text{geared beta} = \text{ungeared beta} \times \{1 + \text{gearing} \times (1 - \text{tax rate})\}$$

and then find the effect on the cost of equity.

The *net cost of debt* is the gross expected return by bondholders that are currently holding the bonds – ie the gross redemption yield on the bond – adjusted for the favourable treatment of debt finance in the corporation tax system. That is:

$$\text{net cost of debt} = \text{gross cost of debt} \times (1 - \text{tax rate})$$

Remember that the gross cost of debt depends on the company's credit rating.

The weighting factors are the market values of the various components of capital.

The above formula can be used to estimate the WACC at different debt:equity ratios.



## Question

Spire plc has a debt:equity ratio of 1:1. The risk-free rate of return is 4% *pa*, the equity risk premium derived from the market is 6% *pa* and the gross cost of debt is 4% *pa*. Its beta is 1.5 and any profit is taxed at 30%.

- (i) Calculate Spire's weighted average cost of capital.
- (ii) Spire is concerned about its high debt:equity ratio. If Spire were to repay all debt, calculate the required return on equity.
- (iii) Spire decides against repaying all debt but instead embarks on a rights issue in order to reduce its debt:equity ratio from its current position of 1:1 to a new position of 1:3. Calculate its weighted average cost of capital after the rights issue.

State any assumptions made.

## Solution

- (i) ***Spire plc's weighted average cost of capital***

$$\begin{aligned} \text{Spire plc's cost of equity} &= \text{risk-free return} + \text{beta} \times (\text{equity risk premium}) \\ &= 4\% + (1.5 \times 6\%) = 13\% \end{aligned}$$

$$\begin{aligned} \text{Spire plc's net cost of debt} &= \text{gross cost of debt} \times (1 - t) \\ &= 4\% \times 0.7 = 2.8\% \end{aligned}$$

$$\text{Thus Spire plc's WACC} = (0.5 \times 13\%) + (0.5 \times 2.8\%) = 7.9\%.$$

- (ii) ***The required return to equity if Spire plc were to repay all debt***

To find the new required return on equity when Spire repays all debt, we need to find the ungeared beta.

We can use the following formula:

$$\beta_g = \beta_u \times \left( 1 + \frac{D}{E}(1-t) \right)$$

to find the ungeared beta as follows:

$$\begin{aligned} 1.5 &= \beta_u \times \left( 1 + \frac{1}{1}(1-0.3) \right) \\ &= \beta_u \times 1.7 \end{aligned}$$

$$\Rightarrow \beta_u = 0.88235$$

So the new cost of equity would be:

$$4\% + (0.88235 \times 6\%) = 9.29\%$$

(iii) ***The weighted average cost of capital following the rights issue***

To find the new required return to equity, we need to find the new geared beta.

$$\begin{aligned}\beta_g &= \beta_u \times \left(1 + \frac{D}{E}(1-t)\right) \\ &= 0.88235 \left(1 + \frac{1}{3}(1-0.3)\right) \\ &= 1.08823\end{aligned}$$

So the new cost of equity will be:

$$4\% + (1.08823 \times 6\%) = 10.53\%$$

Assuming the net cost of debt remains at 2.8%, then the new WACC can be found.

$$\text{Spire plc's WACC} = (0.75 \times 10.53\%) + (0.25 \times 2.8\%) = 8.6\%.$$

## 4.2 Uses of WACC

WACC is a consideration in the determination of the capital structure of the company (the financing decision) and in the capital project appraisal process (the investment decision).

Examination questions may ask for calculations, possibly with a discussion of the gearing decision (covered in the next chapter), since the effect of a change in gearing on the cost of capital is clearly an important consideration in the gearing decision, but not the only one.

Alternatively, these questions have been linked with project appraisal chapters since the main use of WACC is as the discount rate in a net present value calculation.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.



## Chapter 19 Summary

### Cost of capital

The weighted average cost of capital (WACC) is found as follows.

$$WACC = \frac{\text{cost of equity} \times \text{equity capital} + \text{net cost of debt} \times \text{debt capital}}{\text{total capital}}$$

### Modigliani and Miller

According to Modigliani and Miller's first irrelevance proposition, the market value of any firm is independent of its capital structure.

According to their second irrelevance proposition, the expected rate of return on the company's shares increases in proportion to the debt-equity ratio, expressed in market values.

These propositions are only valid under certain assumptions, in particular in a world with no taxes.

### CAPM and cost of equity

The CAPM offers many useful results, which can be used to evaluate a company's WACC.

The *beta* of a company is a measure of the systematic risk in terms of its business activities and financing activities. It reflects the volatility of the company's share price and how the share price returns are correlated with the returns from a fully diversified portfolio (the market).

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2} \quad \text{and} \quad \beta_i = \rho_{im} \frac{\sigma_i}{\sigma_m}$$

The expected return from a share is related to its volatility (and beta) by the following formula:

$$\text{cost of equity} = \text{risk-free rate} + \text{beta} \times \text{equity risk premium}$$

where the beta is appropriate for the equity shares, and allows for the company's level of gearing.

As a company increases its gearing, the level of systematic risk to equity investors varies. The effect can be measured by the following formula:

$$\text{geared beta} = \text{ungeared beta} \times \{1 + \text{debt:equity ratio} \times (1 - \text{tax rate})\}$$

### CAPM and cost of debt

The tax system rewards the issue of debt and therefore the *net cost of debt* to a company will be  $(1 - t) \times \text{the gross cost of debt}$ .

## Risk

The risks of investing in a company's shares (or a project) can be divided into two types:

1. Specific risk, *ie* the risk that the return from one company's shares (or one project) may differ from the overall expected return from a well-diversified portfolio containing many such shares (or many projects)
2. Systematic risk, *ie* the risk that cannot be eliminated via diversification.

Systematic risks often come from sources such as:

- the business cycle (*eg* growth or recession)
- interest rates
- inflation
- taxation changes
- currency movements
- freak events.



## Chapter 19 Practice Questions

Exam style

All of the questions that follow are exam style.

- 19.1 A company's shares have a beta of 0.75. The risk-free rate is 3% and the market risk premium is 5%. The corporation tax rate is 30%. What is the required rate of return on the company's shares?
- A 4.73%  
B 5.00%  
C 5.70%  
D 6.75% [2]
- 19.2 Which of the following statements is true?
- A The expected return from a share with a beta of 1.5 is 1.5 times the expected return from a diversified portfolio of shares.  
B Defensive shares are defined as those whose beta is negative.  
C The expected return from a share with a beta of 0.8 is lower than the expected return from a diversified portfolio of shares.  
D A company with a beta of less than 1 should not invest in risky projects. [2]
- 19.3 Which of the following is most likely to be true?
- A A company's cost of equity will be equal to its weighted average cost of capital.  
B A company's cost of equity will be greater than its weighted average cost of capital.  
C A company's cost of equity will be lower than its weighted average cost of capital.  
D A company's cost of equity will fluctuate around its weighted average cost of capital. [2]
- 19.4 Which of the following is NOT true about a company with a high beta?
- A It can be described as a 'defensive' company.  
B Investors in the company should expect a higher return over the long term than investors in companies with low betas.  
C It has more systematic risk than an average company in the market.  
D Its cost of capital will be higher than that for a company with a low beta. [2]
- 19.5 Which of the following statements is true?
- A All equity shares would have the same level of systematic risk if all companies had the same level of gearing.  
B Systematic risk can be eliminated by investing in a large diversified portfolio of assets.  
C If a company increases its level of gearing it will increase its level of specific risk.  
D Increasing a company's gearing can reduce its weighted average cost of capital in a taxed environment. [2]
- 19.6 Explain how beta can be used to determine the appropriate risk discount rate used to appraise a project and discuss the main practical difficulty in using betas in this way. [5]

The solutions start on the next page so that you can separate the questions and solutions.



## Chapter 19 Solutions

19.1 Answer = D

Required rate of return = risk-free return + beta  $\times$  risk premium = 3% + 0.75  $\times$  5 = 6.75%

19.2 Answer = C

Return from a share with a beta of 1.5 = risk-free return + 1.5  $\times$  equity risk premium, not 1.5  $\times$  (risk-free return + risk premium). So A is incorrect.

Defensive shares are those with low positive betas, not negative betas. B is incorrect.

If the beta is 0.8 the expected return on the share (risk-free return + 0.8  $\times$  risk premium) is lower than the expected return from a diversified portfolio of shares (risk-free return + risk premium). C is correct.

A company with a low beta is perfectly free to invest in high risk projects if it chooses. So D is also incorrect.

19.3 Answer = B

The cost of equity is generally higher than the cost of debt because shareholders take a bigger risk than holders of company debt and therefore require a higher return.

The weighted average cost of capital is a weighted average of the cost of debt and the cost of equity. Thus, assuming the company has some debt finance, the weighted average must be smaller than the cost of equity.

19.4 Answer = A

A company with a low positive beta is described as a defensive company.

19.5 Answer = D

Equity shares have various betas. The beta depends on the systematic risk of the underlying business and the level of gearing. Thus, even if all companies had the same level of gearing, some businesses would still have higher levels of systematic risk, so A is incorrect.

Systematic risk cannot be eliminated by investing in a large diversified portfolio of assets – it is specific risk that can be diversified away so B is incorrect.

A company increasing its level of gearing would increase its systematic, not specific risk, so C is incorrect.

Increasing gearing can reduce the WACC due to the tax efficiency of debt, so D is correct.

## 19.6 Use of beta

If we are able to estimate the beta of a particular capital project, then we can use it to estimate the appropriate risk discount rate to be used in the appraisal of that project from the relationship  $r_p = r_f + \beta_p(r_m - r_f)$  where  $r_p$  and  $r_m$  are the expected returns on the project and the market respectively and  $r_f$  is the risk-free rate of return. [1]

$r_p$ , which represents the rate of return that the investor should require given the level of systematic risk in the project, is then used as the risk discount rate. [1]

The main practical difficulty is that we are unlikely to have an accurate estimate of the beta for any capital project, particularly as there is unlikely to be any relevant past history upon which to base it. [1]

One way around this difficulty in practice might be to use an estimated beta for a similar project that is already in existence ... [1]

... but it may be difficult to determine exactly what constitutes a 'similar' project. [1]

An alternative is to measure the beta of the shares of a quoted company that undertakes the type of project that we are considering, and use this beta as a proxy for the beta of the project. [1]

[Maximum 5]

# 20

## Capital structure and dividend policy

### Syllabus objectives

- 2.4 Discuss the factors to be considered by a company when deciding on its capital structure and dividend policy.
1. Describe the effect that the capital structure used by a company will have on the market valuation of the company.
  2. Describe the effect of taxation on the capital structure used by a company.
  3. Discuss the principal factors that a company should consider in setting dividend policy.
  4. Discuss alternative ways of distributing profits, such as buybacks.
  5. Discuss the effect that the dividend policy will have on the market valuation of a company.

## 0 Introduction

Firstly we investigate the gearing decision, *ie* the ratio of debt to equity in the company's capital structure, and look at the factors affecting the gearing decision in practice.

Then we investigate the dividend decision under the following headings:

- the fundamentals of dividend policy
- other methods of rewarding shareholders
- the market and dividends.

The examination tests *knowledge* of the factors affecting the gearing and dividend decisions; *understanding of the implications* of a particular gearing or dividend decision on a company; and the *ability to evaluate* the appropriateness of the gearing and dividend decisions of a particular company.



# 1 Capital structure

## 1.1 Components of capital structure

The components of the capital of a limited company are equity capital, short- and medium-term debt and long-term debt.

When we discuss a company's capital structure, we are mainly concerned with the debt-equity decision that the company takes. The proportion of debt to equity is measured by the *gearing* ratio.

## 1.2 The aims of the financial manager

The financial managers of a company seek to maximise the return to the owners of the equity, within the parameters that they have set out.

These involve:

- the variability of anticipated returns (having regard to the nature of the business)
- the owners' desire for immediate profit rather than future high growth
- the willingness (or otherwise) of the owners to put additional capital into the business
- their willingness to see a reduction in the proportion of the business which they own
- the degree to which risk should be carried by the owners.

The management of a company can control the variability of the profits (and hence the risk) of the company *eg* by:

- increasing or decreasing the gearing
- negotiating clauses in the contracts with suppliers which remove certain risks
- taking out insurance against certain risks and the use of export guarantees
- other risk management measures including financial risk control and financial hedging using derivatives.



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### Question

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Describe how each of the above management actions might affect the expected return to shareholders.

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### Solution

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#### ***Increasing gearing***

This would be expected to increase the volatility of return. Because of the beneficial effect of debt on the company's tax charge it would also be expected to increase the return on equity.

### **Supplier contract negotiation**

Transferring risks to suppliers would be expected to decrease the volatility of the return to shareholders. One would expect there to be a cost involved, which might reduce the return to shareholders.

### **Insurance**

As above, this should reduce the risk and volatility of return experienced by shareholders, but might reduce the absolute expected return to shareholders.

### **Risk management and financial risk control**

If carried out at no cost this should have a beneficial effect on the volatility of profits without reducing the expected return.

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When a company wishes to raise further capital for expansion, the existing shareholders normally have pre-emptive rights that give them the right to buy shares to maintain the proportion of the company they own.

These rights give existing shareholders the opportunity to maintain their proportional shareholding in the company, and hence their voting rights and their degree of control over the company. If they do not wish to contribute any additional finance, they have two options:

- Shareholders can attempt to stop the issue through their existing control. This is hard to do in medium to large companies because the shares are so diversely owned, and organising any combined action is difficult.
- Shareholders can accept a reduction of their holding by selling their nil-paid rights. This means that other investors are able to buy shares, and the proportion of the company held by the original shareholders reduces.



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### **Question**

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Explain why regulations normally require that shareholders have pre-emptive rights.

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### **Solution**

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Shareholders have few controls on the managers of their company.

Even the ultimate sanction of voting the current management team out of their positions requires shareholders to find another management team that can step in.

If the management were also free to raise capital and give away rights to future profit streams whenever and to whomsoever they choose, then the amount of control is further reduced.

If a company is successful, the shareholders will want to benefit from that success. Pre-emptive rights give shareholders the right to maintain a proportional holding of a company in order to benefit from the company's growth. They also maintain their share of the voting rights.

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## Question

Greedy AG is quoted on the US Stock Exchange. Following its announcement that it is to have a further rights issue, an investor is no longer willing to commit fresh funds to the company.

Calculate what proportion of the company the investor will own and the value of that holding (assuming no unexpected share price movements) if the investor does *nothing* at all during the rights issue.

The details are as follows:

Stock price: \$3 per share

Rights details: one-for-two at \$2.50 per share

Current holding: investor holds 1,000,000 shares representing 1% of the company.

## Solution

Value of investor's holding before issue =  $3 \times 1m = \$3$  million

Expected price of shares after issue =  $\frac{(\$3 \times 2) + (\$2.5 \times 1)}{2 + 1} = \$2.83$  per share

Value of nil-paid rights =  $\$2.83 - \$2.5 = \$0.33$

If the investor does nothing, the nil-paid rights will be sold and the investor will be given the sum of  $500,000 \times \$0.33 = \$166,000$  in cash.

The holding of shares will be worth \$2,833,000 (*ie* \$3,000,000 - \$166,000 or  $\$2.83 \times 1,000,000$ ).

The proportion of the company owned was 1%. As there are now three shares in issue where there were previously two, the proportion of the company will fall to  $\frac{2}{3}\%$ .

## 1.3 Assets and their financing needs

**Assets of a business can be divided into:**

- **non-current assets such as land, property, plant, equipment and 'intangibles'**
- **current assets such as inventories, work-in-progress, debtor balances, cash (and equivalents).**

The following table gives types of non-current and current assets that may be found in the accounts of a typical petrol station:

<i>Current assets</i>	<i>Non-current assets</i>
Cash	Cash register
Oil	Petrol pumps
Debtors	Land & buildings

**Current assets less current liabilities form the working capital of the business and a certain level of liquidity will be needed for a business to survive.**

**Also, in cyclical businesses current assets (and current liabilities) will fluctuate with the cycle in that industry.**

**Therefore both non-current and current assets have to be financed on a long-term basis.**

## 1.4 Changing the capital structure

### The need for change

**In most cases, the need for change in capital structure arises from the desire to expand the business or start new or additional capital projects.**

**Another reason for changing capital structure is where the business finds itself with excess cash that it cannot profitably use, and so it returns this to shareholders by way of a share 'buyback'.**

Companies may also wish to deliberately pursue a particular level of gearing. A company might raise debt finance to fund a share buyback operation in order to increase its gearing, or to minimise the WACC.

We will assume, however, that a company is raising finance to fund expansion.

### Retained earnings

**Retained profits are the simplest and most accessible source of finance. However:**

- **Shareholders may demand immediate release of profits as dividends.**
- **There may not be sufficient accumulated funds to finance projects when required.**

Retained earnings tend to be 'slow and steady' in nature, accruing gradually over the years. The opposite is often true of expansion projects and takeovers, which can be very 'lumpy' in nature.

It can also be the case that the profits of a growing company are accounting profits and do not accrue in the form of cash. This can make it difficult to use such profits to finance projects.



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### Question

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Explain why accounting profits for a financial year might not equate to the increase in the cash balance.

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## Solution

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Some of the most obvious areas where accounting profits and cashflows would differ would be:

- Sales: when a company signs a deal with a customer and registers the trade, the sale will be added to the accounting profit. However, until the customer pays cash, the sale does not represent a cashflow.
  - Purchasing non-current assets: when a building is purchased it represents a large cash outflow. However, this is not registered as a cost in the P&L. The cost is 'depreciated' through the accounts over many years.
  - Debt: If a company raises cash by increasing its borrowings the profit is unaffected. However such action would obviously bring in a lot of cash resources.
  - Trade payables: if a company buys raw materials, it registers the cost in the P&L. In most cases the company will only pay for the goods later, which is when the cashflow occurs.
- 

## Equity finance

**Due to the cost, delay and unpopularity of raising new equity finance (particularly for comparatively small sums), other forms of finance are typically used – at least initially.**

## Other forms of finance

**Most businesses can choose alternatives such as borrowing, lease of assets, sale and leaseback or the use of trade credit to finance turnover. (Sale and leaseback is where the owner of an asset sells it to an institutional investor who then leases it back to the original owner. In this way the owner releases the capital tied up in the asset.)**

**The use of these alternative forms of finance is constrained by:**

- the nature of the business and its assets
- the degree of gearing considered acceptable
- the effects of taxation

**and these are reflected in the credit-worthiness rating of the business.**

**However, these alternative financing solutions have their drawbacks. Leased assets may become of lower value than expected before the expiry of the lease (due to innovation or a change in business strategy). Sale and leaseback forgoes flexibility and the possible future appreciation in the value of the property.**

**Borrowing to finance projects is, therefore, typically required.**

## 1.5 Theoretical background to the gearing decision




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### Question

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Explain what the theories of Modigliani and Miller say about the effect of capital structure on the market value of a company and the WACC.

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## Solution

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### *Market value*

Modigliani and Miller argued that, under certain assumptions, the market value of a company is independent of its capital structure.

Their view was that the market value of a company is determined primarily by its *investment decisions* and *not* by its *financing decisions*. This proposition allows complete separation of investment and financing decisions.

### WACC

Modigliani and Miller argued that the WACC is constant as gearing increases.

Raising the proportion of debt (which is cheaper than equity) does not reduce a company's WACC because in response to an increase in debt, the cost of equity increases by just enough to compensate for the increased volatility in earnings and to keep the WACC constant.

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If gearing were completely irrelevant as the MM theories suggest, we would see that gearing ratios varied *randomly* between industries and between firms within industries. Yet we don't see this. Companies in particular industries are often fairly highly geared while companies in other industries are not.

This suggests that gearing is important and that companies adjust their gearing until it is appropriate.

According to Myers, there is an optimal capital structure but there is no golden rule: the optimal capital structure might be different for different industries and for different firms within an industry.

## 1.6 Factors affecting the gearing decision in practice

### The nature of the business and its assets

**Some businesses – for example, banks and property companies – will use a high proportion of debt financing due to the nature of their assets (loans to customers, leased properties).**

**Others – for example mineral prospectors or IT developers – will have very limited tangible assets and will need to rely on equity finance. Most businesses, however, lie between these two extremes.**

In the case of high-risk businesses or businesses with very little asset backing (like advertising agencies), banks are often unwilling to accept the types of risk involved in the company. An IT company may not be able to provide the long-term guarantees required by the bank to enable the bank to provide the finance, at least on the terms the company is willing to pay.

Many companies have very little in the way of physical assets to pledge as collateral for the loan (eg management consultants). Their assets tend to be in the form of human capital. In such cases the terms of the loan may be prohibitively expensive for the company to bear.

## Financial risk

**As a business expands its gearing – the ratio of debt to equity – the costs of financial failure rise. In the end, losses can wipe out not merely the assets financed by the loans, but also those financed by the equity, at which point the business is bankrupt.**

This must be balanced against the *higher expected return* for the shareholders.

Consider the following two scenarios for a property company, Company X:

<i>(figures in £ millions)</i>	<b>Scenario 1</b>	<b>Scenario 2</b>
<b>Assets</b>		
Property	4	7
Cash	1	1
<b>Total</b>	<b>5</b>	<b>8</b>
<b>Liabilities</b>		
Share capital	2	2
Loan stock	3	6
<b>Total</b>	<b>5</b>	<b>8</b>

Scenario 1 shows a geared company that has raised £2 million from shareholders and a further £3 million in the form of debt. It has used these funds to buy assets worth £5 million.

Scenario 2 differs from Scenario 1 only in the amount that the company has borrowed in the form of debt to buy property.

Under Scenario 1, it would require a £2 million (or 50%) devaluation of property to wipe out the value of the investment of the equity investors. In other words, if the value of property fell by 50%, the property and cash assets that the company owns would be worth £3 million, which is just sufficient to pay the bondholders.

In Scenario 2 only a 29% drop in the value of the property portfolio is needed to wipe out all of the equity investors' value (*ie* 29% of £7m is £2m).

The potential reward for investors is greater under Scenario 2 because equity shareholders gain more for each percentage point that the property portfolio increases in value. They will also gain from fact that the financing cost of debt will be lower than the return the company is generating on its assets, so even if property prices do not rise, equity shareholders will get a higher return. However most investors would *require* a greater prospective return from their investment to warrant taking the increased risk of Scenario 2. As such, the price they would be willing to pay for the equity may well need to be lower – *ie* the price of the equity could fall in the secondary market.

**The greater the debt, the less likely it is that the available assets (possibly realised in 'distress' circumstances) will be able to pay off all the creditors in full.**

**In addition, the holders of the equity will become concerned that, should the business hit a bad patch, the interest burden will leave nothing for them.**

## The cost of debt and equity

Debt finance is cheaper than equity finance because debtholders bear a lower risk than shareholders. Also interest on debt finance is tax deductible whereas dividend payments are not.

However, as gearing increases, the cost of both debt and equity increases as the risk increases to both lenders and shareholders.

**Lenders will wish to consider the burden of existing debt before providing further funds. Credit rating agencies monitor the financial status of major companies (and others, on request). The down-rating of a company can have a major impact on the cost of its existing debt and its ability to borrow more.**

Companies have rolling overdraft facilities and short-term finance agreements with banks that are often specifically linked to the company's published credit rating (Standard & Poors, Moody's or Fitch IBCA are among the largest rating companies).

Thus, a down-rating can have an immediate effect on the cost of borrowing. More obviously, when a company rolls over its medium and long-term loans, the interest rate it will need to pay to attract investors will be directly affected by investors' perception of its long-term credit worthiness. Many investors are happy to let the credit rating agencies do this work for them, and accept their judgement.

Companies often refer to the risk caused by such a down-rating as 'reputation risk'.

## Availability of finance

This is very much linked with the last point.

The company may wish to raise a particular form of finance but the providers of debt or equity might be unwilling to provide it (or only at very high rates of return).

If a particular project is large in comparison to the business as a whole, the lender may not be prepared to lend the *amount* of capital required, and may wish to add *covenants* to the loan agreement restricting the amount of further debt the company can raise.



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### Question

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Explain why a bank might be unwilling to finance the whole of a project, despite the fact that it considers the project to be profitable and secure.



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## Solution

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A bank will control its credit exposure in a number of ways. It will consider:

- the amount of each loan as a proportion of its own share capital
  - the amount of each loan as a proportion of the borrowing company's share capital
  - the total amount of all similar loans (*ie* in the same sector or industry) on the bank's books as a proportion of both of the above.
- 

Where the providers are institutions, rather than individuals, there may be *rules* restricting investment in companies with high levels of gearing.

## Control of the business

Shareholders may not wish to see their control in the business *diluted* by increases in equity. In this case, they could either take up any rights issues offered, or, if they did not wish to or could not afford to take up any new rights, they could try to persuade the company to raise the funds in an alternative way.

Managerial incentives and hence *agency costs* might change with gearing. As debt increases, management might be less willing to invest in risky projects. Agency costs, *ie* costs of monitoring management, might rise steeply beyond a certain level of gearing.

## The market view

**The stock market will consider every aspect of a company in making the assessment of worth that culminates in a share price. If the capital structure does not appear consistent with the other features of that assessment, the price will change to take that into account. For example:**

### ***A high-growth company that is highly geared***

**Consider a medium-sized company in an industry with numerous growth opportunities that is already highly geared compared with its rivals. The value of shares may be diminished by the market's expectations that the shareholders will be asked to put up more funds.**

It is argued that high-growth companies need *financial slack*, *ie* a cushion of equity, enabling them to raise more debt finance easily when investment opportunities present themselves. High-growth companies therefore tend to be lowly geared.

**In a static or low-growth industry the converse will apply since a highly geared company is making more efficient use of the shareholders' funds.**

Taking our property company X on page 9, there are three possible outcomes following the increase in borrowing as the company moves from Scenario 1 to Scenario 2. One of the following may occur:

- Adding further debt to the company's financial structure is likely to reduce the interest cover of the existing debt. Investors could become worried that the company may soon be forced to come to the market to raise more equity finance, because it can no longer finance the *interest* burden of the new debt. Any increase in the supply of equity would depress the current value of the existing equity.
- Equity shareholders may become worried about the prospective volatility of *market prices* of property and their effect on the residual value of the company. Due to fears that the chances of a 29% down-valuation in property prices (*ie* sufficient under Scenario 2 to bankrupt the company) are quite high, the value of the equity might fall.
- Provided the property market was predicted to be quite stable investors might be quite glad of the additional gearing. The equity shareholders will receive better returns from a slow and steady increase in property values under Scenario 2.

The addition of debt will also make the structure of the company more tax efficient and offer higher returns to equity shareholders.

Therefore the equity shares may appreciate in value because the new structure is better suited to the investors' desired risk profile.

### ***A cyclical industry***

**The most efficient company will have a high debt to equity ratio when activity is at its peak, but will be structured so that this debt can be reduced greatly as the trough approaches.**

In a downturn, activity will reduce and the company will need less capital. Profits and therefore interest cover will fall, so it is desirable to reduce debt finance.

**Here it is the term structure of the loan capital that will influence the valuation of the equity.**

### ***An industry facing decline***

**In an industry facing decline, the management will need to diversify or go out of business.**

**If the company diversifies, it will be capital-hungry and will also need to adapt its capital structure to that of the industry to which it is seeking to move while reducing (by liquidation, if necessary) exposure to the business in decline.**

**If closure of the company is chosen, then the less debt in the capital structure the better.**

Often declining industries can be used as 'cash cows' to finance the diversification into newer areas, reducing the requirement to raise further capital elsewhere with no further investment needed in the old industry.

### ***'People' businesses***

**Consider 'people' businesses, where the skills and abilities of certain groups of staff and management are in very short supply and are essential to the competitive success of the business.**

**It may be necessary to reward some individuals by stock options or other similar schemes. However, excessive use of such arrangements can have an adverse effect on the valuation of the company's shares.**

Share options can have a very dilutive effect on the company's earnings. The directors or management of the company are given the right to buy shares in the company at prices which might be well below the current market price – however the value of these options need not be reflected in the company's balance sheet.

When these options are exercised, the money paid to the company per share can be quite low, but a normal share is created. The company's earnings are therefore divided between an ever-increasing number of shares, reducing the earnings per share growth.

Microsoft issues share options worth billions of dollars to staff, none of which show up on the balance sheet. They are disclosed in the notes to the accounts for those that want to investigate.




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### Question

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Explain why investors might be concerned about the market value of outstanding share options in a company.

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### Solution

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The market value of the outstanding options will be approximately equal to:

*(current market value of the shares given away)*  
 – *(the amount the directors will have to pay in order to subscribe for those shares)*

It can be seen that when the directors exercise their options, new shares will be created.

These new shares give the right to participate in the future profits of the company, and as such have the same value as existing shares. However only the subscription amount will be received by the company, which may be a lot less than the market value of those shares.

There will be 'dilution' to the extent that the amount received is less than the market value of the shares issued.

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### ***Companies in high-growth but high-risk industries***

**In high-growth but high-risk industries such as bio-technology or deep-sea oil exploration, loan capital is unlikely to be available, but shareholders will need to be rewarded for the risks they must bear in the absence of cashflow to fund dividends.**

### ***Conclusion***

**The more a company's capital structure fits the market perception of the company's prospects, the higher the shares will be rated.**

**There are no simple rules of thumb – everything in the market's knowledge of the business and its managers will contribute to the share price.**

The managers will know more about the company than its shareholders, due to *information asymmetries*. The market price of the shares will depend on the signals received by the shareholders about the company from the managers.

This concern about the market reaction can affect management's decision making. An issue of debt is often seen by the market as a sign of confidence on the part of management, whereas an issue of equity is often thought to indicate that shares are overvalued. This has led Myers to believe that there is a preferred *pecking order*: companies are likely to choose internal finance first, then debt, and finally equity.

## Taxation

**The main features of company taxation (as discussed in the chapter on taxation) imply that:**

**(i) Interest payments are tax deductible.**

The tax payable is consequently reduced.

**(ii) Capital allowances on new plant and equipment are deductible.**

In other words companies can reduce their tax liability in respect of the capital allowances on the plant and equipment they own.

The amount and the structure of these allowances will influence a company's desire to invest in such equipment, which will influence their requirement for more finance.

**(iii) Lease of plant and equipment receives tax relief.**

As above the amount of relief available will influence a company's financing decisions.

**(iv) Property rental payments receive full relief and some features of industrial buildings have capital allowances (although at a much lower rate than plant).**

**This means that the cost of the risk borne by shareholders arising from their company's debt is diminished by the reduction in corporation tax, whereas profits attributable to shareholders' funds do not benefit from such relief.**

If a company borrows in the form of debt and buys assets that generate profits, the equity shareholders will benefit from:

- the fact that the payments of debt interest serve to reduce the tax liability
- the fact that the assets themselves attract allowances which can reduce the tax liability.

**In effect, the taxpayer is subsidising the use of debt in the capital structure.**

**In addition, where a company is owned by taxpaying individuals, these individuals may not be able to obtain tax relief on their own borrowings. Thus, such companies cannot expect their shareholders to borrow in order to provide the company with extra equity capital (other things being equal).**



### Question

Explain what is meant by 'individuals may not be able to obtain tax relief on their borrowings'.

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## Solution

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When a company borrows money, the interest payments are tax deductible and so reduce the company's tax liability.

An individual borrowing money from the bank and investing it in an asset (eg their main residence) is not allowed to reduce the income or gains accruing from the asset by the amount of the loan interest payments before calculating their tax.

Therefore income and gains are taxable in full, and any loan interest payments that have to be made come out of post-tax earnings.

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### 1.7 An illustration

We can demonstrate some of the above concepts using the statement of profit or loss of an example company, WrongTurn Ltd. The company has investigated a potential project it would like to undertake. It requires £5 million of additional capital.

*Estimated statement of profit or loss for WrongTurn Ltd for the year ended 31 December 20XX*

	<i>(figures in £)</i>
Operating profit	1,000,000
Interest payable on loan stock (£5 million @ 10%)	<u>(500,000)</u>
Profit before tax	500,000
Tax @ 30%	<u>(150,000)</u>
Profit after tax (Earnings)	350,000
<i>Earnings per share</i>	<i>25p</i>

The company made dividend payments of £196,000, ie 14p per share on 1.4 million shares, in respect of the year ending 31 December 20XX.

Increase in retained earnings	154,000
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If the shares currently stand in the market at a price of £2 per share and the dividend is the only dividend paid during the year we can find:

$$\text{dividend yield} = \frac{\text{dividend per share}}{\text{share price}} = 7\%$$

The *return on equity capital* for the shareholders (using market capitalisation as a proxy for share capital and reserves) is

$$= \frac{\text{earnings attributable to equity shareholders}}{\text{market value of equity shares}} = \frac{350,000}{1,400,000 \times 2} = 12.5\%$$

where the *market value of equity shares* = *number of equity shares* × *share price*

7% is the return in the form of immediate dividend yield and the remainder (of the 12.5%) is in the form of dividend growth through retained earnings.

The company estimates that the project will give a return of 12% before taxes on the capital raised – *ie* on £5 million of capital invested, it would yield £600,000 per year. However, this could be as low as a 2% return (£100,000) or as high as a 22% return (£1,100,000).

### Scenario 1

WrongTurn could raise the capital through an additional tranche of the loan stock @10%. Assuming additional income of £600,000 the income account for the coming year might then be:

	<i>(figures in £)</i>
Operating profit	1,600,000
Interest payable on loan stock (£10 million @ 10%)	<u>(1,000,000)</u>
Profit before tax	600,000
Tax @ 30%	<u>(180,000)</u>
Profit after tax (Earnings)	420,000
<i>Earnings per share</i>	<i>30p</i>

The company made dividend payments of £196,000, *ie* 14p per share on 1.4 million shares, in respect of the year ending 31 December 20XX.

Increase in retained earnings	224,000
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We assume that the company could issue more unsecured loan on the same terms as the existing debt, *ie* at the Gross Redemption Yield (GRY) of 10% *pa*. In the real world a further issue would doubtless reduce the credit worthiness of the loan and lead to an increase in the GRY of the entire issue, including the new tranche.

This analysis also assumes the equity share price does not move in response to the expansion.



### Question

Repeat the calculations for the situation where the additional operating profit from the new project is £100,000 (*ie* 2%) and £1,100,000 (*ie* 22%).

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**Solution**


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	<b>2% return</b>	<b>22% return</b>
Operating profit	1,100,000	2,100,000
Interest payable on loan stock (£10 million @ 10%)	<u>(1,000,000)</u>	<u>(1,000,000)</u>
Profit before tax	100,000	1,100,000
Tax @ 30%	<u>(30,000)</u>	<u>(330,000)</u>
Profit after tax (Earnings)	70,000	770,000
<i>Earnings per share</i>	<i>5p</i>	<i>55p</i>
Increase/(decrease) in retained earnings	(126,000)	574,000

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**Question**


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If WrongTurn Ltd were to follow this route (Scenario 1), explain the possible effect on investors' attitudes towards the shares, and explain what might happen to the share price in each case.

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**Solution**


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Possible outcomes include:

- The business was already quite highly geared before the additional borrowing. With the additional gearing in the form of the new debt, shareholders may become concerned about whether there is sufficient *interest cover*.

There is a risk that interest rates will have increased when the company has to repay and refinance the loan.

In order to carry that risk, investors may require a higher prospective return – *ie* the share price may fall.
  - The further gearing reduces the chances of the equity holders receiving anything in event of wind up, given the bondholders would be repaid first.

Given that this is a large project relative to the company as a whole, the chances of failure must be uppermost in investors' minds. If they are concerned about the reduced *asset cover*, the share price may fall.
  - Investors may be happy to have the additional gearing.

It gives them a *higher prospective return* immediately (the project adds value) and gives them increased exposure to any upside risks for the company, so the share price may rise.
-

## Scenario 2

Alternatively WrongTurn could raise the finance through an issue of equity. Assuming they were sold at the current price of £2 per share (though it would be more usual to issue new shares at a price below the current market price), £5 million would require the issue of an additional 2.5 million shares.

Operating profit	1,600,000
Interest payable on loan stock (£5 million @ 10%)	<u>(500,000)</u>
Profit before tax	1,100,000
Tax @ 30%	<u>(330,000)</u>
Profit after tax (Earnings)	770,000
<i>Earnings per share</i>	<i>19.74p</i>

The company made dividend payments of £546,000, *ie* 14p per share on 3.9 million shares, in respect of the year ending 31 December 20XX.

Increase in retained earnings	224,000
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Again this analysis assumes that the share price does not move in response to the expansion.

Comparing Scenario 2 with Scenario 1, we can see that WrongTurn has paid *£150,000 more in tax* on its profits, simply because of the way in which it has chosen to finance the expansion.



## Question

Repeat these calculations for Scenario 2 for the situation where the additional operating profit from the new project is £100,000 and £1,100,000. Compare the answers with those obtained in the previous calculation.

## Solution

	<i>2% return</i>	<i>22% return</i>
Operating profit	1,100,000	2,100,000
Interest payable on loan stock (£5 million @ 10%)	<u>(500,000)</u>	<u>(500,000)</u>
Profit before tax	600,000	1,600,000
Tax @ 30%	<u>(180,000)</u>	<u>(480,000)</u>
Profit after tax (Earnings)	420,000	1,120,000
<i>Earnings per share</i>	<i>10.8p</i>	<i>28.7p</i>

The company made dividend payments of £546,000, *ie* 14p per share on 3.9 million shares, in respect of the year ending 31 December 20XX.

Increase/(decrease) in retained earnings	(126,000)	574,000
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The volatility of returns is far greater in the more highly geared situation (Scenario 1).






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## Question

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Describe the possible impact on the share price for WrongTurn Ltd under Scenario 2.

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## Solution

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Possible outcomes are:

- The gearing of the company is reduced under this scenario, so the investors may feel this is not the best use of capital. Their *prospective return* has been reduced, causing the share price to fall.
- The gearing of the company could have been considered too high in the first place. The extra share capital reduces the risk of the company not being able to *finance its interest payments*. This could be perceived as positive and the share price would rise.
- The increased *marketability* of the shares may be welcomed and the share price may rise.
- The additional supply of equity could have a short-term effect on the value of the shares, and drive the price down. This would only be a *short-term* effect, and has little to do with the fundamental value of the shares themselves.

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**There is therefore a powerful tax incentive for a company to borrow (or finance assets through a lease, etc) when it needs capital for expansion. However, the costs of some partial failure of the business can exceed the tax benefit that has been obtained in respect of the project and its financing.**

**The greater the debt of a business the less likely it is that the available assets (sold in 'distress' circumstances) will be able to pay off all the creditors in full if the business fails.**

**Therefore as a business increases its gearing, the costs of financial failure rise.**

**Financial managers of a company can use as a yardstick the maximisation of the (positive) gap between tax benefit and the distress cost of failed projects.**

This could be measured by the change in shareholder value.

So in the case of WrongTurn above, an estimate might be made of the effect on the share price under both the scenarios. Whichever is most likely to lead to a higher share price, is by definition the option which shareholders feel happiest with.

Shareholders may prefer an issue of debt because of the utilisation of the tax benefit and the higher prospective return to shareholders of the geared strategy.

Alternatively, shareholders might prefer the issue of shares because, despite the lower prospective return and tax disadvantages, due to the lower gearing and the reduced volatility of earnings.

## 2 Dividend – the shareholders' reward

### 2.1 Fundamentals of dividend policy

Dividends can be seen as a financing decision – money paid out by way of dividend is no longer available for investment in the business. This is particularly true of unlisted companies since:

- the company does not have the option of raising further funds in the stock market
- the borrowing powers of unlisted companies tend to be more restricted.

On the other hand, shareholders in such companies have the opposite problem – they cannot sell some shares in the market to replace dividend income.

In general, the choice for a company's board (and its shareholders) is between immediate income and the prospect of higher income at some future date. The latter will, in a listed company, be reflected in capital appreciation as the market takes that prospect into account.

**Factors influencing the decision on dividend policy include:**

The main factors influencing the dividend decision include:

- stock markets
- cash reserves
- tax
- growth opportunities
- stability and consistency.

### Stock markets

**Stock markets display significant adverse reactions to announcements of dividend cuts. Managers therefore tend to conservatism in good years, particularly in cyclical industries and for smaller companies (especially those that are new to the market).**



#### Question

The stock market is often accused of being too focused on the short term. Explain how this could have a negative effect on a company's long-term growth prospects.

#### Solution

If the stock market is focused on the short term, it is possible that investors will reward companies that pay high dividends with a high share price.

Companies may then return too much to shareholders, rather than focusing on the payout ratio that best suits their business, which may be bad for the company's long-term prospects.

**A change of dividend policy can have significant repercussions for a company's market rating and its capacity to raise finance.**

## Cash reserves

**Companies with large cash reserves that fear a takeover bid may well distribute generously to both encourage shareholder loyalty and limit the size of the 'cash pile'.**

A cash pile is seen by investors as a sign of weakness.

Some companies try to label it as a 'war chest' – cash held in anticipation of a large aggressive takeover bid – in the hope that the market will continue to believe that some big value-adding manoeuvre is imminent.

Shareholders invest in companies to get exposure to a certain type of risk. If they wished to invest it in cash or other investments, they would choose to do it themselves through direct investment, rather than let the company do it for them.

So the belief is that if the company can't use the money they should give it back to shareholders. Shareholders can then find another company that has some ideas and that can use the cash!

## Tax

**Companies with a large proportion of non-taxpaying shareholders may feel it appropriate to distribute a large proportion of earnings.**

In general, non-taxpaying shareholders (and those who receive dividend income tax-free *eg* because the income is below the tax-free dividend limit) will wish to receive much of their return in the form of income, rather than reinvesting the profits in the company to give a capital gain. This will lead to a bias towards higher payouts from companies whose shareholder base contains a higher proportion of non-taxpaying shareholders or smaller investors.

## Growth opportunities

**Companies in high-growth industries may find that the demands for capital investment to maintain competitive advantage exceed their capacity to borrow on satisfactory terms and may prefer to pay low dividends rather than making frequent rights issues.**

Many internet companies pay no dividend at all, and often have negative net cashflow. It is the promise of superior growth in the future that makes these companies attractive, not a high dividend yield. So paying a dividend to the sort of investor who invests in such companies makes little sense.

## Stability and consistency

**Since companies with high dividend policies tend to attract investors who seek high payouts (and similarly for low dividend policies and preferences) any move from one category to the other will cause adverse market reaction as investors readjust their portfolios.**




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### Question

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State the types of investors that might have a preference for low payout policies.

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### Solution

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Investors who may have a preference for companies with low payout ratios are investors who:

- prefer capital gains to income from a tax point of view
  - have no current need for cash
  - believe the company can reinvest the cash better than they can
  - are also managers of the company, and want resources now.
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### Question

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State any legal constraints on the amount of dividend that can be distributed.

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### Solution

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Companies are not allowed to pay out in dividends more than they have in their retained earnings from the current and previous years. This is to protect creditors in the event of the company being wound up.

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## 2.2 Other methods of reward

### Introduction

**In addition to regular dividends, usually paid quarterly or half-yearly, one-off *extra* or *special* dividends may be paid occasionally.**

**Alternatives to cash dividends include:**

- scrip, stock or share dividends
- share buybacks.

**Occasionally, companies may offer non-cash dividends in the form of product samples or discounts on services.**

**Often companies will offer an *automatic dividend reinvestment plan*. This may include the issue of new shares at a discount to market price (partly to reflect the saving in underwriting costs).**

Shareholders are offered the opportunity to reinvest their dividends in the company's shares, which are offered at a discount.

### Scrip or stock dividends

**The effects of scrip issues were discussed earlier in the course.**

A scrip dividend is very similar to a scrip issue except that scrip dividends are usually much smaller affairs, aimed at emulating the effect of a dividend payment. Scrip issues can be very large indeed, for example issuing one new share for every one that exists.

**Stock or share dividends are paid in the form of extra shares, rather than cash.**

**Such a dividend will be shown in the company accounts as a transfer from retained earnings to equity capital.**

**Scrip dividends are defined as either 'pure', where the shareholder has no option to take cash, or as a scrip alternative to a cash dividend.**

If a shareholder has the right to receive a new share for every 20 held, this is equivalent to a 5% dividend yield. Tax issues arise, since the authorities require that the value of the new shares allocated are treated as taxable income.

### ***Effect on the company***

These methods of distribution are of benefit to companies that either:

- have no cash with which to pay a dividend because of long-term expansion
- usually paid a dividend, but are unable to pay one at present.

If they expect to resume paying dividends in the future, and wish the dividend yield to be continuous through these hard times, they may pay a scrip dividend.

**From the company's point of view, the scrip dividend retains funds to be used for investment or to reduce borrowings and, therefore, to improve earnings. The capital base will increase and this will improve the company's financial capacity. The shareholder base may be increased by attracting investors who prefer scrip dividends.**




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### **Question**

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A company is debating whether to pay no dividend or to pay a scrip dividend.

Explain which option is expected to lead to a faster appreciation of the share price over time.

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### **Solution**

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The 'no dividend' option allows the company to retain all of its earnings, and involves no dilution of earnings (reduction of earning per share) through the issue of new shares. It would therefore lead to the fastest capital appreciation. Scrip dividends, (like scrip issues) reduce the share price slightly.

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### ***Effect on the shareholder***

**From the shareholder's point of view there are fewer benefits.**

**Tax will normally be payable as if cash had been taken but, as no cash is received by the shareholder, this must be funded out of other resources.**

The scrip issue only benefits those shareholders who wish to increase their holdings, as they will avoid brokerage and other acquisition costs and may also benefit from a slightly better price. On the other hand, the practice complicates the computation and recording of capital gains.

## Share buybacks

If a company has accumulated large amounts of cash which it does not need in running the business, or if it wishes to change its capital structure by replacing equity with debt, it will generally undertake a *share repurchase* or *buyback* exercise.

### *The procedure*

The company announces that it intends to buy back a certain number of its own shares.

This may be implemented by:

- purchase of shares in the open market, often by a gradual programme over a period of time
- a fixed price offer
- a tender offer (either a *Dutch* or *uniform price* auction)
- repurchase by direct negotiation with a major shareholder.

The most common method is for the company to announce its intention of buying its shares in the open market.

If the company repurchases a stated number of shares at a fixed price (typically at a significantly higher price than the current market value), the shareholders are informed of the company's intention and are free to accept the offer or not.

If a *uniform price auction* is used, the company asks shareholders how many shares they are prepared to sell and at what price.

Suppose:

- shareholder A is willing to sell 10,000 shares at £2
- shareholder B is willing to sell 15,000 at £3
- shareholder C is willing to sell 20,000 shares at £4.

The company will then calculate a price at which it can buy the number of shares it wishes to buy. If it wishes to buy 25,000 shares, it will pay £3 per share to shareholders A and B.

If a *Dutch auction* is used, the company states a series of prices at which it is prepared to repurchase shares. Shareholders reply to this offer, informing the company of how many shares they are willing to sell at each price.

The company then calculates the lowest price at which it can buy the required number of shares.

### **Effects on the shareholders**

Often, for simple supply/demand reasons the share price rises on such an announcement. However, this is not always the case.

Investors invest in a company with the intention of being exposed to a certain type of risk (and hopefully a certain return). The company is essentially forcing some investors to sell their shares and invest elsewhere.

Such an announcement can also be seen as a sign of weakness by investors, who may think that the company has no ideas or innovative projects to generate returns. On the other hand, some might argue that it is good to reduce the stockpile of cash, since it will not have been earning a great rate of return.

There are also tax issues to consider.

- Some investors might be happy to realise a capital gain if they have not used their capital gains allowance because they will pay no tax on the capital gain.
- However other investors may be forced into realising capital gains at times when they would rather not, *eg* if their year's allowance is already used up.

Share buybacks have been a common way of rewarding shareholders in the United States because, until recently, shareholders had to pay income tax on dividend income on top of the corporation tax paid by the company on its profits.

**Share buybacks can benefit private shareholders to the extent that the tax treatment of capital gains is better than that of dividends.**

**The effect on the company's earnings per share should be beneficial, since the cash held is probably only earning a deposit rate of interest – much less than its industrial assets. The value of the remaining shares should, therefore, improve.**

**However, investing institutions prefer to make their own buy/sell decisions and receive no tax benefit from a share buyback, so this alternative is more frequently carried out by companies with a high proportion of individual shareholders.**

## **2.3 The market and dividends**

**The market value of a company is the market's valuation of future dividends (unless there are expectations of takeover or winding up and the distribution of residual assets).**

In many cases, such as internet based companies and high-tech stocks, the first prospect of a dividend payment can be many years in the future. Under these circumstances it becomes very hard to value companies by this method.

**If no outside loan capital is available and the company has better investment opportunities than its shareholders, then the payment of dividends will reduce the business' ability to take advantage of these situations and will be damaging to the market value of the company.**

**However, provided loan capital is available to the company on tolerable terms, this restriction does not apply (and even after this is exhausted there is always the possibility of a rights issue).**

Looking at the dividend question from the point of view of the shareholder, it is a reasonable assumption that the purchaser of shares has some expectation of a dividend policy. If this expectation is not fulfilled, it will change the investor's relative valuation of the share.

A consistent dividend policy is, therefore, important in building a clientele of investors, and an unexpected change can have a negative effect on perceptions of the company's worth. It follows that investors will move to shares where dividend policy is compatible with (or acceptable in) their tax position.




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### Question

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A large well-established company GHJ has run upon hard times. Having had robust and increasing profits for the last ten years, half of which it has paid in the form of dividends, it has been hit by recession in three of the four industrial areas in which it operates. The directors are keen to maintain investor loyalty, and are afraid of a takeover by another company. However they accept that the profits in the current financial year will be zero.

State what further information would be required in order to set the dividend policy for the coming year.

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### Solution

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Addition information required includes whether:

- the company can afford to pay a dividend
- and when the profits are going to recover to their former level
- the company can pay scrip dividends in order to preserve cash
- other companies in the sector are struggling, and the dividends they are paying.

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**The financial management of a company must, therefore, consider carefully the likely effect on investor perception of any dividend announcement – particularly if it can be construed as a change in dividend policy.**

**If a change should be necessary, it is necessary to explain the reasons quickly and clearly – shareholders will generally accept decisions made for the long-term benefit of the shareholders. Any efficient market will take its cue from the statements and actions that enter the public domain, not from what a company's managers wish or think.**




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### Question

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Set out possible courses of action for the management of company GHJ.



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**Solution**

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- Maintain the dividend despite the fall in profits.
  - Declare a scrip dividend equal in size to the previous actual dividend.
  - Declare a postponement of dividend payments until the company is profitable again.
  - Estimate the sustainable profitability of the company over the next few years and scale the previous dividend down to reflect this lower expectation in the future.
- 

Examination questions on dividend policy often require consideration of the choices facing directors when setting their company's dividend, the implications of a particular policy (such as the effect on the share price), and the implications of changing their policy.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.

## Chapter 20 Summary

### Capital structure

The management has a great deal of flexibility as to how a company's capital should be structured. It is important that they manage the *capital structure* in a suitable manner.

Factors influencing the gearing decision are:

- business risk  
If the business is in a volatile industry, it may be better to avoid too much debt, as it would increase the risk of winding up.
- financial risk  
Also, as the level of gearing rises, the *service cost* of the debt will rise due to the added risk of default. The *return on equity* will no longer benefit from further gearing.
- cost of raising and servicing the capital  
Depending on the capital structure, issuing more debt finance may reduce the WACC.
- availability of debt and equity finance  
Additional debt finance may not be *available* if the company is already highly geared or has few tangible assets.
- effect on control of the company  
Raising funds through the issue of equity causes a reduction of the existing shareholders' proportional holding in the company if shareholders are not able or willing to buy the new shares.
- market view  
Ultimately, the *market* will reflect its view on the capital structure through the company's share price.
- taxation  
Debt finance is advantageous in a world with tax. Debt finance costs are deducted from pre-tax profits, thereby reducing the amount of tax payable. In addition, the assets purchased generate capital allowances, which can serve to reduce the *tax liability* yet further.

## Dividend policy

Key factors in the dividend decision are:

- stock market reaction *eg* adverse reaction to dividend cuts, competitors' policies
- cash reserves – cash-rich companies might give a generous dividend or might buy back shares; cash-poor companies might give no dividend or perhaps a scrip dividend
- tax – investors prefer dividends if they are taxed at a higher rate on capital gains
- growth opportunities – if these exist it may be better to retain profits
- stability and consistency with previous dividend policy
- investor preferences *eg* need for cash, better opportunities to invest elsewhere.

Other ways of rewarding shareholders include scrip dividends and share buybacks.

The financial managers of a company should seek to maximise the return to the owners of the equity, within the parameters that they set out.



## Chapter 20 Practice Questions

Exam style

All of the questions that follow are exam style.

- 1.1 Which of the following types of company is most likely to employ a high proportion of equity financing?
- A supermarket
  - B property company
  - C IT company
  - D bank
- [2]
- 1.2 A company owns a large out-of-town shopping centre in a prime location. In order to reduce the debt, one of the directors has suggested that the company should approach a bank to arrange a sale and leaseback on the property, whereby the company will sell the property to the bank for a sub-market price and the company will negotiate a long-term lease on the centre at a reduced rent level.
- List the advantages and disadvantages of such a move. [5]
- 1.3 A High Street bank is determining its long-term dividend policy. Describe the factors it might wish to take into account. [5]
- 1.4 A company has recently been aggressively gearing its balance sheet in order to enhance equity shareholders' returns. Its most recent statement of financial position shows total assets less intangibles of \$200 million and debt of \$100 million.
- Bondholders have complained at the low level of asset cover and demanded that the company refinance through an issue of equity shares in order to improve the bondholders' situation.
- The company has stated that the assets are still twice as much as would be required to repay the borrowers in full.
- Discuss both the bondholders' statement and the company's statement in the light of this information. [5]
- 1.5 Company XYZ is seeking finance for expansion. The Chief Executive states that there should be sufficient funds raised internally through retained earnings to fund business growth over the medium and long term and that other methods of raising finance are too expensive so should be avoided.
- Discuss the Chief Executive's statement. [5]
- 1.6 A company proudly announces that its free cash reserves have reached record levels, making it the financially strongest company in its sector.
- (i) Discuss the possible shareholder reactions to the statement. [3]
  - (ii) Outline how the company could reduce the cash pile. [2]
- [Total 5]

- 1.7 Discuss whether a share buyback is more tax-efficient than paying a large special dividend and is therefore always beneficial to all shareholders. [5]
- 1.8 Explain how a company might carry out a share buyback programme. [5]



## Chapter 20 Solutions

### 1.1 Answer = C

It is difficult to obtain debt finance without security in the form of tangible assets. Since an IT company is unlikely to have many tangible assets, and in the early years be making no profits to pay interest, the main form of finance available is likely to be equity finance.

### 1.2 The *advantages* are as follows:

- It releases cash for other purposes, or for reducing the amount of debt outstanding. [1]
- It releases the company from the obligation of maintaining the building and all of the potential liabilities which go along with owning a building. [1]
- A low long-term rent can be negotiated to suit the company's cashflow requirements. [1]

The main *disadvantages* would be:

- No further gains would accrue through the appreciation in value of the property. [1]
- The lease would be finite, and the company will have to re-negotiate terms. [1]
- The company loses the flexibility and control of owning the property. The company will be restricted in what it can do with the property in future, *eg* sub-letting surplus space if the company's business declined. [1]
- If the bank fails to keep its side of the agreement, the company will have let the property go below market value without any benefit. [1]

[Maximum 5]

### 1.3 The bank might want to take into account any of the following factors:

- The stability of its profits. If stable then the bank may be able to pay out a higher proportion of its profits as dividends, without having to cut them in future, which is likely to cause a negative market reaction. [1]
- The amount of profit it is making and how these profits might change in the future. Greater competitiveness might lead to a squeeze on margins and a reduced dividend. [1]
- The amounts being paid out by other banks. Peer group pressure is an influence. Companies paying above or below their competitors can open themselves up to criticism and shareholder dissatisfaction. [1]
- Tax effects. The payment of dividends may have advantageous tax consequences, either for the company or its shareholders. [1]
- The company's historical dividend policy. Consistency is important to shareholders who buy a certain type of share to suit their own taxation and income preferences. [1]
- The bank's cashflow. Consider if there is enough cash available to make the required dividend payments. [1]
- Alternative options for finance, and their cost, and to what extent the bank is reliant on retained profit to finance expansion. [1]

- Legal requirements. Ordinary shareholders cannot be paid a dividend until all loan interest and preference share dividends have been paid. [1]
  - Growth plans. The extent to which the bank wishes to retain profits to fund expansion in different areas, *eg* to set up a telephone banking operation. [1]
- [Maximum 5]

#### 1.4 *Bondholders' statement:*

- The deeds of the various bonds in issue will document exactly what rights they have to demand capital restructuring in the current circumstances. [1]
- For secured debt such as mortgage debentures, the security of their debt is to a large extent determined by the fixed charge applying to the debt and only in the event that the asset over which the fixed charge applies is insufficient do they have an interest in the remaining assets of the company. [1]
- In the event of a floating charge over company assets, the secured bondholders will have an interest in the overall asset cover of the company. [1]
- The terms on which the debt was issued were presumably made clear at the time, and cannot be tightened later. [1]

#### *Company' statement:*

- The recent statement of financial position is only a snapshot of the company's trading position, which may be out of date. [1]
  - Also, creative accounting can sometimes distort the statement of financial position. [1]
  - The values in the statement of financial position are not market values, and in many cases are not designed to be an estimate of market value. [1]
- ... *eg* depreciation is designed to spread the cost of an asset over its useful life, not to ensure that the residual value in the statement of financial position is close to the asset's resale value. [1]
- The assets may sell for a lot less if a forced sale or when they are sold in an unfavourable economic environment, than their value in a normal economic environment. [1]
  - Some assets are specific to a company or an industry and have no resale value. [1]
- [Maximum 5]



## 1.5 **Retained earnings**

Companies can and do raise substantial finance through retained earnings not least because it avoids any costs of borrowing, the use of intermediaries, regulatory costs, etc. [1]

However:

- Retained earnings are slow and steady in nature, so may not be suitable for the purpose of funding rapid growth. [1]
- Acquisitions in particular tend to be of a lumpy nature, and can be funded as required by raising new finance. [1]
- Growth strategies should not be restricted to the amount of the retained earnings. [1]
- Even if borrowing is expensive, it is worth doing if the project expects to achieve a higher return than the WACC, in order to maximise returns. [1]
- The shareholders will not be happy with the directors if decline such projects. [1]
- If the company wishes to expand more rapidly at one point in time, then it should do so through a rights issue or a debt issue. [1]

[Maximum 5]

## 1.6 (i) **Shareholder reaction**

The announcement may be received positively if:

- the shareholders feel comforted by the strong financial situation [1]
- the company's financial strength allows the company to do business in markets that it could not otherwise. [1]

The announcement may be received negatively if:

- the reserves are invested in low-yielding financial assets, so the cash pile is not serving a purpose and is an inefficient use of capital [1]
- it is taken as an indication that the company has no ideas with which to expand the business. [1]

[Maximum 3]

## (ii) **Reducing the cash pile**

The company could reduce the cash pile by:

- Giving higher dividends is likely to reduce the cash pile only slowly over time. [1]
- Special dividends would have a larger short-term effect. [1]
- A share buyback either by buying the shares in the market, or by making an open tender to all shareholders, or by direct negotiation with a number of larger shareholders. [1]
- A takeover of another company for cash. [1]

[Maximum 2]

1.7 A share buyback can be more tax-efficient because any profit made by the investor when selling the shares back to the company are taxed as capital gains. [1]

This may be advantageous to private investors who have an unused capital gains allowance. [1]

Shareholders can choose whether to sell their shares back to the company and realise the gain, or to hold on to the shares and benefit from the fact that the total number of shares in the company will shrink, and the earnings attributable to their shares should rise accordingly in the future. [1]

Not every shareholder's tax position is the same. Some may not prefer a share buyback. [1]

The timing of the capital gains may not be to the shareholder's liking as shareholders often prefer to manage their gains to fit in with other realised gains in the tax year. [1]

If the buyback is not through an open offer to all shareholders then it can give special treatment to those shareholders who were given the opportunities to sell their shares. [1]

[Maximum 5]

1.8 A company could carry out a buyback programme:

- On the open market. The company could instruct its stockbroker to purchase its own shares on the stockmarket. [1]

The company runs the risk of driving its own share price up, so that the buyback becomes more expensive. [1]

- By negotiation with a single large shareholder, if there is such a large shareholder who wishes to relinquish its shareholding. [1]

- Through an offer to shareholders at a fixed price: The company could write to all shareholders offering to buy back shares at a fixed price (usually slightly above the price at which the shares are currently quoted on the stockmarket). [1]

- Through a uniform price auction whereby the company would ask each shareholder how many shares they would be willing to sell and at what price. [1]

- Through a Dutch auction whereby the company would ask each shareholder how many shares they would be willing to sell at a series of set prices. From this information, the company could calculate the lowest price at which it can buy the required number of shares. [1]

[Maximum 5]

# 21

## Capital project appraisal (1)

### Syllabus objectives

- 3.1 Discuss how a company's cost of capital interacts with the nature of the investment projects it undertakes.
3. Discuss the principal methods that may be used to determine the viability of a capital project.
4. Carry out cashflow projections and techniques to estimate cashflows.
5. Describe methods commonly used to evaluate risky investments including simulation and certainty equivalents.

(Covered in part in this chapter.)

## 0 Introduction

Companies use real assets to carry out projects in order to generate profits for their shareholders. Before proceeding with a particular project it should be thoroughly appraised in order to determine if it is likely to be profitable and hence worth undertaking. It is the nature of the appraisal of capital project that we discuss in this and the following chapter.

In order to acquire the assets to undertake projects the company must raise finance. So, the basic requirement of a capital project is that the returns from the project should exceed the cost of the capital employed to generate those returns.

If this is likely to be the case, then the company should undertake the project on behalf of its shareholders, as to do so will add value to their investment. A key element of any project appraisal is therefore to assess whether this is in fact likely.

However, as the returns from projects are always uncertain, so project appraisal can only ever indicate the likely profitability of a project and cannot give definite answers.

The structure of this chapter is as follows:

- Firstly, we define exactly what we mean by a capital project and then discuss how to carry out an initial appraisal and discuss the scope of the project.
- We then consider some of the main methods typically used to evaluate the likely profitability of projects in practice. The most common methods are discounted cashflow techniques, such as *net present value (NPV)* and the *internal rate of return (IRR)*.
- Finally, we consider how to interpret the result of the numerical evaluation of the project and how we can gain a fuller understanding of the viability of a project by the use of simulation techniques.

This chapter is concerned mainly with the methods of investment appraisal.

The next chapter will consider in more detail how to:

1. calculate the required rate of return for a project *ie* choose the discount rate to be used
2. identify, quantify and mitigate risks.

The examination could test for example *knowledge* of the different methods of project evaluation and the *ability to analyse* the relative merits of these methods.

# 1 Introduction to capital project appraisal

## 1.1 Definition of a capital project

**By a capital project we mean any project where there is initial expenditure and then, once the project comes into operation, a stream of revenues less running costs.**

**A capital project does not have to involve the construction of a physical asset.**

The key feature of a capital project is really that it involves the creation of a new asset or the transformation of an existing asset into a different asset.

In this context, asset refers to anything that will generate future positive cashflows for its owner. Capital projects therefore exclude the transfer of ownership of an existing asset – eg the purchase of an ordinary share in an existing company.

Examples of capital projects would include the:

- construction of fixed capital assets, eg new factories or aeroplanes
- setting up of a new business
- modernisation of an existing asset, eg a computer system, or a business
- redevelopment of an existing asset, eg a property.

**New projects undertaken by a company, requiring significant resources more than the normal budget, will be subject to cost justification to show that the expected benefits exceed costs.**

**When the costs exceed the benefits for more than a short time, a mechanism to incorporate the time value of money is needed. This will consider the value of any project or how alternative projects compare.**

**Capital will be needed to finance these projects and there will be a cost in supporting that capital. The cost of capital is a measure of this cost expressed as an annual rate of interest.**

The cost of capital shows the price at which investors are willing to buy in to the risks (and returns) that the company offers. The determination of a suitable required rate of return for a project based on the cost of capital is discussed in detail in the next chapter. We shall see that the discount rate chosen should reflect the systematic risk of the project.



### Question

Entrepreneur A approaches the bank with a low-risk business proposal and is offered finance at 10% *pa* for the project. Entrepreneur B approaches the bank with a different project and is offered finance at 15% *pa* for the project.

Explain what this might indicate about the two projects.

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## Solution

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It is probably not the case that Entrepreneur B has failed to sell themselves as well as Entrepreneur A or that the bank are simply looking for 50% extra return from B compared with A.

More likely, the bank perceives B's project as carrying higher risks, either of complete failure / default or of not achieving the stated returns, so the bank charges a higher interest rate to compensate for the risks.

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## 1.2 Initial appraisal

Before proceeding with a full-scale time-consuming and costly detailed project appraisal, the company's project analysts will usually undertake a quick initial appraisal.

**The main purpose of the initial appraisal of a proposed capital project is to decide whether the project will satisfy the criteria set by the sponsoring organisation that authorises the project.**

If not, it is not worth carrying out a detailed appraisal.

The sponsoring organisation may have a single set of predetermined criteria or the criteria may be varied according to the particular project concerned, *eg* a 'low-risk' project might be required to produce an internal rate of return of 10% *pa* compared to 20% *pa* for a 'high-risk' project.



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### Question

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Explain the possible meaning of 'high-risk' and 'low-risk' in the above statement.

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### Solution

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Most projects can be analysed in terms of cash inflows and cash outflows.

A *high-risk* project might be one in which the cashflows cannot be predicted with any degree of certainty. The graph of NPV (on the *x*-axis) against the probability of outcomes (*y*-axis) would show a wide range of outcomes for the project.

A *low-risk* project might show a narrow spread of results with a high certainty of a profitable outcome.

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**These criteria will describe the financial results expected and (sometimes) the risk that these results may not be achieved. However, there may be many additional criteria in practice, including:**

- **achieving synergy or compatibility with other projects undertaken by the sponsor**  
For example, developing a new product that can be sold in conjunction with an existing product.
- **satisfying 'political constraints', both within and without the sponsoring organisation.**  
The project may not be acceptable or even desirable in the eyes of senior management who may need to give approval before the project can proceed.
- **having sufficient upside potential**
- **using scarce investment funds or management resources in the best way.**  
Although the particular project may appear profitable, there may be other even more profitable projects or uses for the available funds.

In other words, the main criteria by which to judge the attractiveness of the project are the usual ones of risk and expected return, together with an assessment of how far the project is likely to satisfy any other objectives that the investor might wish to achieve.

Consider how well the project fits into the overall project portfolio and whether there are any synergies *eg* in the form of reduced average costs, once these are spread across other projects.

**During the appraisal process it will be necessary to investigate the main risks involved in the project and come to a view on the best course of risk mitigation, having regard to the costs involved.**

**The remaining risks will need to be listed for the benefit of sponsors, lenders and investors, so that they can be considered in the decision-making process.**

We will discuss the analysis and mitigation of specific risks in detail in the next chapter.

**Detailed analysis is an expensive process, so the complex evaluations are conducted only once it is clear that the effort is justified.**

As the project looks more likely to proceed, the financial modelling becomes increasingly complex and sophisticated, so as to generate more accurate projections of the likely financial outcomes of the project, *eg* for tax, risk and the sensitivity of cashflows to different economic scenarios.

In this way, the level of uncertainty attaching to the appraisal is reduced.

### 1.3 Definition of project

**The first step is to define the project and its scope carefully and to assess its likely length of operating life.**

The definition and scope of the project must be unambiguously set out and agreed by the various parties involved and should include careful reference to any interactions with existing projects.

The length of the project might itself be one of the criteria by which it is judged.

The *scope* of a project might include:

- the specific objectives of the project
- the principal activities in each stage of the project, *eg* construction of asset, use of asset
- the aims, scope and timing of investment and the stages of the investment cycle
- the success criteria of the project, *eg* a positive NPV based on 12% *pa*
- to whom (or which departments) the goals of the project apply (and who is not affected)
- the exact responsibilities of the various people in the project team
- time limits beyond which the project team's responsibilities and powers will not extend
- a list of connected issues for which the project team is *not* responsible.

It is hard to generalise, however the failure of many projects occurs because the scope of the project was not specified clearly enough. Consequently during the project, the individual goals and responsibilities may become unclear and confused and the project will fail to meet its targets.

## 1.4 Evaluation of cashflows

**There should then be an evaluation of the most likely cashflows for:**

- **capital expenditure**
- **running costs**
- **revenues**
- **termination costs.**

This will often be based upon the best point estimates of each of the main cashflows involved.

**These cashflows should be expressed in terms of present day money values and should exclude financing costs such as interest, depreciation, effects of price inflation, etc. However, if any of the cashflows are expected to increase in real terms (*eg* in line with wages rather than prices), this must be considered.**

The initial appraisal is usually based upon *real* values for the cashflows – the cashflows perhaps being easier to interpret if expressed in present-day money values – discounted using appropriate risk-adjusted real discount rates.

**The cashflows should allow for any effects on the sponsor's other activities or costs.**

Again any interactions or synergies with existing projects must be allowed for appropriately, *eg* sharing of costs, by-products or spin-offs.

**Accurate definition and evaluation of the most likely cashflows is crucial to the success of the subsequent work, as these constitute a baseline.**

**Great care must be taken, with all the assumptions made being carefully documented.**





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## Question

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A software company is assessing whether or not to develop a 'second generation' financial modelling package for insurance companies.

Suggest a possible synergy that might be considered by the software company as part of its project appraisal process.

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## Solution

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A potentially beneficial synergy is that companies who buy this new financial modelling package might also buy other modelling packages from the software company in the future.

On the other hand, sales of this new financial modelling package might simply replace sales of the software company's existing 'first generation' financial modelling package.

Both of these possibilities would need to be allowed for in the project appraisal.

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**Candidates are expected to be able to carry out simple cashflow projections and use techniques to estimate cashflows.**

## 2 Methods of project evaluation

Using cashflow projections, the next step is to make an initial evaluation of the likely financial result of the project. A discounted cashflow approach is normally used.

### 2.1 Net present value (NPV)



The NPV method models all the cashflows of a project until completion and discounts these back to the present day using the cost of capital.

NPV uses a *discounted cashflow* (DCF) approach to project evaluation.

**If the result is positive then the project will improve shareholder returns.**

If the NPV is positive when discounted at the Weighted Average Cost of Capital (WACC), then the project earns a rate of return greater than the WACC, so earns a return greater than the opportunity cost of the funds provided by the shareholders and debtholders.

The company can allow for risk within the NPV method.

**Risk is best allowed for in the model explicitly so that the company will look at the weighted average NPV of a range of scenarios.**

**The company would need to bear in mind its risk tolerance in deciding how to finance the project. The discount rate used could be different for different types of project.**

A high discount or hurdle rate might be used for projects that are deemed to have a high degree of systematic risk. In addition, we will see below that companies may deliberately use high hurdle rates in order to identify those projects that are particularly profitable. If this is the case then it does not mean that a project is loss-making simply because it fails to meet the hurdle rate. It simply means that the project is not as profitable as it needs to be to meet the company's criteria.

We will discuss the determination of the required rate of return for a project in the next chapter.



#### Question

Wrong Turn Ltd is analysing two projects, the first of which (Project A) gives the following estimated cashflows at the end of each of the coming years):

Time in years	0	1	2
Cashflow (in \$ millions)	(4)	2	4

The second project (Project B) gives the following cashflows:

Time in years	0	1	2
Cashflow (in \$ millions)	(2)	15	(14)

Assuming that the company sets a hurdle rate of 20% *pa* for its projects, determine which of the above projects pass the test.

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## Solution

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Both! At 20% the NPV of Project A is:

$$NPV_A = -4 + \frac{2}{(1+0.2)} + \frac{4}{(1+0.2)^2} = 0.44$$

and of Project B is:

$$NPV_B = -2 + \frac{15}{(1+0.2)} - \frac{14}{(1+0.2)^2} = 0.78$$




---

## Question

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On further analysis of Project A, WrongTurn finds that the risk involved in the cashflows comes primarily from one source of uncertainty, which it analyses further. The cashflow at the end of Year 2 has a high risk of not materialising. In fact there is a 25% chance that the cashflow will simply not happen, and a 75% chance that it will be earned.

The company wishes to analyse Project A using its cost of capital (15% *pa*) rather than an arbitrarily high hurdle rate of 20% *pa*. Determine a revised NPV in this situation.

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## Solution

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By allowing more precisely for the final cashflow, it can be determined that the expected value of the payment would be  $0.25 \times 0 + 0.75 \times 4 = 3$ . Reworking the equation with a final payment of 3 and a discount rate of 15% *pa* gives:

$$NPV = -4 + \frac{2}{(1+0.15)} + \frac{3}{(1+0.15)^2} = 0.008$$

*ie* the project satisfies the requirement (just!)

Alternatively one can analyse the project as a weighted average of two scenarios, namely:

$$NPV^1 = -4 + \frac{2}{(1+0.15)} + \frac{4}{(1+0.15)^2} = 0.76$$

with a 75% chance of occurring, and:

$$NPV^2 = -4 + \frac{2}{(1+0.15)} = -2.26$$

with a 25% chance of occurring.

The value of the average is  $0.25 \times -2.26 + 0.75 \times 0.76 = 0.008$

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**Some companies take a more relaxed view for small expenditures and demand a higher rate for large expenditures.**

## 2.2 Internal rate of return (IRR)



This is essentially the same in method of calculation as the NPV, the difference being that rather than discounting at the cost of capital, a solution is found for the interest rate that gives the project a zero NPV.

The method has the benefit of highlighting the return achieved by the project.

If this is higher than the cost of capital then the project may proceed.

If a project has an IRR which does not satisfy the company's criteria, this does not mean that the project is loss-making. It simply means that it is not profitable enough to satisfy the minimum requirements (eg a cost of capital requirement) set by the company.

However there are practical problems with the IRR approach.

1. Nonsense results can be obtained if the initial capital is small, giving very high positive (or negative) solutions, two solutions or no solution at all.
2. While the average net present value of a range of scenarios can be found simply by summing the value multiplied by the probability of the scenario, this is not the case for the internal rate of return.
3. It should be noted that the IRR equation can sometimes have multiple solutions, especially if there are net negative cashflows at some points during the operating life of the project or at completion. This has helped to make it less popular than the NPV as a measure of project worth.

Despite these problems, the internal rate of return can provide a single convenient tool.

One main advantage of the IRR is that it provides a rate of return for the project. As such it is intuitively easy to understand for non-experts.




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### Question

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Determine the internal rate of return for Projects A and B.

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### Solution

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We are looking for  $i_A$ , and  $i_B$  respectively in the following:

$$NPV_A = -4 + \frac{2}{(1+i_A)} + \frac{4}{(1+i_A)^2} = 0$$

$$NPV_B = -2 + \frac{15}{(1+i_B)} - \frac{14}{(1+i_B)^2} = 0$$

The most sensible answers are  $i_A = 28.0\%$  and  $i_B = 9.2\%$ . However, Project B has a negative net cashflow during the life of the project, and there is an alternative solution  $i_B = 540\%$ .

---

## 2.3 Annual capital charge



**This method expresses the capital outlay as an annual charge, writing off the capital steadily over a period of years. This charge may then be offset against the benefits, and if the net result is positive, the project or capital expenditure can be approved.**

**This method is valuable since it shows the impact on the company's profit stream of an investment. The short-term impact on earnings may be highly sensitive, as it is very visible.**

The annual capital charge is similar to the depreciation charged through the balance sheet.

The initial capital expenditure is amortised over a specified period and offset against the profits from the project as they accrue.

There are then a number of ways of using the resulting *net* earnings figures, they can be:

- simply accumulated to establish the year in which the project moves in to profit
- added to the company's other forecast earnings to see the overall impact on the reported figures, useful if the other earnings are depreciated on a consistent basis.

**This method works well looking at capital expenditure on machinery or plant and benefits from being simple and easily understood. It should not be ruled out just because there are more complex methods available.**



### Question

Project D involves an initial investment of 10. It is estimated that the project will generate subsequent cashflows of +3, +3½, +4 and +4 at times  $t=1, 2, 3, 4$ . Calculate the net cashflows after allowing for an annual capital charge using a 4-year amortisation period.

### Solution

Writing off the 10 initial investment over a 4-year period, implies an annual capital charge of 2½. So the net cashflows after the annual capital charge are +½, +1, +1½ and +1½ at times 1, 2, 3, 4.

## 2.4 Shareholder value approach



**Shareholder value represents the present value of all expected current and future cashflows available to shareholders.**

**The shareholder value method is based on but extends the NPV approach. The method has the important distinction that it is looking at the company from the point of the external shareholder and less on the internal issues governing the attractiveness of a project.**

**The way the method works conceptually is very simple. The total value of the company is examined on a 'before and after' basis.**

**The way the company is valued currently by the market needs to be understood.**

This is where the human element comes in. It is very difficult to say what 'investors' in general are looking for in a company's shares.

**Depending on the sector, price earnings ratios or price to net asset ratios may give an indication of how a company stands in relation to its competitors. Comparison of key figures such as these with competitors will help determine a company's standing in the market.**

**The difference in rating is the value being placed by the market on the management's ability to grow the business profitably. If they have high confidence then the capitalisation of the company will be high in relation to its peers.**

We looked at ratio analysis in more detail in an earlier chapter. Amongst the most important ratios with regard to shareholder value are the price earnings ratio and the dividend yield.



## Question

Company A and Company B are quoted in the same industrial sector. The following observations can be made of the two companies:

	<i>Company A</i>	<i>Company B</i>
Current market price	200p	300p
Historical dividend	10p	20p
Historical earnings per share	20p	35p

A financial analyst in Company A is considering using the 'shareholder value' method to assess a project and is wondering what the above information indicates about how the market perceives the company relative to its competitors.

- (i) Analyse the two companies based on the data above.
- (ii) Give reasons why the above analysis might be tenuous.

## Solution

- (i) ***Tentative analysis***

	<i>Company A</i>	<i>Company B</i>
Dividend yield	5%	6.7%
PE Ratio $\left( = \frac{\text{price per share}}{\text{earning per share}} \right)$	10	8.6

We can say in general that Company A is rated more highly than Company B. Investors are willing to pay a higher multiple of its historical earnings to buy the share. The substantially higher dividend yield for Company B is simply a factor of the higher payout ratio of Company B, *ie* Company B pays a higher proportion of its earnings in dividends.

The conclusion is that Company A is regarded more highly than Company B in the eyes of investors, perhaps because investors see greater potential in Company A.

Company A must demonstrate this potential in profitable projects. If a project earned the same return in Company A as it did in Company B this would cause the market to think that they had overestimated the potential of Company A.

(ii) ***Reasons why the analysis might be tenuous***

Possible reasons include:

1. although the companies are in the same sector, they may not be directly comparable
2. the historical earnings and dividends may be affected by one-off factors
3. the companies may be valued by investors on various other grounds that are not mentioned in the question, eg market share, brand recognition, etc.

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**The value-added approach then adds in the new project or company purchase and looks at all the valuation issues above to see what the impact is. The impact on net asset value, future earnings and debt cover may all be calculated relatively easily by adding in to the company model the cashflow scenarios developed for the NPV method.**

**The important element of the value-added process now comes into action, for it has to look at the impact of the new project on the rating of the company.**

**Issues to be evaluated would include:**

- **impact on ranking versus competitors**
- **possible competitor reactions and change in level of competition**
- **impact on perception of management**
- **impact on analyst perceptions**
- **impact on debt rating**
- **enhancement or dilution of earnings**
- **impact on dividend policy**
- **impact on stock beta.**

**The addition of a new project to the business could have an impact on the whole way the business is perceived and so fundamentally alter the share rating. The value added approach tries to look dispassionately at the before and after positions and the result measured is the increase in value of the shares to the current investors.**

This is clearly a subjective decision, as many business decisions are.

However, the method has the advantage of allowing numerate managers to mix the rigorous financial calculations and cashflow projections with the uncertainties of the market, and emerge with a decision that fits with the strategic direction of the company and adds shareholder value.

**The shareholder value added approach has exciting possibilities for actuaries; it is complex and benefits from careful mathematical modelling of the interactions and feedback loops to ensure all the possible consequences of the project have been considered.**

**It offers the opportunity for exciting new policies that are likely to be well received by the stock market to be adopted. These projects might have been overlooked if evaluation was carried out on a narrow basis, looking only at the project itself.**

The disadvantage of such a method is that it involves rating the project on a number of different criteria, some of which may be perceived as more important and some less. When debating the pros and cons of a number of projects, there may be no clear winner or loser. It may be a matter for discussion which factors should be rated most highly in the analysis.

In addition, the stockmarket itself is prone to changing its focus regularly. Companies that are valued on the basis of net asset value one year, suddenly become valued on their prospects for growth the next.

## 2.5 Payback period

**In many small companies it is cashflow that is crucial and so the speed at which a project can recoup its initial investment is vital.**

**For a small fast-growing company that will find it hard to raise debt and whose shareholders are already stretched, payback becomes the crucial factor.**



**The *payback period* is defined as the time it takes for the accumulated cashflow to become neutral.**

**The project with the faster payback period will be preferred. Alternatively, the method can be used to identify the project that generates the most funds over a specific period, say three years.**

**The method is of relatively little value where payback terms are over three years.**

This is because it does not allow for discounting.

**Nevertheless, in view of its simplicity it continues to be a popular method.**



### Question

The table below describes the expected cash inflows and outflows in respect of a project.

Time in years	0	1	2	3	4	5
Cashflow (\$ millions)	(4)	(3)	2	4	3	2
Cumulative cashflows	(4)	(7)	(5)	(1)	2	4

Determine the payback period.

### Solution

The payback period is found by looking at the cumulative cashflows, and estimating the time at which it changes from negative to positive.

This looks to happen around one third of the way through Year 4. So the payback period is about 3.33 years, assuming continuous cashflows.





## Question

Describe circumstances in which the payback method might be applicable.

## Solution

Payback period would be applicable when the:

- size of the project does not warrant deeper analysis *eg* discounted cashflow techniques
- hurdle rate is low enough such that discounting has little impact
- project occurs over a short period where discounting is not warranted and would make little impact
- cashflows themselves are so uncertain that discounting introduces spurious accuracy.

## 2.6 Nominal returns



This is a variant of the payback period where one simply compares the ratio of cash generated to cash consumed over a period.

It can give a quick idea of the relative profitability of projects and is an adequate approach where the ratio can quickly be seen to be high.

Again, the term over which such an evaluation is made should be short.



## Question

Calculate the nominal return over a four-year period of the project on the previous page.

## Solution

The nominal return over a four-year period is  $\frac{9}{7} - 1 = 28.6\%$ .

The method is normally used (and is better suited) to projects that involve a single cash outflow in the first year and an inflow in subsequent years.

## 2.7 Strategic fit



Strategic fit will normally form a part of every project evaluation as every project should fit logically with the business, building on its areas of expertise, resources or customer base.

Sometimes a new departure into a business sector cannot be justified on purely financial grounds, but it is being taken because of a view being taken on the way the industry is moving.

Often projects cannot be analysed on financial grounds, and can only be subject to *qualitative* analysis.

**There are parallels with the methods outlined when a range of scenarios is considered. The difference here is that a particular future business scenario is identified, and a business response developed, on the assumption that this future projection holds good. Such an investment can reap huge rewards if the future goes as predicted and there are opportunities to be gained by being ahead of the pack. If things do not turn out as expected however, the project has to be carefully monitored to limit the potential downside.**

Of course most projects *can* be analysed using projected cashflows, and one can take the view that the investment must justify itself.

**Over the last ten years, the insurance industry has seen massive changes in distribution methods and many of the investments made could only be justified on strategic grounds.**

Even the changes to insurance product distribution networks may be justified if one looks sufficiently long term, and is willing to make the assumptions that are required.

However, when the parameters become more 'guesswork' than science, and the variability of the inputs becomes too high, it is often better to accept that it is a purely subjective decision, and make the decision on that basis.

**If a business makes the right investment decision then the required return comes as a by-product and is not the deciding factor.**

**There is scope for actuaries to develop more sophisticated models that build in explicitly these 'difficult to quantify' benefits. Indeed, any project may bring with it intangible benefits that it may be possible to value if sufficient thought is given to the exercise.**

## 2.8 Opportunity cost

**It is all too easy to put up a project that may satisfy the business criteria for acceptance but may not actually be the best way of proceeding. There may be some alternative opportunity that is even better that has not been considered.**



**The opportunity cost method asks 'What alternative ways could we spend this money and what return would be achieved?'**

Thus, even if a project does satisfy the criteria applied by the company it might not be the best opportunity available to the company.

A key criteria required that the project be the best use of scarce management time and resources. It is therefore always worth looking at all the available projects before making a decision, and choosing the one that best satisfies the financial and qualitative criteria.

**Apart from this method proving useful to help identify better alternatives, it can also on occasion justify spending when there is surplus capital that cannot for some reason be invested to earn the cost of capital return.**

**It may be in the company's interest to invest in this project provided that it yields a better return than alternatives with a similar risk profile, even if under the true cost of capital.**

It is often the case that a company will identify a project it believes would strengthen its position in the industry. However it cannot justify the expenditure using a cost of capital analysis.

If the company has capital available to invest, it has two options:

1. reject the project and keep searching for projects that do satisfy the IRR requirement
2. test the rejected project using a lower cost of capital.

The company must consider the return it will get if it rejects the project but can find no other project to invest in and therefore invests the surplus cash in the money markets. If the IRR of the project is higher than money market returns, then it might be better to undertake the project than to simply leave the funds invested in money market deposits.

If the management decide that there is a risk that an alternative will not be found quickly, and that the money will lie idle for some time, it may be that the opportunity cost of not undertaking the initial project is large. They should begin a project as an alternative to investing in the money market.

**It should be remembered that returning capital to shareholders is an option, but there are frictional costs if the company finds itself wanting to raise new capital at some future point.**



### Question

Explain how a company might return funds to shareholders.

### Solution

It might use share or stock buybacks, or alternatively simply pay a much larger dividend.

It is also possible for companies to pay an exceptional dividend to shareholders, however the tax-inefficiency of this route means that it is seldom followed.

**This is not really a new method as all the items could be incorporated in the main methods; it is the focus of attention on alternatives that is the difference.**

## 2.9 Hurdle rates

**Again, this is not a new method but can be incorporated in the methods above.**



**The emphasis is that the company sets a target rate of return, or a hurdle rate. This could typically be quite high and well in excess of the true cost of capital.**

**For example, a company might set a target return on capital of 20% in order to concentrate minds on only the most profitable projects. Only projects with a positive NPV discounted at 20% or an IRR in excess of 20% would get past the first screening.**

**In reality, the project champion is likely to emphasise the potential upside to demonstrate the high return, understating the risk. The actual achieved return on accepted projects is therefore liable to come in well below the business plan.**

**The approach has the advantage of exposing the high potential projects which, if managed well, will bring in high returns. The flip side is that many excellent low-risk projects that would deliver good returns above the cost of capital (but below the hurdle rate) will never be considered.**

If a company intends to look only at projects that deliver returns in excess of 20% it will accept:

- extremely high-risk projects, which may, if successful, give a superior return
- projects presented by over-ambitious project managers who dearly want their project to get the go-ahead and underestimate the risks and overstate the returns.

**The rates actually being used by companies of different sizes have been surveyed. This showed an average IRR hurdle rate of 17.1%, which is very high compared with the long-term achieved returns on equity.**



### Question

Explain why the use of high hurdle rates is common in industry.

### Solution

- They are simple to compute and understand.
- Often the uncertainties in a project can best be modelled by a simple (say) 5% *pa* compound probability (cashflows at the end of the first year have a 0.95 chance of occurring, in year two they have a 0.95<sup>2</sup> chance of happening, *etc*). In such circumstances a high hurdle rate (say 20%) can be viewed and justified as a 15% cost of capital rate and a 5% uncertainty rate.
- Companies often have more than sufficient projects to be getting on with. If a new project is accepted, using valuable scarce resources, it has to be a really profitable one.

## 2.10 Receipts/costs ratio



**Another measure, which is not often employed but which can sometimes be useful is the receipts/costs ratio, defined as:**

$$\frac{\text{NPV of the gross revenues}}{\text{NPV of the capital and running costs}}$$

This indicates the level of profit as a proportion of costs and is therefore related, but different, to the concept of the profit margin encountered in the financial analysis of companies.

The denominator includes the capital costs as well as the project costs.

## 3 Results of the evaluation

### 3.1 Initial result

The result of an NPV calculation would usually be regarded as satisfactory if it was positive.

The result of an IRR calculation would be regarded as satisfactory if it exceeded a predetermined 'hurdle rate' set by the sponsor.

The payback period would be regarded as satisfactory if it was less than a predetermined period set by the sponsor.

The choice of the discount rate used with the NPV or the hurdle rate with which the IRR is compared is therefore crucial – likewise the choice of payback period.



#### Question

Explain why the choice of the discount rate used with the NPV is so important.

#### Solution

If the negative cashflows associated with a project mostly precede the positive cashflows, then the use of too high a discount rate will lead to the rejection of some projects that are actually likely to be profitable when assessed against an appropriate discount rate.

In addition, if the high return projects tend to be riskier, then this will lead to the acceptance of too many risky projects.

It may also lead to more short-term projects, as long-term cashflows will be 'over-discounted'.

**The results of these calculations will provide a crude initial appraisal of the financial viability of the project.**

However, there are a number of simulation techniques that can be used to obtain a fuller understanding of the viability of the project.

### 3.2 Simulation

#### Sensitivity analysis



Having modelled the project for the purposes of evaluation, we may wish to apply *sensitivity analysis* to see how the value of the project changes with differing future conditions.

We take each key assumption in turn and assess the effect on NPV of the most optimistic and pessimistic results occurring.

A broad idea of the sensitivity of the results to varying assumptions can be obtained by assuming that all the costs are, for example, say 10% higher than the most likely values and all the revenues are, for example, say 10% worse than the most likely values.

However, it is important to understand the impact of each individual assumption, so for sensitivity analysis, we take each key assumption in turn.

**In this way, we can identify which are the variables that have the greatest effect on the outcome of the project, thereby determining where more information is needed (and when forecasts are inappropriate, confused or inconsistent).**

For example, a company could sensitivity test a project as follows. Having completed the central NPV estimate for the project, it might wish to test the sensitivity to the key assumptions – for example *inflation, consumer spending and materials costs*.

	Inflation		Consumer spending		Materials costs	
	Low	High	Low	High	Low	High
Assumption	Less 2%	Plus 2%	Less 2%	Plus 2%	Less 2%	Plus 2%
Net effect on NPV \$m	-1.5	3.2	-6.2	4.5	2.5	-8.9

The results shown in the table above demonstrate that the project would benefit from higher inflation and higher consumer spending, but that the key exposure on the downside is an increased cost of materials.

The results demonstrate how the profitability is affected by movements in the underlying parameters. However, the results give no indication of the interaction between the variables, eg an increased cost of materials may occur at times of high inflation, but no indication is given of this.

## Scenario testing

**However, sensitivity analysis does not allow us to consider the interrelationships between input variables.**



**To do this, we need to employ *scenario testing*, where we consider some plausible combinations of input values and see what effect these have on the project.**

Scenario testing involves choosing particular scenarios or combinations of factors to which the project or institution may be exposed. The effect of the combination of events is then modelled and investigated, showing the overall resulting financial gain or loss for the company.

For the above project, the results of a scenario test might look like this:

<i>Scenario</i>	<u>Gain/(Loss)</u>
Inflation + 2%, cons spending + 2%, materials + 2%	- \$1.5m
Inflation - 2%, cons spending + 2%, materials - 2%	+ \$4.1m      etc

These scenarios can be chosen to show, for example:

- combinations of events to which profitability is highly exposed.
- circumstances that the company management believe are highly likely to occur
- the implications of further exposure to the same particular scenarios to which the company is already exposed through existing projects.



## Question

Describe why it might be important to perform both a sensitivity test and a scenario test on the results of a project.

## Solution

A sensitivity test shows the impact on profitability that an individual parameter has on the final result, with all other parameters of a model held constant.

But a variation in one parameter could lead to a variation in another *eg*:

- inflation and earnings growth are likely to be positively correlated
- there could also be offsetting or hedging effects *eg* the project could gain from higher inflation through higher sales prices but lose on higher material costs.

These effects can be modelled using scenario testing.

**But even scenario testing will involve a limited number of plausible combinations, which may or may not include the most optimistic and pessimistic values. To consider *all* possible combinations we need to use (*Monte Carlo*) simulation.**

## Monte Carlo simulation



Here we look at the entire distribution of possible project outcomes.

In order to do this we need to:

- ***model the project*** (usually on a computer), allowing for interdependencies and serial correlations
- ***specify probabilities*** for the distribution of the key variables (possibly investigated by the use of sensitivity testing)
- ***simulate the cashflows*** many times using values extracted randomly from the distributions of possible variable inputs
- ***record and order*** the outputs to assess their probability distributions.

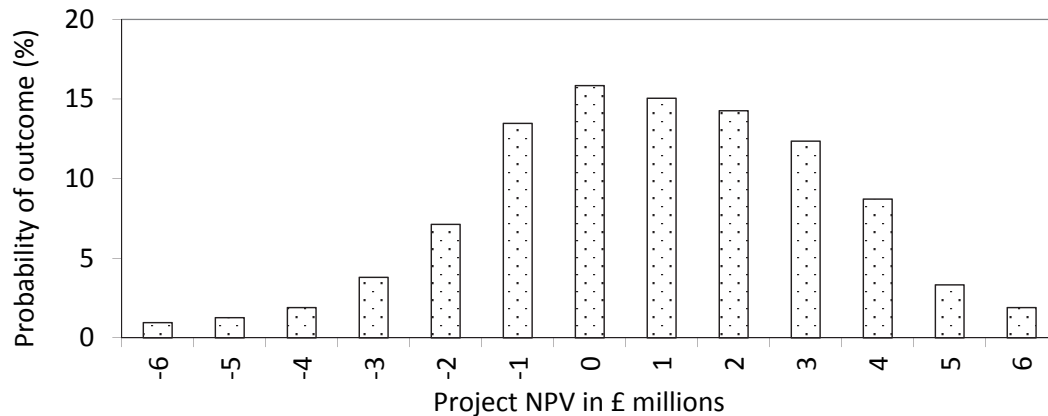
This process is critically dependent on:

- ***appropriate model design***
- ***appropriate assessment of the probability distribution of the inputs.***

The former is a problem when the model builder is not experienced in the field being modelled. (See also the next chapter.)

Monte Carlo simulation involves creating a model, into which all the variabilities and correlations of the input criteria are entered. The model then runs a large number of simulations to obtain a spread of results. The resulting chart may look as follows.

**Figure 1: Results of Monte Carlo simulations**



From the chart we can identify the mean profit, the spread around that mean, and the shape of the profitability chart, which here appears to be negatively skewed (due to the long lower tail).

Financial modelling software can be purchased that has been specifically designed for carrying out Monte Carlo simulation. Indeed, the process is so complicated that many models, each specific to a particular sector of a particular industry, have been designed.



### Question

Set out the main advantages and disadvantages of performing a Monte Carlo simulation as part of a project appraisal.

### Solution

Advantages include:

- increased understanding of the project parameters
- greater information on the range of results, not just the mean but also the spread and the shape of the distribution of such outcomes (*eg fat-tailed, skewed, etc*)
- identification of outliers – *eg* events with negative NPVs.

Disadvantages include:

- increased workload, which might not be justifiable
- spurious accuracy
- errors caused by the complexity, leading to a wrong result.

Scenario testing and Monte Carlo simulation are complex and therefore expensive. They are unlikely to be performed at an early stage in the project appraisal process.



### 3.3 Results of the analysis

The results obtained might, if very unsatisfactory, suggest that further analysis is not worthwhile without some fundamental redesign of the project.

If, however, the results appear satisfactory, it is not sufficient to stop there, and a proper risk analysis should be undertaken as indicated in the next chapter.

### 3.4 A note about tax

In the initial stages of the analysis it will usually be sensible to exclude the negative cashflows resulting from corporation tax, since these will depend (among other things) on the method of finance adopted and it is an unnecessary complication to rework the tax every time the NPV is reworked during the analysis.

At the final stage, when the investment submission is being prepared, the negative cashflows arising in respect of corporation tax can be evaluated (allowing for appropriate timelags in the collection of the tax) and discounted in order to arrive at a suitable deduction from the NPV.

In practice we will be interested in the NPV of a project net of any tax payments, or equally the net-of-tax IRR.

Successive iterations of the appraisal process can introduce more complex and hence realistic modelling of the project.

The chapter summary starts on the next page so that you can keep all the chapter summaries together for revision purposes.

## Chapter 21 Summary

### Capital project appraisal

A *capital project* involves an initial expenditure and then, once the project comes into operation, a stream of revenues less running costs.

An *initial appraisal* assesses whether the project is likely to satisfy the *sponsor's criteria*, eg:

- the financial results expected and risk these results may not be achieved
- achieving synergy or compatibility with other projects undertaken by the sponsor
- satisfying 'political constraints', both within and without the sponsoring organisation
- having sufficient upside potential
- using scarce investment funds or management resources in the best way.

The first step of the appraisal is to *define the project* and its scope carefully and to assess its likely length of operating life for the purpose of the appraisal.

There should then be an *evaluation of the most likely cashflows*, expressed in terms of present values, for capital expenditure, running costs, revenues and termination costs.

### Methods of project evaluation

The *net present value (NPV)* method models all the cashflows of a project until completion and discounts these back to the present day using the cost of capital. A positive result indicates that the project will improve shareholder returns.

The *internal rate of return (IRR)* is the interest rate that gives the project a zero NPV. This is compared with the cost of capital.

The *annual capital charge* expresses the capital outlay as an annual charge, thus writing off the capital steadily over time. This charge may then be offset against the benefits.

The *shareholder value approach* attempts to assess the impact of the project on the value of the company as a whole from the point of view of shareholders.

The *payback period* measures the time it takes for the accumulated cashflow from the project to become neutral.

*Nominal returns* compares the ratio of cash generated to cash consumed over a period.

*Strategic fit* assesses how the project fits in with the rest of the company's business, building on its areas of expertise, resources or customer base.

The *opportunity cost method* asks 'What alternative ways could we spend this money and what return would be achieved?'

Companies sometimes assess the profitability of a project against a *hurdle rate* of return, which could be quite high and well in excess of the cost of capital.

The *receipts/costs ratio* is defined as 
$$\frac{\text{NPV of the gross revenues}}{\text{NPV of the capital and running costs}}$$

## Results of the evaluation

The result of an NPV calculation would usually be regarded as satisfactory if it was positive.

The result of an IRR calculation would be regarded as satisfactory if it exceeded a predetermined 'hurdle rate' set by the sponsor.

The payback period would be regarded as satisfactory if it was less than a predetermined period set by the sponsor.

These results offer a crude initial appraisal of a project. To gain a fuller understanding of the viability of a project, *simulation techniques* can be used:

- *Sensitivity analysis* takes each key assumption in turn and assesses the effect on the NPV of the most optimistic and pessimistic results occurring.
- *Scenario testing* involves changing plausible combinations of input values and seeing what effect these have on the project.
- *Monte Carlo simulation* attempts to look at the entire distribution of possible project outcomes via numerical simulation. It is critically dependent on an appropriate model design and appropriate assessment of the probability distribution of the inputs.

If the results from an initial cashflow analysis are very unsatisfactory, then further analysis is unlikely to be worthwhile without some fundamental redesign of the project. If, however, the results appear satisfactory, then a proper risk analysis should take place.

The analysis is usually refined to allow for complications such as corporation tax only at its later stages.



## Chapter 21 Practice Questions

Exam style

All of the questions that follow are exam style.

- 21.1** A key difference between the net present value technique and the internal rate of return technique for capital budgeting is:
- A that the net present value is easier to calculate.  
 B that they use different cashflows.  
 C that they have different reinvestment rate assumptions.  
 D that they use different time periods. [2]
- 21.2** The payback method can lead to the wrong decision being made because:
- A it ignores income beyond the payback period.  
 B the payback period is difficult to calculate.  
 C the returns in later years are uncertain.  
 D of the emphasis placed on the interest factor. [2]
- 21.3** Which of the following is NOT a valid reason for using simulation in order to evaluate an investment project?
- A The cashflows are uncertain.  
 B The required rate of return might vary during the life of the project.  
 C Decision makers are interested in the range of possible outcomes.  
 D Decision makers require an accurate forecast. [2]
- 21.4** Company G has prepared the following table giving the expected net present values for a large project which is under consideration.

*Net present values of project using a discount rate of 10%*

Inflation estimate	2%				6%			
	3 yrs		5 yrs		3 yrs		5 yrs	
Duration of construction phase	low	high	low	high	low	high	low	high
Labour costs	low	high	low	high	low	high	low	high
Expected NPV (in \$ millions)	2	0	(1)	(3)	4	2	2	0

- (i) Explain the benefit of the above analysis over a single estimate of the NPV. [2]
- (ii) Describe the weaknesses of the above approach. [2]
- (iii) Explain how the technique above could be improved. [1]
- [Total 5]

21.5 Company D uses a 'hurdle rate' to appraise investment projects.

(i) Explain what is meant by a 'hurdle rate' and comment on its usefulness. [3]

Company D is considering two projects. They are identical, except that one is based in a foreign country and the profits will accrue in a foreign currency.

(ii) Explain which would be more likely to pass the 'hurdle' test. [2]

[Total 5]

21.6 Explain what is meant by the 'payback period' and describe the circumstances under which it would be appropriate to use the payback period approach to evaluate a project. [5]

21.7 Outline the drawbacks of the payback period method of project appraisal. [5]



## Chapter 21 Solutions

21.1 Answer = A

Both methods use the same cashflows and there is no reinvestment assumed in either NPV or IRR calculations. They do not use different time periods.

21.2 Answer = A

Both the NPV method and the IRR method consider all cashflows throughout the life of the project, but the payback method only considers cashflows up until the end of the payback period. The payback period is easy to calculate. There is no discounting so the interest rate has no role. The fact that future cashflows are uncertain is not so much of a problem for the payback period method as it is for the NPV and IRR methods, since the payback period is less likely to use cashflows further into the future.

21.3 Answer = D

Simulation techniques allow the decision makers to assess the effects on the net present value of a change in a range of variables such as the inflation rate or the discount rate. These techniques are useful where the cashflows are uncertain and the decision makers want to see a range of possible outcomes. They would not expect such techniques to give an accurate forecast of the outcome.

21.4 (i) **Benefit of this analysis**

The benefit of the analysis is that it indicates the spread of possible results around the central assumption, rather than simply giving the expected NPV of the project. [1]

This is useful because it shows that there are circumstances under which the NPV is negative. [1]

This benefit is obtained relatively quickly and cheaply, and involves very little additional effort. [1]

It enables each member of management considering the investment submission to look at the scenario that best matches their individual forecasts. [1]

[Maximum 2]

(ii) **The weaknesses of this analysis**

No indication is given of the correlation between the parameters which are being varied. [1]

For example, high labour costs are likely to occur at times when inflation is relatively high. No indication of the effect this has on the likelihood of each scenario occurring is given. [1]

The approach uses one discount rate for a number of scenarios. The discount rate should arguably be dependent on the scenario chosen, eg high inflation scenarios might be associated with higher discount rates. [1]

In many cases the best approach is to use real cashflows and a real discount rate, rather than use actual inflation estimates and a nominal interest rate. [1]

[Maximum 2]

**(iii) Method of improving the technique**

To improve the technique, a stochastic (Monte Carlo) model should be considered. In such an analysis, the variation in each of the underlying parameters and the correlations between them are considered. [1]

The outcome will be a distribution of possible NPVs and their associated probabilities. [1]  
[Maximum 1]

**21.5 (i) The hurdle rate**

The hurdle rate is a discount rate set by management as a target rate of return. Any projects considered by the company must demonstrate that they offer a positive net present value to the company when valued at this rate. [1]

The hurdle rate is typically quite high and well in excess of the true cost of capital. [1]

It does serve to highlight profitable projects, by ruling out those which offer inferior rates of return. [1]

It has a tendency to favour high-risk projects, because these will satisfy the artificially high rate of return demanded. It does not allow for the extra risk that may be involved. [1]

It will rule out many low-risk projects that would deliver returns above the cost of capital but below the hurdle rate. [1]

It is used widely in industry. Its advantages are that it is quick and simple, and easily understood. [1]

It enables management to look at projects from all different parts of the company's business consistently, and avoids the conflict caused by using one rate for one department/business and another rate for a different department/business. [1]  
[Maximum 3]

**(ii) The two projects**

It might be argued that the project in the foreign currency would be expected to give a much more uncertain and therefore risky profit profile. Volatile returns are usually associated with higher returns, and therefore it should pass the hurdle test. [1]

However this argument is flawed in this case. The risk is 'specific' risk and now 'systematic' risk, and is therefore diversifiable. [1]

As the risk can be diversified away, both projects would be expected to offer the same return, and would either both pass or both fail the hurdle test. [1]  
[Maximum 2]

*An exception is if the foreign country is less developed and exposes the investor to greater default or political risk (ie systematic risk) than the domestic country.*



21.6 The payback period of a project is the time taken before the cumulative cashflows arising from the project switch from being negative to being positive. [1]

Most projects will need a large initial capital payment. As the project progresses, profits will hopefully begin to flow, and the cumulative cashflow will become positive. The time at which this occurs is the payback period. [1]

The payback period may be discounted, in which case it is the time at which the present value of the cumulative cashflows becomes positive. [1]

The payback period approach would be appropriate in situations where either:

- a simple method is required because perhaps the project is extremely small and does not warrant further analysis [1]
- the time horizon is very short and discounting will not affect the overall result to any great extent [1]
- the quality of the data does not warrant detailed analysis [1]
- the company would be at risk if cashflows were negative for an extended period [1]
- resources are scarce, and do not permit further analysis. [1]

[Maximum 5]

21.7 The drawbacks of the payback period method are:

- the method is simplistic [1]
- no account is taken of the real value of money (not 'discounted payback') [1]
- no account is taken of the cashflows after the end of the payback period [1]
- no measure of return is given to allow the user to compare with other projects [1]
- no measure of net present value is generated to allow the user to make a comparison of the size of the project relative to other projects. [1]

[Total 5]

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# 22

## Capital project appraisal (2)

### Syllabus objectives

- 3.1 Discuss how a company's cost of capital interacts with the nature of the investment projects it undertakes.
5. Describe methods commonly used to evaluate risky investments including simulation and certainty equivalents.  
(Covered in part in this chapter.)
6. Discuss the issues in establishing the required rate of return for a capital project.
7. Discuss the factors underlying the choice of discount rate within project assessment including:
  - the assumptions and limitations in the use of the weighted average cost of capital
  - the allowance for leverage
  - the allowance for risk.
8. Discuss the methods that may be used for identifying the risks that may be present for different types of project.
9. Discuss suitable techniques for ascertaining the probability of occurrence of different risks over varying timescales and the financial impact of occurrence.
10. Discuss suitable techniques for ascertaining the distribution of the possible financial outcomes of a capital project.

## 0 Introduction

This chapter continues and concludes the discussion concerning capital project appraisal.

First we consider the determination an appropriate risk discount rate or hurdle rate which should reflect both the opportunity cost of capital and the degree of systematic risk inherent in a project.

Then we will introduce a general approach for analysing and dealing with the risks that will be present in any project, which may lead the actual timing and/or amounts of the cashflows differing from our estimates.

The rest of the chapter looks in detail at the identification of risk, the analysis of risk, the distribution of net present values, other ways of appraising risky projects, risk mitigation and finally, the investment submission.

This chapter could be the focus of a 20-mark question which could test *ability to calculate and discuss the appropriateness* of a particular discount rate in project appraisal, and *knowledge and understanding* of risk analysis.

# 1 Choice of discount rate

## 1.1 The basic theory

### Background

**The use of the cost of capital to calculate the net present value in screening projects ensures that only projects that will enhance the return to shareholders are taken on, provided that the cost of capital is adjusted to reflect the project risk.**

The cost of capital is usually defined as the rate of return that investors forego by investing in the particular project in question, which in practice is equal to the rate of return available on other similar projects. Here 'similar' refers to the level of systematic risk involved.

**The historical costs of the company's existing capital is irrelevant. What is important is the current cost of raising incremental capital for the company to carry out the project.**

In other words, the cost of raising additional finance to fund the project via a rights issue or a new issue of debt, based upon *current* required rates of return in the market.

**One way of looking at this cost is that it is the rate of return which needs to be earned on the capital if the existing shareholders are to be no better or no worse off.**

It may be incorrectly thought that the sources of incremental capital for the project should be considered:

- **If all the capital were to be raised from internal reserves or by a rights issue, the cost of capital would be equal to the total rate of return which could be expected to be earned by the shareholders on their existing shares.**
- **If, however, the whole of the capital were to be raised from fixed-interest borrowing, it would be the net cost of that borrowing after allowing for tax reliefs and likely future inflation, which would need to be taken as the cost of capital.**
- **If part of the capital were raised through equity and part through borrowing, we would need to look at the weighted average cost.**

However, the points above are 'incorrect'. We discuss 'why' below.



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### Question

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Explain what is meant by the expression 'it would be the net cost of that borrowing after allowing for tax relief ... which would need to be taken as the cost of capital' in the above paragraph.

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### Solution

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The funds required to service the debt of a company are deducted from the profit before tax, and therefore reduce the amount of tax a company has to pay.

---

However, it can be convincingly argued that it is irrelevant where the actual finance for the particular project under consideration is coming from, and that what matters is the company's normal cost of raising new capital, taking this as a weighted average where the weights are based on the optimum capital structure for the company as between equity and debt.

If the company's capital structure is not currently optimal, it could be made so through a separate decision.

## Weighted average cost of capital

As we have seen, a company's weighted average cost of capital (WACC) can be defined as:

$$\begin{aligned} \text{WACC} = & \frac{\text{Market value of debt}}{\text{Market value of debt} + \text{equity}} \times \text{net cost of debt} \\ & + \frac{\text{Market value of equity}}{\text{Market value of debt} + \text{equity}} \times \text{cost of equity} \end{aligned}$$

The WACC is a weighted average of the cost of debt and equity capital of the company. Or equivalently, it can be regarded as the rate of return that must be achieved on projects if the existing shareholders are to be no better or no worse off.

It therefore represents the rate of return that should be used to discount the future cashflows generated by the company from the various projects that it undertakes.

If the company is able to generate a rate of return in excess of its WACC from a particular project, then that project:

- has a positive NPV calculated at the WACC and offers a return to the shareholders in excess of the WACC
- will increase the value of the company, where this is calculated as the NPV of all of its future cashflows, and therefore make the shareholders better off.

An additional complication, is that for any particular company the WACC *may* vary with capital structure, *ie* the split between debt and equity capital. If the WACC *does* vary with the level of gearing, then the optimal capital structure will be that which minimises the WACC and so maximises the value of the company. It is this optimal and minimum WACC that should be used to value the company.

If the proposed project has the same degree of systematic risk as the existing company, then undertaking the project will not change the company's overall degree of systematic risk or its WACC.

It is therefore this minimum level of WACC that should be used to value new projects with the same degree of systematic risk as the existing company.

It can be argued that this should be the case regardless of exactly how the project in question is to be financed. The finance decision for the project or the company as a whole being inconsistent with the company's minimum WACC is a separate issue and should not influence the investment decision.

**The cost of debt capital should be taken as the cost in real terms of new borrowing by the company. This is calculated by taking an appropriate margin over the current expected total real return on index-linked bonds, having regard to the company's credit rating, and multiplying by  $(1 - t)$ , where  $t$  is the assumed rate of corporation tax.**

This is because interest payments of  $C$  say, are paid out of pre-tax profits. Hence the effective cost to shareholders, in terms of the reduction in the post-tax profits that are available to pay dividends, is only  $(1 - t) \times C$ .

**The cost of equity capital should be taken as the current expected total real return on index-linked bonds plus a suitable margin to allow for the additional return which equity investors seek to compensate them for the risks they run.**

Here we normally have in mind *government* index-linked bonds.




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### Question

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List the additional risks of equities compared to index-linked government bonds.

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### Solution

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The main additional risks are the:

- uncertainty relating to the level of future income payments
  - additional volatility of the share price as compared to index-linked bonds
  - additional default risk of the shares, with regard to the income and capital payments, as compared to index-linked bonds
  - lack of perfect inflation protection.
- 

**This gives a real discount rate, to be applied to cashflows expressed in present day monetary values, or adjusted by the assumed future inflation rate and used with cashflows in nominal terms.**

## 1.2 Allowing for systematic risk

As we have seen, the beta of any asset, such as a company's shares, is defined as:

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2}$$

where  $\sigma_{im}$  is the covariance between the individual stock's return and that of the market and  $\sigma_m^2$  is the variance of the market index.

It is a measure of the systematic risk inherent in the asset. Betas can be estimated from historical data on investment returns.

**The beta measure relates to the company's (or industry's) *existing* activities.**

**We need to consider whether the risk associated with any proposed project is consistent with the company's existing risk profile.**

This is because the appropriate cost of capital to use in decision making is the rate of return offered by equivalent investment alternatives, *ie* with the same level of systematic risk as the project.

**Note that by 'the risk associated with any proposed project' we do not mean the (diversifiable) specific risk regarding the project's outcome.**

**If we are unsure about our cashflow projections, we need to refine them and to make allowance for possible unfavourable outcomes in calculating the *expected* cashflows that will be discounted. Such uncertainty is not incorporated into our analysis by simply increasing the value of beta (and the resulting cost of capital).**

**Suppose, however, that the company is considering a project with a degree of systematic risk higher than is usual for its projects. 'Systematic risk' is that part of the return on a project that cannot be eliminated by investing in the same type of project many times over, nor by diversification, because investing in a number of projects cannot reduce this part of the variability to zero. Systematic risk can vary from one project type to another.**



**Systematic risk should be allowed for by varying the discount rates used in the model and the discount rate used should be greater than that which the company normally employs.**

**For example, an international company might apply a higher discount rate to projects located in countries with unstable political regimes.**

A suitable upward adjustment is therefore made to the cost of capital discussed above in order to reflect the higher level of systematic risk. There is more than one way of determining the value of the adjustment to be applied.

## **Look at other companies**

**One guide might be to consider the discount rates which would be appropriate for use by any companies which habitually engage in such projects, using the above methodology.**

But the companies that habitually engage in such projects may have more experience of such projects and so be better able to mitigate the inherent risks involved.

If this is the case, then a slightly *higher* discount rate than that used by other companies might actually be appropriate.

## **Arbitrary approach**

**In practice such data may be hard to obtain and there may be no alternative but to make an arbitrary addition to the discount rate.**

## **CAPM-based approach**

The CAPM model can be used to estimate the returns required from different capital assets (including a capital project).



The following equation relates the required return on any asset or project  $p$  to the return on the market:

$$r_p = r_f + \beta_p(r_m - r_f)$$

where  $r_f$  is the risk-free rate of return,  $r_m$  is the market return and:

$$\beta_p = \frac{\sigma_{pm}}{\sigma_m^2}$$

and  $\sigma_{pm}$  is the covariance between the individual project's return and that of the market.

This required rate of return can then be used as a risk discount rate to price the project.

The project beta measures the systematic risk of the project and so the above equation gives a higher/lower risk discount rate for projects with a higher/lower level of systematic risk.

## Factors influencing beta in practice

**We would expect to adjust our historic value of beta when we feel that investors would see the project as being more (or less) risky than the typical company venture.**

**Ultimately, this will be a matter for judgement, but issues to consider include:**

- ***cyclicality*** – does the outcome of the project depend strongly on the state of the economy and the business cycle?
- ***operating leverage*** – does the project involve a high proportion of *fixed* (as opposed to *variable*) costs?

**Positive answers to either of these questions will suggest a higher value should be used for beta.**

At every stage of the economic cycle people need to eat, hence the profits of a large supermarket chain will not be as exposed to the economic cycle as those of a luxury hotel chain. This is what we mean by 'cyclicality'. Some industries simply have higher systematic risk by nature.

Operating leverage has a similar effect to financial leverage. If a project has high fixed costs, this adds to the risk as there is a greater chance the project will give a negative return when revenues fall.

## 1.3 Practical experience

**Many companies apply the same cost of capital to all projects. This can lead to wrong decisions being made if the systematic risk of different projects is substantially different.**

**This will particularly be the case if the company involves itself in a project outside its usual area of activity. In these cases, a project beta should be estimated from which a project cost of capital can be derived.**

**It has been found that use of different costs of capital can lead to internal friction within a company which can, along with the complexity of the method, mean that the theoretically correct approach is often ignored.**




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### Question

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Explain why the use of different costs of capital for different projects might lead to friction.

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### Solution

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It might lead to friction because different rates of return could mean the go-ahead or the shelving of various projects.

These rates would have to be determined by management, and views on the riskiness or not of a project might not be consistent between managers.

Feelings could be hurt and accusations of politics could emerge if certain projects were allowed to proceed purely because of the use of a lower risk discount rate.

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**It is not uncommon for companies to use very high discount or hurdle rates when appraising proposed projects.**

**However, the use of a discount rate which is too high could distort the relative weights placed on the short term and on the longer term, thereby leading to mistaken decisions.**

A higher discount rate places lower relative weights on cashflows farther into the future. Its use may therefore lead to, or indeed reflect, too 'short-termist' an approach to capital projects.

**It may be assumed, mistakenly, that the deliberate use of a very high discount rate provides a contingency margin which reduces the need for a rigorous risk analysis. However, this leads to the danger of the incorrect acceptance of a risky project with a high apparent NPV or the incorrect rejection of a low-risk project with a negative NPV, which would have a positive NPV if this were calculated on a lower but more appropriate discount rate.**

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### Question

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Consider two projects, A and B, each of which requires an initial investment of 100.

Project A produces a certain cashflow of 300 in five years' time.

Project B yields a series of level cashflows at the end of years one to five inclusive, the value of which is equally likely to be 0 or 90.

Explain which project is the more suitable if the appropriate risk discount rate is 15% *pa*.

Explain which project would be preferred if the appropriate risk discount rate is 20% *pa* instead.

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### Solution

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With a risk discount rate of 15%, the NPV of project A has a certain value of 49.2.

The NPV of project B takes values of -100 or 201.7 with equal probability. Hence, B has an expected NPV of about 50.8.

So B has a slightly higher expected NPV, but in view of the much higher level of risk involved, A may well be the more suitable investment. A fairer comparison would use a higher risk discount rate for B, in order to reflect the extra risk involved.

If 20% is instead used for both projects, then the NPVs are 20.6 for project A and 34.6 for B.

The higher risk discount rate leads to an even stronger preference for the more risky project because the cashflows occur earlier.

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**As a result, grossly distorted discount rates are inappropriate and could be dangerous.**

**However, too much precision is unnecessary since the results of NPV calculations are not usually very sensitive to small changes of, say, 1% *pa* in the discount rate.**

**In any case it would usually be appropriate to carry out the NPV calculations on two alternative discount rates (say 6% and 10% *pa* real), and if both results are satisfactory, then there is no need to worry too much about determining the most appropriate discount rate precisely.**




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### Question

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Explain how a company should choose a suitable discount rate to evaluate a project.

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### Solution

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The starting point in this decision is the weighted average cost of capital (WACC). The WACC is the weighted average of the returns required by investors on the debt and equity of the company.

Since the WACC will be affected by gearing, the company should use the WACC at its optimal capital structure, regardless of how the project is actually financed.

This separates the financing decision from the investment decision. (If the company's capital structure is not optimal, it could be made optimal through a separate decision.)

If the proposed project has the same degree of systematic risk as the company as a whole, then the WACC is the appropriate discount rate to use.

However, if the degree of systematic risk is different from the company as a whole then the WACC should be adjusted up or down to reflect the higher or lower degree of systematic risk of the project compared with the average of the company's projects.

The adjustment to the discount rate could be found by:

- reference to past similar projects
- reference to the discount rate used by companies that usually invest in this sort of project (though allowance must be made for any differences in gearing)
- an arbitrary approach
- using an estimated beta for the project  $\beta_p$  and the capital asset pricing model.

The beta of the project will be affected by the cyclicity of the project returns and its operating leverage.

## 1.4 Certainty equivalents

The use of a risk discount rate for establishing the present value of future project cashflows combines the two elements of time value of money and the level of risk associated with the cashflow.

As the level of risk may vary according to the nature of the item being assessed, we should strictly use a different risk discount rate for each element.

To avoid this, we replace the individual (risky) projected cashflows with their *certainty equivalents* – that is, the projected element of the cashflow adjusted for risk alone.

In this way we produce a series of ‘certain’ cashflows that can then be discounted at a uniform rate of return.

*Certainty equivalents* can be used to replace the individual risky projected cashflows and then discounted at a uniform rate of return.



### Question

Suppose a project will produce two cashflows, one at the end of Year 1 and another at the end of Year 2.

The cashflows are respectively \$10 million and \$20 million. The company estimates that the uncertainty surrounding the amount of the first cashflow is quite low, but the uncertainty surrounding the amount of the second is relatively high.

The company can:

1. either discount both using some arbitrarily high rate of discount (*eg 25% pa*) to reflect the average level of risk
2. or assess the value of the certainty equivalent cashflows and discount these at an appropriate rate of return. This might involve decreasing the first payment by 5% and the second by 15%, and discounting both at the rate of return of 12% *pa*.

Calculate the net present value result in each case.

### Solution

Discounting at 25% gives:  $\frac{10}{1.25} + \frac{20}{1.25^2} = \text{£}20.8m$

Using certainty equivalent values gives:  $\frac{10 \times 0.95}{1.12} + \frac{20 \times 0.85}{1.12^2} = \text{£}22.0m$

## 2 Risk analysis – an overview

With any project there are risks and these can be divided into two types:

1. **Systematic:** 'in the system' and which affect the whole area of the business into which the project falls, eg price of land for a building project.
2. **Specific:** 'specific to the project' and which can be diversified away by the company, eg the risk of a cold summer reducing ice-cream sales diversified by also selling hot dogs.

We have seen how the discount rate should allow for systematic risk.

Risks specific to the project should be determined by a risk analysis of the project.

In practice it may sometimes be difficult to determine into which of these two categories a risk should fall, but the temptation to classify too many risks as systematic to reduce the analytical work should be resisted.

When we use the word 'risk', we mean either an event which leads to a variation from the most likely outcome in either direction (eg the risk of the structure collapsing) or the probability of occurrence of such an event.

Many risks are 'downside', in that they involve a worsening of the outcome of the project if they occur, but the analysis should also take account of possible upside variations in the same way.

If we are more concerned with downside than upside risk, then we may wish to allow for this in our risk analysis, eg by attaching a greater weight to 'bad' than to 'good' outcomes.

To deal with the risks of a given activity, we need to:

- *identify* them
- *analyse* them, by estimating the frequency of occurrence and the consequences if they occur
- consider the possibility of *mitigating* the downside risks, by reducing the frequency of occurrence or reducing the adverse consequences (if they do occur), or both
- consider the costs of possible mitigation options, to see whether they are financially viable or not and select the best combination of mitigation options.
- The remaining or residual risks are the ones which must be *accepted* by the sponsors and/or investors.

At this point a decision is needed on whether to proceed with the project or not. If the project is undertaken, the residual risks need to be controlled using a series of measures which include:

- regular monitoring of the risks
- plans for dealing with foreseeable and unforeseeable crises
- appointment of risk custodians
- regular management reviews.

The remaining sections of this chapter look at each of the key stages of risk control in more detail.

## 3 Identification of risks

It is important that all risks in a project are identified and evaluated.

A methodology for Risk Assessment and Management of Projects (RAMP) has been developed jointly between the Faculty and Institute of Actuaries and Institute of Civil Engineers.

The steps necessary to achieve an effective identification of the risks (upside as well as downside) facing the project can be summarised as follows:

- **Make a high-level preliminary risk analysis to confirm that the project does not have such a high risk profile that it is not worth analysing further.**

If there is a 50% chance that the project will collapse losing all of the initial investment, the project may be rejected at an early stage.

- **Hold a brainstorming session of project experts and senior internal and external people who are used to thinking strategically about the long term.**

The project team here might include actuaries, accountants, management consultants and various other experts depending upon the exact nature of the project concerned, *eg* engineers, marketing analysts, computer analysts *etc.*

**The aim will be to identify project risks, both likely and unlikely, to discuss these risks and their interdependency, to attempt to place a broad initial evaluation on each risk, both for frequency of occurrence and probable consequences if it does occur, and to generate initial mitigation options and discuss them briefly.**

- **Carry out a desktop analysis to supplement the results from the brainstorming session, by identifying further risks and mitigation options, using a general risk matrix, researching similar projects undertaken by the sponsor or others in the past (including overseas experiences), and obtaining the considered opinions of experts who are familiar with the details of the project and the outline plans for financing it.**
- **Carefully set out all the identified risks in a risk register, with cross references to other risks where there is interdependency.**

High correlations between risks will increase the variance of the investment returns from the project, as the individual risks are less likely to cancel each other out.

### 3.1 Risk matrices

These are helpful in the identification and analysis of risks. By imposing a standardised structure on the process of risk analysis, they help to ensure that no factors are overlooked. The basic idea is to construct a table or tables with different generic categories and sub-categories of risk as the column and row headings.

One method by which to categorise risks is according to:

- the *cause of the risk* (*eg* as columns)
- the *stage of the project* at which the risk arises (*eg* as rows).

Subheadings could then be used to subdivide the risks into more tightly defined subcategories, eg splitting the natural causes of risk into various types such as weather, earthquake etc.

The identified risks, their characteristics and importance can then be documented in the matrix. As the project advances through each stage, the project manager can use the matrix to ensure that the causes of risk are considered and mitigated.

The categorisation of risks into different types may also aid with the identification of interdependencies. Two risks with the same cause, eg an economic cause such as higher than expected inflation, are more likely to be interdependent, than a risk with an economic cause and one that results from a natural cause.

An example of a risk matrix might be as follows:

		Cause of risk						
		Political	Natural	Economic	Financial	Crime	Project	Business
Stages in the project	promotion of concept					✓	✓	
	design					✓	✓	
	contract negotiations				✓		✓	
	project approval	✓					✓	✓
	raising of capital	✓		✓	✓	✓	✓	✓
	construction	✓	✓	✓	✓	✓	✓	✓
	operation and maintenance	✓	✓	✓		✓	✓	✓
	receiving of revenues	✓	✓	✓	✓	✓	✓	✓
	decommissioning	✓	✓		✓	✓	✓	✓

Each cell in the matrix would be considered in detail and details would be entered to remind the risk manager of the risks to be considered at each point in time.

## Causes of risk

A risk matrix suitable for the above purposes would consist of a square table, with the following column headings relating to cause of risk:

- political
- business
- economic
- project
- natural
- financial
- crime.

## Risks in the successive stages of the project

The rows of the table would relate to the risks in successive stages of the project:

- promotion of concept
- design
- contract negotiations
- project approval
- raising of capital
- construction
- operation and maintenance
- receiving revenues
- decommissioning.

Each of these main headings would have subheadings; for example, natural might have sub-columns headed:

- weather
- earthquake
- fire or explosion
- ground conditions.



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### Question

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Set out examples of sub-categories that might be included under political risks.



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## Solution

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The sub-categories could include:

- government intervention
- public opinion
- environmental objections
- changes in legislation
- wars, crime *etc*
- public relations.




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## Question

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Give examples of the risks facing a project to expand overseas a financial consultancy business.

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## Solution

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There is no uniquely correct answer here. Possible examples could include:

- political risk arising from a lack of co-operation from the overseas government and regulators
- business risk arising from a lack of experience of the way business is conducted
- economic risk arising from a slowdown in economic activity in the overseas country.

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**Design might include the following risks, each of which would have its own row in the table:**

- **failure to meet specified standards**
- **professional negligence.**

**The matrix would act as a reminder to the analyst to consider types of risk which may otherwise be missed.**

**The cells in the matrix can be ticked off to show whether the risk in question applies to the project, with a cross reference to the appropriate entry in the risk register.**

**Some of the risks identified will probably be such that no realistic estimates can be made of probability of occurrence or likely consequences, and it may be that some such risks can be regarded as being systematic rather than probabilistic and hence already accounted for in the discount rate.**

**It should be emphasised that risks of very serious or disastrous events, however uncertain or however low the probability of occurrence, should never be ignored on the grounds that an allowance has been made for them in the discount rate. Such risks should always be the subject of searching analysis, and any which cannot be eliminated should be highlighted in the final report.**




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## Question

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Jubiloil plc is considering building a new oil pipeline from Siberia to Japan. The company wishes to identify and analyse the risks involved in the project.

It is confident that the market for oil is strong and will get stronger as economic growth continues in the Far East. The pipeline will be built under land and sea and will pass through islands en route to Japan. Environmentalists have been concerned about the threat of pollution from oil slicks and the threat to an endangered species of whale that feeds on the sea bed under which the pipe will be laid. The area is prone to seismic activity.

Jubiloil plc is seeking finance from international financial institutions.

- (i) Describe the steps necessary to achieve an effective identification of risks facing Jubiloil's project.
- (ii) Describe briefly five major risks facing the project.

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## Solution

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### (i) **Identification of risks**

*High-level preliminary risk analysis* to confirm that the project does not have such a high risk profile that it is not worth analysing further.

*Brainstorming session* of project experts, eg actuaries, accountants, management consultants, oil experts, engineers etc. The aim will be to identify all project risks and make an initial judgement of their likelihood, severity and interdependency.

*Desktop analysis* to supplement the above by identifying further risks, using a risk matrix, researching similar projects, and consultation with experts.

Set out all the identified risks in a *risk register*, with cross references to other risks where there is interdependency.

### (ii) **Five major risks facing the project**

*Political risks*, eg some governments might be hostile to the pipeline and may not allow the company to pass through its borders or they might impose constraints or additional taxes.

*Natural risks* arising from earthquakes and bad weather could delay the building of the pipeline, could destroy it or could cause widespread pollution and destruction of wildlife.

*Economic risks* associated with unpredictable and large changes in world oil prices, the US dollar (in which oil is priced), Jubiloil's domestic currency and the project's local currencies, eg yen.

*Project risks* arising from the level of difficulty in construction of the pipeline being greater than anticipated or the failure of technology.

*Financial risks* arising from the difficulties in raising finance and the possible withholding of funds until concerns of the financiers have been addressed.

## 4 Analysis of risks

Having *identified* the risks inherent in the project, the next step is to attempt to quantify their impact upon the financial returns yielded by the project.

**Once the identification process is regarded as complete, the project team will review the work done to date.**

**This will be followed by an analysis of the risks, to ascertain the frequency of occurrence and the consequences if the risk event occurs.**

**The analysis will concentrate on the independent risks and regard the dependent risks as consequences of them.**

The risks could be classified according to four different dimensions:

*Frequency of occurrence* – the perceived likelihood that the particular risk will occur. The categories used might vary from ‘very likely’ to ‘very unlikely’, with associated numerical values, eg probability ranges such as ‘>50%’, down to ‘< 0.01%’.

*Impact* – the effect on the cashflows. The occurrence of a risk with a major negative impact upon the project could lead to its cancellation. At the other end of the scale, the impact might only be a slightly increased cost or a short delay in completion.

*Degree of dependence* – on other separately identified risks. Categories here could range from ‘very high degree’ to ‘very low degree’.

*Controllability* – the extent to which the impact of the risk can be mitigated or managed. Here the categories could range from ‘can be completely mitigated’ to ‘very uncontrollable’. The cost of control might also be considered here.

The risk(s) in each cell of the risk matrix are therefore essentially awarded a score for each of the above dimensions and the most important risks in terms of their likely financial impact are thereby identified. The most crucial aspect of risk is probably the absolute magnitude of the financial impact.

**A guide to the frequency of occurrence will be obtained by consulting experts in each risk. It might be possible for the expert to give a probability distribution of the risk. The analysis will be supplemented by a study of the statistics available, if any, from other projects.**

### 4.1 Financial consequences of risks

**The financial consequences if the event occurs will be expressed in present day money values.**

In present day money values means after removing the effects of inflation.



#### Question

Explain why present-day money values are used.

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## Solution

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Present-day money values are used for the financial consequences because future cashflows are easier to interpret if they are expressed in terms of current money values. For example, it may be easier to appreciate the size of a cashflow in five years' time if it is expressed as £100 in today's money as opposed to, say, £130 in five years' time's money.

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**It will often consist of a range of possible values, for which it may be appropriate to use the mid-point, or perhaps a simple probability distribution for further analysis.**

**The result will be discounted to its net present value.**

**In principle, the expected NPV of the risk in question will be derived by summing a series of expected NPVs in respect of all future years covered by the analysis. The expected NPV for a potential future year will be the probability of occurrence of the event in that year (derived from the estimated frequency of occurrence) multiplied by the NPV of the resulting incremental or decremental cashflows if the event occurs in that year.**

The approach can be illustrated as follows. Consider a particular risk relating to an  $n$ -year project. Define:

- $C_t$  = net present value *in year  $t$*  of the cashflows arising given that the risky event occurs in year  $t$
- $v^t$  = appropriate discount factor to calculate the present value at time zero of cashflows arising in year  $t$  (reflecting the risk discount rate for the project)
- $p_t$  = probability that the risky event occurs in year  $t = 1, \dots, n$ .

The expected net present value of the particular risk is found by summing over the lifetime of the project, namely the years,  $t = 1, \dots, n$ , to obtain:

$$ENPV = \sum_{t=1}^n p_t NPV_t = \sum_{t=1}^n p_t C_t v^t$$




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## Question

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Consider a three-year project in which all cashflows are assumed to occur at the end of each year and a risk discount rate of 10% *pa* is used to evaluate the project.

A particular risk may occur at the end of one of the three years, but it can occur only once in the lifetime of the project.

- If it occurs at the end of Year 1, which event has a probability of  $\frac{1}{4}$ , the consequent cashflows are 1 at the end of each of the three years.
- If it occurs at the end of Year 2, which event has a probability of  $\frac{1}{2}$ , the consequent cashflows are 2 at the end of each of Years 2 and 3.
- If it occurs at the end of Year 3, which event has a probability of  $\frac{1}{4}$ , the consequent cashflow is 3 at the end of Year 3.

Determine the expected net present value of the cashflows at the start of the project.

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## Solution

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Consider the first possibility; if the risk event does occur at the end of Year 1, then the present value *at time 1* of the consequent cashflows is:

$$C_1 = 1 \times v^0 + 1 \times v^1 + 1 \times v^2 = 2.7355$$

The present value of these cashflows *at the start of the project* is:

$$NPV_1 = C_1 v^1 = 2.7355v = 2.4869$$

If the risk event occurs at the end of Year 2, then the present value *at time 2* of the consequent cashflows is:

$$C_2 = 2 \times v^0 + 2 \times v^1 = 3.8182$$

The present value of these cashflows *at the start of the project* is:

$$NPV_2 = C_2 v^2 = 3.8182v^2 = 3.1555$$

Finally, if it occurs at the end of Year 3, then the present value *at time 3* of the consequent cashflows is:

$$C_3 = 3 \times v^0 = 3$$

The present value of these cashflows *at the start of the project* is:

$$NPV_3 = C_3 v^3 = 3v^3 = 2.2539$$

Weighting each of the above by the probability that the risk event actually occurs at the end of each year then gives the overall expected net present value of this particular risk as:

$$\begin{aligned} ENPV &= p_1 NPV_1 + p_2 NPV_2 + p_3 NPV_3 \\ &= \frac{1}{4} \times 2.4869 + \frac{1}{2} \times 3.1555 + \frac{1}{4} \times 2.2539 \\ &= 2.76 \end{aligned}$$

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**Care must be taken to ensure that the method of calculating the expected NPV of each risk is consistent with the method chosen to calculate a distribution of NPVs for the project as a whole (see the next section).**

**The risks will then be prioritised for further analysis. In general the risks with low expected NPVs will be discarded, with the intention of including them in a general contingency allowance later.**

This could be done by a one-off global deduction from the overall expected NPV of the project.

**However, any risks which would have very serious or disastrous consequences, but where the expected NPV is low because the probability of occurrence is small, would be kept for further analysis along with the risks having higher expected NPVs.**



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**Question**

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Give examples of the types of risk events might have very serious or disastrous consequences, but a low expected NPV.

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**Solution**

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The types of risk events that might have very serious or disastrous consequences, but a low expected NPV include:

- extreme natural disasters such as earthquakes
  - extreme stock market collapses, could severely impact on the financing of a project
  - extreme political risks, such as the outbreak of war.
-

## 5 Obtaining a distribution of NPVs in practice

In the previous chapter, we looked at the two principal ways in which a range of the NPVs for the project as a whole may be obtained.

### 5.1 Scenario analysis

The first is to construct a series of future scenarios, each representing a combination of possible outcomes for the major risk events and each having its own probability of occurrence, obtained by combining the probabilities of the various independent component risks.

The outcomes selected for the scenario analysis will in practice often be the mid-points of a range of possible values.

For example, if there is an 80% chance that the capital cost will lie between £40m and £42m, and a 20% chance that it will lie between £42m and £50m, one might model two sub-scenarios, the first having a capital cost of £41m with an 80% probability and the other having a capital cost of £46m with a 20% probability. If each of these 2 sub-scenarios for capital cost were to be combined with (say) 4 sub-scenarios on gross revenue and 3 sub-scenarios on running costs, we would generate a total of  $2 \times 4 \times 3 = 24$  scenarios.

Hence, if each of the sub-scenarios has an attaching *independent* probability of occurrence, these probabilities can be multiplied together to obtain the probabilities of each of the 24 independent scenarios arising.

If we then evaluate the NPV that will arise under each of the 24 scenarios, we can weight these NPVs accordingly in order to calculate the expected NPV of the project as a whole.

One method of obtaining the distribution of NPVs is therefore to estimate separate distributions of outcomes for:

- capital costs
- operating costs
- receipts

and then to combine the resulting distributions thus obtained to get the distribution of NPVs.

**It is sometimes possible for simple scenario analysis to be carried out without using a computer at all.**

**For each scenario the probability of occurrence and the NPV if it occurs are calculated.**

**Assuming that the scenarios cover all possible outcomes, at least in principle, the result will be an approximate probability distribution of the NPVs of the project.**



## Question

Consider a potential project with a lifetime of five years, in which the initial investment is 120. Assume that the net annual cashflow ( $X$ ) is received at the end of each year and is the same for each of the five years, and that the risk discount rate is 15% *pa*.

So the NPV is calculated as  $NPV = -120 + Xa_{\overline{5}|} @15\%$

The value of the net annual cashflow ( $X$ ) depends on the assumptions made about market growth (high/medium/low) and market share (high/medium/low).

The following table shows the various scenarios along with the assumed probability of occurrence, the assumed net annual cashflow and the NPV of the cashflows associated with that outcome.

Market growth outcome	Market share outcome	Probability of scenario	Net annual cashflow of project ( $X$ )	NPV of outcome
high	high	1/16	70	114.65
high	medium	1/8	52.5	55.99
high	low	1/16	35	-2.67
medium	high	1/8	60	81.13
medium	medium	1/4	45	30.85
medium	low	1/8	30	-19.44
low	high	1/16	50	47.61
low	medium	1/8	37.5	5.71
low	low	1/16	25	-36.20

Calculate the expected NPV of the project, and comment on your answer.

## Solution

The expected NPV of the project is then found by multiplying each NPV by its associated probability and then summing over all possible scenarios:

$$NPV = \frac{1}{16} \times 114.65 + \frac{1}{8} \times 55.99 + \dots + \frac{1}{16} \times (-36.20) = +30.8$$

Thus, in this case, the expected NPV turns out to be about +30.8, and so the project would appear to be profitable. According to the table, it will in fact be profitable in six of the nine possible scenarios – when a medium or high market share is achieved – with probability  $\frac{3}{4}$ .



## 5.2 Stochastic modelling

**The other main method is to build a computer-based stochastic model, in which the various risks are modelled and a series of simulations is then run to get a probability distribution of the NPVs.**

This approach may give a better overall feel for the variability of the possible financial outcomes. The possible outputs of such a model might include the distributions of:

- NPVs
- profits (or revenues and costs separately) in each future year
- events (eg profitable years and unprofitable years)
- times to events (eg time until total receipts exceed expenditure – the payback period).

## 5.3 Relative merits of the two approaches

**Although it may appear that the second method would be superior, practical experience has shown that the results from a stochastic model cannot always be relied upon with sufficient confidence to justify the effort and expense involved.**

When building a stochastic model, the most difficult data to estimate reliably are the correlation coefficients linking the various input parameters.

It is not hard to imagine that if your input parameters for a model were:

- (1) German interest rates
- (2) US inflation
- (3) the failure of your German market supplier
- (4) the failure of your US marketing company

then probabilities of each event of each might be hard to estimate in the first place.

Whilst the correlation between (1) and (2) might be obtained through analysis of historical financial data, the correlations between (1) and (3) would be hard to estimate, and between (3) and (4) might be no more than guesswork.

**More seriously, there is the danger of losing sight of key factors and assumptions in looking at the output from such a model. Instead, the effort of working up a scenario analysis by hand often forces the analyst to concentrate on the important risks and assumptions.**

**Despite this, however, a comparatively simple stochastic model may be useful to simulate one specific project activity, where the assumptions underlying the model, and its limitations, can be kept clearly in view.**

## 5.4 Unfavourable NPVs

Having arrived at a probability distribution of NPVs for the project, it will often be found that some of the resulting NPVs are 'unfavourable', ie they are unacceptably low or negative.

Some of these unfavourable NPVs may have low probabilities of occurrence attached to them, and the sponsor may be prepared to accept these risks.

In other cases, however the NPV may be so unfavourable that even with a low probability of occurrence it is unacceptable.

For example, the financial consequences of a natural disaster on a construction project may be enormous, perhaps even threatening the solvency of the company.

The consequent and unacceptably high downside risk might then mean that the project is not considered viable (unless it can be mitigated – see next section), even though the:

- project has a positive expected NPV
- probability of the risk occurring is very small.

It is for this reason that the assessment of the impact of each risk is particularly important.

## 6 Risk mitigation

Once the risks in a risk matrix have been classified and analysed, we can consider how they might be mitigated.

Risk mitigation is aimed at reducing either the probability that a risk occurs and/or the financial impact should it occur.

### 6.1 Ways of mitigating risk

For each major risk, consideration would be given to identifying the main options for mitigating the risk, by such methods as:

- **avoiding the risk (eg by redesigning the project)**
- **reducing the risk, ie either reducing the probability of occurrence or the consequences or both (eg by modifying the design or building in safety margins or procedures)**
- **reducing uncertainty (eg through further research or a feasibility study)**
- **transferring risk (eg through engaging a sub-contractor on a fixed price contract)**
- **insuring risk (in fact a particular case of risk transfer)**
- **sharing risk with another party (especially where the other party is able to control the risk to some extent).**

Each option for mitigating a particular risk will be evaluated, assessing:

- **likely effect on frequency, consequence and expected value**
- **feasibility and cost of implementing the option**  
The cost of implementing the option will normally reduce the expected NPV of the project.
- **any 'secondary risks' resulting from the option**  
A strategy that reduces one element of risk, could introduce an additional, but less important risk, eg insurance introduces the small risk that the insurer could default.
- **further mitigating actions to respond to secondary risks**  
For example, insurance could be arranged with a number of insurers instead of just one to reduce the exposure to any one insurer defaulting.
- **overall impact of each option on the distribution of NPVs.**

The amount of work involved at this stage of the analysis can sometimes be considerable, especially in relation to the secondary risks and their mitigation. The analysis may be an iterative process.

## 6.2 The financial consequences of risk mitigation

The result of adopting a particular option ought to be to reduce the downward volatility of the NPVs but in addition it will normally either:

- increase the expected NPV, or
- decrease the expected NPV.

In the former case, the mitigation option is entirely beneficial and should be built in to the project.

This is because risk has been reduced and expected return increased. Consequently the project has been unambiguously made more attractive.

In the second, and more normal, case, judgement will have to be exercised on whether the mitigation option in question should be adopted.

In this more usual case, risk has been reduced at the expense of a reduction in expected return.

Indeed it will be a matter for judgement, which is the best combination of mitigation options, so as to achieve the most acceptable resulting distribution of NPVs.

This should have regard not only to the views of the sponsor but also the likely reactions of prospective lenders and investors – remembering that the lenders in particular will be more concerned with downside than upside variability.




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### Question

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Consider a capital project involving the upgrading of an office IT platform. Give examples of how the risks associated with this project might be mitigated.

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### Solution

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Again, there is no one correct solution. Possibilities include:

- *Reducing* the risk, *eg* by refining the plan and performing the upgrade in phases hopefully enabling any problems to be identified and addressed on a smaller scale.
  - Reducing uncertainty via *further research* to gain more precise estimates of the possible likelihood and impact of each risk, *eg* by contacting other users of the intended hardware and/or software to investigate any issues they have faced.
  - *Transferring* risk by employing external consultants to perform the upgrade on terms that include technical support and backup if problems occur.
-

## 6.3 Core Reading examples

### Example 1

The following sections illustrate a simple process for appraising competing projects and choosing between them, using RAMP methodology for risk assessment, combined with a suitable investment model. A practical example of the process is given, together with a method for deciding whether risk mitigation is financially worthwhile or not.

The following projected cashflows could result from analysing a proposed project:

Scenario	A	B	C	D	E
Year	£000	£000	£000	£000	£000
1	-1000	-1000	-1000	-1000	-1000
2	300	500	-300	200	-300
3	400	400	300	300	200
4	400	400	400	300	300
5	400	400	400	300	300
6	—	—	400	—	300
Net cash flows	500	700	200	100	-200
NPV	292	481	-64	-54	-391
Probability of occurrence	55%	10%	15%	10%	10%

Expected (weighted average) NPV = 155 =  $292 \times 0.55 + 481 \times 0.1 - 64 \times 0.15 - 54 \times 0.1 - 391 \times 0.1$

Hence on 65% of occasions such a project would show a profit but on 35% of occasions it would show a loss. The loss could be as high as £391,000 but might be even more. On average a large number of such projects would show a profit.

The external contractor who will carry out the work is prepared to bear the whole of any extra development costs arising after year 1 (as in scenarios C and E), provided that the contract price is increased by £80,000. Is it worthwhile for the sponsor to accept this offer?

## Solution 1

The various scenarios can be evaluated again, assuming that this new condition applies, as follows:

Scenario	A	B	C	D	E
Year	£000	£000	£000	£000	£000
1	-1080	-1080	-1080	-1080	-1080
2	300	500	—	200	—
3	400	400	300	300	200
4	400	400	400	300	300
5	400	400	400	300	300
6	—	—	400	—	300
Net cash flows	420	620	420	20	20
NPV	212	401	139	-134	-188
Probability of occurrence	55%	10%	15%	10%	10%

Expected (weighted average) NPV =  $145 = 212 \times 0.55 + 401 \times 0.1 + 139 \times 0.15 - 134 \times 0.1 - 188 \times 0.1$

The project will now show a profit on 80% of occasions and a loss on only 20%. Moreover, the 'maximum' (mid-point) loss is reduced from £391,000 to £188,000. This risk profile may well be more attractive than the original one to a sponsor who would find losses hard to bear. On the other hand, for a large sponsor where the project is one among many projects, the better expected NPV of the original situation (£155,000 instead of £145,000) would suggest that the risk should remain unmitigated.

## Example 2

A French-based fashion clothing retailer is considering setting up a new internet subsidiary to sell its clothing range into the US market. Currently it has no distribution outside France.

Identify the major risks involved in launching the subsidiary together with ways that these risks might be mitigated.

## Solution 2

The major risks involved in launching the subsidiary and ways that these risks might be mitigated are set out below:

Risk	Mitigation
Language	Employ people who are bi-lingual.
Web security <i>ie</i> risk that data supplied to the retailer is not secure	Employ software firm to advise on suitable package.
Credit card fraud	Ditto.
Fashion <i>ie</i> the subsidiary may be offering the wrong type of clothing for the American market	Make sure thorough market research has been conducted and do not offer 'high fashion' unless one is certain that it will sell.
Stock <i>ie</i> ensuring there is enough stock to meet demand without maintaining an excess of stock	Market research.
Supply <i>ie</i> ensuring that the clothes will be delivered to the customer within the promised timescale	Investigate the companies offering third party delivery services and choose one that can fulfil the company's needs.
Returns <i>ie</i> how will unwanted goods be handled	Set up a suitable internal system to monitor returns.
Competition <i>ie</i> what are other e-retailers doing and how will it impact on this subsidiary	Monitor competition.
Presence <i>ie</i> how will customers be attracted to the website and will they recognise the subsidiary's name	Advertise.
Pricing <i>ie</i> is the price charged competitive with other retailers both on the internet and in the shops	Monitor prices.
Currency <i>ie</i> how will movements in exchange rates affect the prices the subsidiary can charge for its goods and how will it affect the profitability of the company when expressed in Euros	It might be possible to hedge the currency, at least in part.
Market risk <i>ie</i> the stock market may regard the subsidiary as very risky and put a lower valuation on the whole group	Explain to investors what the plans are and what strategies are being put in place to minimise the risk and maximise the return.

## 7 The investment submission

A decision will now need to be taken on whether the project should proceed. The investment submission, which is to be used as a basis for this decision, should assume that the best possible combination of mitigation options will be implemented. It should show the expected NPV (allowing for both upside and downside risk and for an appropriate contingency margin to cover probabilistic risks which have not been fully analysed) and the probability distribution of NPVs.

The residual risks should be fully identified and analysed. Particular attention needs to be paid in the submission to any remaining risks that could have a serious or catastrophic effect on the outcome of the project as a whole, even if they have a low or uncertain probability of occurrence.

The method by which it is proposed to finance the project should be specified, and an analysis provided showing the likely effect on investors after taking account of expected price inflation, borrowing, tax, etc.

The aim of the investment submission should essentially be to discuss how the project relates to the sponsor's criteria for judging whether or not to proceed with a project.

The decision makers will need to pay attention not only to the submission but to a range of intangible considerations that are outside the scope of the formal analysis. Such considerations might include:

- allowance for any likely bias or possible approximations in the estimates
- 'hunch'  
This means any gut feelings or instincts, perhaps based on previous experience.
- knowledge not in the possession of those who have prepared the submission
- last-minute developments
- doubts about feasibility or quality of implementation
- overall project credibility, etc.

They will also consider whether the upside potential has been estimated realistically. Finally, judgement will be required on whether, taking all these aspects into account, the project meets the sponsor's criteria sufficiently to justify a decision to proceed.

If the decision is to taken to proceed with the project, then it is important that all aspects of the project are reviewed regularly to assess its ongoing profitability.

Should the project be rejected, it is important to bear in mind that circumstances may change, eg an economic upturn may enhance the projected profitability of the project to the extent that it is deemed viable at a future date.

Thus, in each time period we could think of the decision to be made as a choice between:

- starting the project now

deferring the start of the project until *at least* the next time period, at which point we will revisit the choice in the light of the conditions then prevailing.



## Chapter 22 Summary

### Calculating the required rate of return for a project

The use of the cost of capital to calculate the net present value in screening projects ensures that projects are only entered into that will enhance the return to shareholders, provided that it is adjusted to reflect the project risk.

The required rate of return should therefore reflect:

- the weighted average cost of capital
- the degree of systematic risk associated with the project.

The weighted average cost of capital can be calculated as:

$$WACC = \frac{\text{Market value of debt}}{\text{Market value of debt} + \text{equity}} \times \text{net cost of debt} \\ + \frac{\text{Market value of equity}}{\text{Market value of debt} + \text{equity}} \times \text{cost of equity}$$

*Systematic risk* is that part of the return on a project that cannot be eliminated by investing in the same type of project many times over, nor by diversification.

If the systematic risk for a particular project is thought to be higher/lower than is usual for a company's projects, then in theory the discount rate used should be greater/lower than that which the company normally employs.

### Adjusting the discount rate

A suitable adjustment to the discount rate might be based on:

- discount rates used by any companies which habitually engage in such projects
- an arbitrary addition
- the degree of cyclicity associated with the project
- the operating leverage of the project.

*Certainty equivalents* can be used to replace the individual risky projected cashflows and then discounted at a uniform rate of return.

### Dealing with specific risks

Risks may be upside as well as downside. In order to deal with them we need to:

- identify them
- analyse them
- mitigate them.

### **Identification**

The steps necessary to achieve an effective *identification of the risks* include undertaking a *high-level preliminary risk analysis*, holding a *brainstorming session*, carrying out a *desktop analysis*, setting out all the identified risks in a *risk register*, and ensuring that *upside risks* as well as *downside risks* are covered.

A *risk matrix* can be used to systematically identify risks categorised according to the cause of risk and the stage of the project.

*Causes of risk* can be classified as political, business, economic, project, natural, financial and crime.

The *stages of a project* include promotion of concept, design, contract negotiations, project approval, raising of capital, construction, operation and maintenance, receiving revenues and decommissioning.

### **Analysis**

The *analysis of risks* aims to ascertain the *frequency of occurrence* and the *consequences* if the risk event occurs, the *correlation* with other risks and the *controllability of risks*.

In order to judge the *financial consequences of each risk*, the expected NPV for each risk can be calculated.

A probability distribution for the NPVs for the project as a whole can be obtained using either scenario analysis or stochastic modelling.

### **Mitigation**

Risks can be avoided, reduced, insured, shared, transferred, or researched.

### **Investment submission and decision**

Considerations in the investment decision, beyond the investment submission, might include:

- allowance for any likely bias or possible approximations in the estimates
- 'hunch'
- knowledge not in the possession of those who have prepared the submission
- last-minute developments
- doubts about feasibility or quality of implementation
- overall project credibility.



## Chapter 22 Practice Questions

Exam style

All of the questions that follow are exam style.

- 22.1 Describe the steps necessary to deal with the risks facing a capital project. [5]
- 22.2 Explain how a risk matrix can be used in the risk analysis process. [5]
- 22.3 The government of a country that is about to celebrate 100 years of independence is appraising a proposal to build a Centennial Dome to celebrate the anniversary.

The Dome will be built using new construction methods and materials and will be located in an industrial site close to the centre of the capital city. It is expected to cost about \$500m to build – financed in a public-private sector partnership – and is expected to be a major tourist attraction that will attract 3,000,000 overseas and 2,000,000 domestic visitors each year.

Describe briefly five major risks facing the project. [5]

- 22.4 XYZ is a construction company involved in infrastructure projects in all parts of the country in which it is based. It has been offered the opportunity to become involved in a large new bridge construction project to build one, two or three new bridges over a major river.

The construction project has been structured by the government so that the company must build each bridge and operate the tolls for the first three years. After that the government will buy, or arrange a buyer for, the bridges on the basis of the volume of cars using the bridge and the level of the tolls.

The following information is available:

	figures in €millions		
	Scenario 1	Scenario 2	Scenario 3
Bridge A			
Net present value @ 11%	(4)	(1)	20
Internal rate of return	7%	8%	13%
Bridge B			
Net present value @ 11%	(14)	15	32
Internal rate of return	2%	15%	22%
Bridge C			
Net present value @ 11%	18	12	17
Internal rate of return	14%	13%	14%
Core business of XYZ			
Expected return on assets	9%	11%	13%

Total market value of existing company €100m  
 Beta of the existing company 1

The data relate to analyses that have been carried out under three scenarios. The company attaches an equal likelihood and an equal credibility to each of the three outcomes.

The first relates to the most pessimistic outcome, the second is the central estimate and the third is the most optimistic outcome for inflation, interest rates, toll charges and traffic volumes.

The return expected on the company's existing portfolio of projects has also been included. The core portfolio is a well-diversified portfolio of projects throughout the country.

The following data are available:

	Mean	Standard deviation	Covariance between returns on project and those on core portfolio	Correlation coefficient between returns on project and those on core portfolio
Bridge A	9.33%	2.62%	0.0004	0.93
Bridge B	13.00%	8.29%	0.00133	0.985
Bridge C	13.67%	0.47%	0	0
Core portfolio	11.00%	1.63%	N/A	1

(i) Show that the betas of each project are as follows:

	<i>beta</i>
Bridge A	1.5
Bridge B	5
Bridge C	0

[2]

(ii) The directors of XYZ have decided that the company should undertake all of the projects together or none at all.

(a) Describe the effect on the risk of the overall company were they to successfully tender for these projects. [8]

(b) List two specific and two systematic risks relating to the three-bridge project. [4]

(iii) Describe the additional analyses that might be carried out on the projects before a decision is made on whether to accept any of them. Discuss where possible what these analyses might show. [6]

[Total 20]



## Chapter 22 Solutions

### 22.1 Steps necessary to deal with the risks

In order to deal with the risks inherent in a capital project, we first need to *identify* them.

The steps here will include a preliminary analysis of risk and upside potential, brainstorming with experts, the use of a risk matrix, desktop analysis and the study of similar previous projects. [1]

Next the risks need to be *analysed*. The aim here is to estimate the frequency of occurrence, the financial consequences, controllability, and any interdependencies between risks. [1]

We must then consider the possibility of *mitigating* the downside risks, by reducing the frequency of occurrence or reducing the adverse consequences if they do occur, or both. [1]

The next step is to consider the cost of possible mitigation options to see whether or not they are financially viable, and to select the *best combination of mitigation options*. [1]

Finally, it is necessary to *control* the residual risks that are not mitigated. This will involve regular monitoring of the risks and the development of contingency plans. [1]

All steps will entail further discussion with experts, desk-top analysis and researching of similar previous projects. [1]

[Maximum 5]

### 22.2 Risk matrix

A *risk matrix* is a table used for the *identification* and *analysis* of the risks inherent in a capital project. [1]

The main column headings shown relate to the causes of risk *eg* political, business, economic *etc*. [1]

The row headings relate to the different risks that arise in the different stages of the project, *eg* creation of asset, operation of asset. [1]

The risk analysis team considers each cell of the table in turn and identifies the relevant risks. [1]

The cells in the matrix can be ticked off to show whether the risk in question applies to the particular project, with a cross reference to the appropriate entry in the risk register. [1]

These risks can then be assessed according to categories such as likelihood of occurrence, degree of dependence, controllability and financial impact on project. [1]

[Maximum 5]

### 22.3 Any five major risks facing the project from:

1. The dome may cost a lot more to build than anticipated, due to failures in the state of the art design and/or the novelty of the methods and materials used (project risk). [1]

2. The actual number of visitors may be very different from that anticipated, *eg* due to fluctuating exchange rates deterring overseas visitors (economic risk). [1]

3. It may prove more difficult or costly than anticipated to raise finance for the project, eg if private sector partners are difficult to find (financial risk). [1]
  4. It may prove more costly than anticipated to clear and decontaminate the industrial site (project risk). [1]
  5. There may be an earthquake, fire, flood or other disaster that destroys all or part of the dome (natural risk). [1]
  6. There may be knock-on effects for the demand for the private providers' services if the build quality of the dome is poor (business risk). [1]
  7. The dome is unpopular and the government loses the next election (political risk). [1]
  8. There is a terrorist attack on the dome, for example by an individual ideologically oppose to independence (crime risk). [1]
- [Maximum 5]

#### 22.4 (i) **Betas of the projects**

The betas of the projects can be calculated using the formula  $\beta_A = \frac{\sigma_{A,m}}{\sigma_m^2}$ , which gives the values:

$$\text{Bridge A} = \frac{0.0004}{(0.0163)^2} = 1.5$$

$$\text{Bridge B:} = \frac{0.00133}{(0.0163)^2} = 5$$

$$\text{Bridge C} = \frac{0}{(0.0163)^2} = 0 \quad [2]$$

[The relative betas can also be checked intuitively by observing that the return from Bridge A seems to move in line with the core portfolio yet slightly more extreme. Bridge B is more sensitive to the three scenarios than the core portfolio, yet Bridge C offers returns which move almost independently of the scenarios.]

#### (ii)(a) **Riskiness of the company**

There are potential diversification benefits from expanding the company's portfolio by running three projects rather than just one. [1]

Such diversification might reduce the volatility of portfolio returns without necessarily reducing the expected return. [1]

The three projects in question have correlations with the core portfolio of 0.93, 0.98 and 0, so individually the first two projects do not offer much in the way of diversification for the company, but the third does. [1]

Although it is possible to reduce or remove *specific* risks by diversifying a portfolio, it is not possible to remove *systematic* risks, which affect all the projects in the portfolio. [1]

The projects together are more volatile than the company as it stands – *ie* the standard deviation of the combined project is greater than that of the core portfolio. [1]

We must also consider the size of the projects in relation to the company as a whole. The combined NPV of the projects is in the range €0 million to €69 million with a central estimate of €26 million (based on Scenario 2 – the central estimate). [1]

This is relatively large compared to the core portfolio of €100 million. [1]

As such the three projects together would exert significant influence on the overall risk structure of the company. If the portfolio is currently a large number of small projects, then undertaking all three bridges may reduce the diversification overall. [1]

The correlations do not give an indication of the overall effect of the project on the company as they do not bring the value of the project into account. [1]

It may be necessary to produce a stochastic model to investigate the effect of the correlations and the sizes and variability of the cashflows. [1]

Since the beta of the combined project is higher than that of the existing company the beta of the company is likely to rise. [1]

This can be offset by adjusting other aspects of the company, *eg* disposing of projects that are highly correlated to the new projects. [1]

The projects will take a number of years to complete and then a further three years to operate and sell off. The company should consider the liquidity risk this introduces. [1]  
[Maximum 8]

(ii)(b) ***Specific and systematic risks***

*Specific*

The three bridges are all in the same geographical area (although this depends on the length of the river) so may be at risk of the same natural disaster, *eg* if the river floods. [1]

This will expose the company to particular risk in respect of the local economy. These can, however, be diversified away if the project is a part of a larger portfolio. [1]

Being exposed to three similar bridge projects will have risks that relate specifically to this type of construction project, *eg* poor build quality or deficiencies in planning. [1]

These issues may make it difficult for the company to win future projects. [1]

The risk that all three projects are cancelled suddenly by the government or the terms renegotiated. [1]

Particular building difficulties encountered at any one of the construction sites. [1]

Poor quality workmanship (providing the same contractors were not used in all three projects!) [1]

Loss through bad administration of a project. [1]

Risks of environmental groups opposing new bridge construction. These can be diversified away by investing in a portfolio that includes other construction projects. [1]

#### *Systematic risks*

An increase in short-term interest rates will affect the cost of borrowing for all three projects. [1]

A reduction in economic growth will affect income on all three projects. [1]

A rise in inflation will increase the costs of all projects and cannot be diversified away. [1]

[Maximum 4]

#### (iii) **Additional analyses**

*Hurdle rate analysis* using a rate in excess of the company's weighted average cost of capital (the company's cost of capital seems to be around 11%). This would indicate whether the project satisfies a high rate of return requirement. [1]

Looking at the returns it seems that only Bridge B and Bridge C stand a chance of meeting that goal if a rate of 11% were to be used. [1]

Alternatively the rate could be altered to reflect the risk of the project. If the risk-free rate of return is estimated to be 5% (say), then Bridge A might be evaluated using a rate of interest of:

$$5\% + 1.5 \times (11\% - 5\%) = 14\%$$

where the 11% is assumed to be the company's weighted average cost of capital (which we use as an approximation for the expected return from a well-diversified portfolio of risky assets) and 1.5 is the beta for the project. [1]

It seems clear that few if any of the projects would survive such an analysis, particularly in the case of Bridge B where the very high beta would increase the discount rate to a very high level. [1]

*A shareholder value approach* could be taken whereby the overall statistics of the company after taking on the projects could be viewed from the eyes of the existing shareholders, eg looking at the effect on the company's profit volatility. [1]

*An opportunity cost analysis* might be worthwhile. The company should consider what they would do with the funds if the projects were not taken on. [1]

Even if the projects satisfy the hurdle rate, a higher rate of return might be available on other similarly risky projects. [1]

On the other hand, if the company has surplus cash and the likely return on other similarly risky investments is lower than the expected return on the bridge projects, then the bridge projects might be worthwhile, even if the return is under the true cost of capital. [1]

[Maximum 6]



## End of Part 3

### What next?

1. Briefly **review** the key areas of Part 3 and/or re-read the **summaries** at the end of Chapters 16 to 22.
2. Ensure you have attempted some of the **Practice Questions** at the end of each chapter in Part 3. If you don't have time to do them all, you could save the remainder for use as part of your revision.
3. Attempt **Assignment X3**.

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### And finally ...

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# **Subject CB1: Assignment X1**

## **2019 Examinations**

*Time allowed: 3¼ hours*

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# Subject CB1: Assignment X1

## 2019 Examinations

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MCQ	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Total	
— 20	— 5	— 5	— 5	— 5	— 5	— 5	— 5	— 5	— 20	— 20	— 100	= _____%

**Grade:**    A   B   C   D   E

**Marker's initials:** \_\_\_\_\_

**Please tick the following checklist so that your script can be marked quickly. Have you:**

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### ***Notes on marker's section***

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## CB1 Multiple-Choice Answer Sheet

Please use this answer sheet to answer the multiple-choice questions. Instructions are given below. In addition, your marker will be happy to give you help on your approach to answering the multiple-choice questions. If you would like such comments, please include your workings on a separate sheet.

### Instructions

Mark your answers by striking a line through the relevant box [—]. Do not mark outside the area. For example:

1	[—]	[B]	[C]	[D]
---	-----	-----	-----	-----

If you make a mistake, mark **X** through your wrong answer and mark the correct box with a [—]. For example:

2	[X]	[B]	[—]	[D]
---	-----	-----	-----	-----

	A	B	C	D	
1	[A]	[B]	[C]	[D]	<i>Marker use only</i>
2	[A]	[B]	[C]	[D]	
3	[A]	[B]	[C]	[D]	
4	[A]	[B]	[C]	[D]	
5	[A]	[B]	[C]	[D]	
6	[A]	[B]	[C]	[D]	
7	[A]	[B]	[C]	[D]	
8	[A]	[B]	[C]	[D]	
9	[A]	[B]	[C]	[D]	
10	[A]	[B]	[C]	[D]	
					Total:

*The assignment starts on the next page.*



For Questions 1.1 to 1.10 indicate on your answer sheet which one of the answers A, B, C or D is correct.

**Having your assignment marked? Your marker will be happy to give you help on your approach to answering the multiple-choice questions if you include your workings.**

- X1.1** Which of the following statements about taxation is false?
- A Taxation is often based on cashflows.
  - B The marginal rate of income tax must increase as income increases.
  - C Taxation is usually assessed in arrears.
  - D Companies pay corporation tax on their taxable profits. [2]
- X1.2** Which of the following is NOT true of a limited company?
- A Its liability in respect of claims against the company is limited to the share capital and reserves of the company.
  - B It must have an issued share capital of at least £50,000.
  - C Its tax calculation will be affected by changes in corporation tax rates.
  - D Its board of directors are legally responsible for its financial affairs. [2]
- X1.3** The effective conversion price of a convertible bond is:
- A the value of the equity + excess income prior to conversion
  - B market price of convertible bond – market price of a similar non-convertible bond
  - C market price of convertible bond ÷ number of shares into which the bond converts
  - D market price of convertible bond + excess dividend income after conversion [2]
- X1.4** Which of the following is NOT a reason why the gross redemption yield on corporate loan stock is usually greater than that on government bonds of equivalent term and coupon?
- A smaller issues sizes of most corporate loan stocks
  - B no tax is paid on interest received from government bonds
  - C lower marketability of the corporate loan stock
  - D greater chance of default of the corporate loan stock [2]
- X1.5** A floating-rate note is:
- A an overdraft.
  - B a bond with a variable rate of interest.
  - C a bank loan with a variable rate of interest.
  - D a debenture where the security of the loan can be changed. [2]

**X1.6** Consider the following definition:

'The borrower can change the security of the loan from time to time (within limits imposed by the trust deed). Upon default the lender can appoint a receiver to take control of the assets. If necessary the assets can be sold off to pay the lender (in advance of unsecured creditors).'

This is a definition of a:

- A subordinated loan stock.
- B floating-rate note.
- C fixed-charge debenture.
- D floating-charge debenture. [2]

**X1.7** Which of the following is NOT a method of reducing principal-agent problems?

- A a profit-related employee bonus scheme
- B executive share options
- C an hourly rate of pay for workers and managers
- D written agreements between stakeholders [2]

**X1.8** Which of the following investors in the futures and options markets can never find that the contract is a liability at expiry?

- A the seller of a futures contract
- B the buyer of a put option
- C the writer of a call option
- D the buyer of a futures contract [2]

**X1.9** Which of the following is NOT the goal of the financial manager?

- A to maximise the share price
- B to invest in projects that display a positive net present value
- C to invest in projects if the rate of return is greater than the cost of borrowing
- D to maximise shareholder wealth [2]

**X1.10** The directors of Phillips plc are considering a 1-for-4 rights issue at a 20% discount to the current share price. The book value of the company's ordinary 50p shares is £8m and the current market capitalisation is £60m. Which of the following is the theoretical ex-rights share price?

- A £3.00
- B £3.15
- C £3.60
- D £3.75 [2]

- X1.11** Explain, with examples, why the interests of a firm's shareholders might conflict with those of its other stakeholders. [5]
- X1.12** Describe the capital budgeting decision and explain its importance to a business. [5]
- X1.13** Describe the main principles of the UK Corporate Governance Code. [5]
- X1.14** Discuss the advantages of the limited company as a business entity. [5]
- X1.15** Describe, with the use of an example, the principles of double taxation relief. [5]
- X1.16** The directors of Thatcher plc are considering having a rights issue. Describe the factors that Thatcher's directors should take into account in deciding whether or not to have the rights issue underwritten. [5]
- X1.17** Country Dairy Ltd is a small business selling ice cream and other dairy products to local shops and restaurants. Recently, the business has experienced some cashflow problems as a result of a few customers paying their bills late, and the owners are now considering using factoring to improve the situation.
- Explain the difference between recourse and non-recourse factoring and consider the relative merits of each for Country Dairy. [5]
- X1.18** A company that has successfully tendered for a large overseas construction project is planning to use futures to hedge the risk that changes in currency exchange rates would increase costs and make the project unprofitable.
- Explain how this risk can be hedged by such a strategy and the advantages and disadvantages of this strategy. [5]
- X1.19** XYZ Limited is a manufacturing company. Currently the company's shares are not listed on any market.
- (i) Explain the reasons why XYZ may seek a full stock exchange listing. [6]
- (ii) Describe any disadvantages of such a listing for the existing shareholders. [3]
- XYZ wishes to obtain a full listing to broaden the pool of shareholders beyond the existing owners and to raise cash.
- (iii) Describe the various methods of issuing shares to achieve these aims and the advantages of each method. [11]
- [Total 20]

**X1.20** The ABC company wishes to issue a tranche of long-term debt. One director has suggested that debenture stock is issued. Another director has suggested the issue should be of unsecured loan stock.

(i) Discuss the two directors' suggestions. [5]

ABC decides to issue a debenture stock which is quoted on the stock exchange. An investor is considering whether to invest in these debentures.

(ii) Describe the risks the investor would face if investing in the debentures. [5]

An alternative that the investor is considering is to participate in the loan-based crowdfunding of a start-up business, STU, via a crowdfunding website.

(iii) Describe the additional risks the investor would face if participating in the crowdfunding project rather than buying ABC's debenture stocks. [10]

[Total 20]

**END OF PAPER**

# **Subject CB1: Assignment X2**

## **2019 Examinations**

*Time allowed: 3¼ hours*

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# Subject CB1: Assignment X2

## 2019 Examinations

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Please tick here if you are allowed extra time or other special conditions in the profession's exams (if you wish to share this information):

Time to do assignment (see Note below): \_\_\_\_\_ hrs \_\_\_\_\_ mins

**Note:** Your ActEd Student Number is printed on all personal correspondence from ActEd. Quoting it will help us to process your scripts quickly. If you do not know your ActEd Student Number, please email us at [ActEd@bpp.com](mailto:ActEd@bpp.com).

Under exam conditions (delete as applicable):            yes / nearly / no

**Your ActEd Student Number is not the same as your IFoA Actuarial Reference Number or ARN.**

**Note:** If you take more than 3¼ hours, you should indicate how much you completed within this time so that the marker can provide useful feedback on your progress.

**Score and grade for this assignment (to be completed by marker):**

MCQ	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Total	
— 20	— 5	— 5	— 5	— 5	— 5	— 5	— 5	— 5	— 20	— 20	— 100	= _____%

Grade:    A    B    C    D    E

Marker's initials: \_\_\_\_\_

**Please tick the following checklist so that your script can be marked quickly. Have you:**

- [    ]      Checked that you are using the latest version of the assignments, *ie* 2019 for the sessions leading to the 2019 exams?
- [    ]      Written your full name in the box above?
- [    ]      Completed your ActEd Student Number in the box above?
- [    ]      Recorded your attempt conditions?
- [    ]      Numbered all pages of your script (excluding this cover sheet)?
- [    ]      Written the total number of pages (excluding the cover sheet) in the space above?
- [    ]      Included your Marking Voucher or ordered Series X Marking?
- [    ]      Rated your X1 marker at [www.ActEd.co.uk/marking?](http://www.ActEd.co.uk/marking?)

Please follow the instructions on the previous page when submitting your script for marking.

## Feedback from marker

### ***Notes on marker's section***

The main objective of marking is to provide specific advice on how to improve your chances of success in the exam. The most useful aspect of the marking is the comments the marker makes throughout the script, however you will also be given a percentage score and the band into which that score falls. Each assignment tests only part of the course and hence does not give a complete indication of your likely overall success in the exam. However it provides a good indicator of your understanding of the material tested and the progress you are making with your studies:

A = Excellent progress    B = Good progress    C = Average progress  
D = Below average progress    E = Well below average progress

**Please note that you can provide feedback on the marking of this assignment at:**

[www.ActEd.co.uk/marking](http://www.ActEd.co.uk/marking)



## CB1 Multiple-Choice Answer Sheet

Please use this answer sheet to answer the multiple-choice questions. Instructions are given below. In addition, your marker will be happy to give you help on your approach to answering the multiple-choice questions. If you would like such comments, please include your workings on a separate sheet.

### Instructions

Mark your answers by striking a line through the relevant box [—]. Do not mark outside the area. For example:

1	[—]	[B]	[C]	[D]
---	-----	-----	-----	-----

If you make a mistake, mark **X** through your wrong answer and mark the correct box with a [—]. For example:

2	[X]	[B]	[—]	[D]
---	-----	-----	-----	-----

	A	B	C	D	
1	[A]	[B]	[C]	[D]	<i>Marker use only</i>
2	[A]	[B]	[C]	[D]	
3	[A]	[B]	[C]	[D]	
4	[A]	[B]	[C]	[D]	
5	[A]	[B]	[C]	[D]	
6	[A]	[B]	[C]	[D]	
7	[A]	[B]	[C]	[D]	
8	[A]	[B]	[C]	[D]	
9	[A]	[B]	[C]	[D]	
10	[A]	[B]	[C]	[D]	
					Total:

*The assignment starts on the next page.*

For Questions 2.1 to 2.10 indicate on your answer sheet which one of the answers A, B, C or D is correct.

**Having your assignment marked? Your marker will be happy to give you help on your approach to answering the multiple-choice questions if you include your workings.**

- X2.1** On 1 January Nafco Ltd bought some machinery for £70,000. The machinery will be depreciated using the reducing balance method over ten years, assuming a scrap value of £5,000 at the end of the period. What was the value shown in the statement of financial position at the end of the year in respect of this machinery?
- A £63,500
  - B £63,000
  - C £53,763
  - D £16,237
- [2]
- X2.2** Which of the following is NOT a requirement of the UK Companies Act as part of a listed company's annual report and accounts?
- A cashflow statement
  - B notes to the accounts
  - C statement of profit or loss
  - D statement of financial position
- [2]
- X2.3** Information provided in a company's accounts is deemed to be 'relevant' if it:
- A is material in the view of the company's directors.
  - B is neutral and free from bias.
  - C informs decisions taken by users of the financial statements.
  - D is a historical fact.
- [2]
- X2.4** Which of the following changes in working capital will result in an improvement in a company's net cash inflow from operating activities?
- A increase in trade payables
  - B increase in inventories
  - C increase in trade receivables
  - D decrease in other current liabilities
- [2]
- X2.5** Which of the following would NOT be included in a firm's equity?
- A retained earnings
  - B dividends
  - C share capital
  - D the upward revaluation of a non-current asset
- [2]

- X2.6** An entry for 'goodwill' might appear in:
- A the unconsolidated statement of financial position of a subsidiary company.
  - B the consolidated statement of financial position of a parent company with a subsidiary.
  - C the unconsolidated statement of financial position of a parent company with a subsidiary.
  - D the consolidated statement of financial position of a parent company with an associate interest. [2]
- X2.7** Last year Company X made profits before taxation of £85m. Throughout the year, the company had a mortgage of £50m on which £6m interest was paid, and an 8% unsecured loan stock with interest payments of £10m. The interest cover on the unsecured loan stock was:
- A 5.3
  - B 6.3
  - C 8.5
  - D 10.1 [2]
- X2.8** The dividend yield for Arrow plc is currently 3.4%. A year ago it was 1.7%. Which of the following is consistent with this increase?
- A Earnings per share and dividend cover have remained constant. The share price has increased by 100% over the past year.
  - B Earnings per share have fallen by 50% over the past year. Dividend cover and the share price have remained constant.
  - C Earnings per share and the share price have remained constant. Dividend cover has fallen by 50% over the past year.
  - D Earnings per share and the share price have increased by 100% over the past year. Dividend cover has remained the same. [2]
- X2.9** Techno Holdings has shares in three companies. It holds 25% of Wizz's shares and has the right to choose one of the four directors of the company. Its 55% holding in Wam enables it to control the board of directors. It holds 18% of Watt's shares and has one of the three seats on the board. Which are associate companies of Techno Holdings?
- A Wizz, Wam and Watt
  - B Wizz and Wam only
  - C Wizz and Watt only
  - D Wizz only [2]
- X2.10** Unlike tangible assets, an intangible asset:
- A cannot suffer depreciation of its value over time.
  - B does not have a value.
  - C can be created when one company takes over another company.
  - D cannot be sold. [2]

- X2.11** Explain how the accounting concept of materiality may improve the usefulness of the published financial statements. [5]
- X2.12** Describe, using numerical examples, the two main methods of charging depreciation in a company's accounts. [5]
- X2.13** Explain the main purpose of the external auditors' report and describe the four possible variations to the standard wording of the auditors' report. [5]
- X2.14** Sheldon plc's equity at 31 December 20Y6 was as follows:

	<i>£000s</i>
Share capital (25p shares)	200
Share premium account	70
Retained earnings reserve	<u>80</u>
Total equity	<u>350</u>

During 20Y7, the following occurred, all of which are reflected in the statement of financial position at 31 December 20Y7:

- payment of the 20Y6 dividend of £25,000 in April 20Y7 (unapproved at 31 December 20Y6 and approved on 31 March 20Y7)
- a 1-for-5 rights issue @ 55p in June 20Y7
- the company made a profit for the year to 31 December 20Y7 of £33,000
- the factory (which had a cost price of £475,000 and had suffered depreciation of £75,000 to date) was revalued to £500,000.

Prepare the company's statement of the changes in equity for the year ending 31 December 20Y7. [5]

- X2.15** Explain how a parent company Alpha would prepare a set of consolidated accounts in relation to a company Jet in its group. [5]
- X2.16** The following information is available for Company X and Company Y:

	<i>Share price (p)</i>	<i>Earnings per share (p)</i>
Company X	100	5
Company Y	216	8

Explain what the price earnings ratios of these two companies might reveal about the market's opinions of them. [5]

**X2.17** The preparation of insurance company financial statements is complicated by the special features of insurance business. Describe the main issues to be considered when determining the profit for the year to be reported in an insurer's accounts. [5]

**X2.18** The following information is provided from the statements of financial position of Bigtop plc and Littletom Ltd. Figures in £m

	<i>Bigtop plc</i>	<i>Littletom Ltd</i>
<b>ASSETS</b>		
Non-current assets	50.0	10.0
Current assets	2.0	1.0
Total assets	<u>52.0</u>	<u>11.0</u>
<b>EQUITY AND LIABILITIES</b>		
Share capital (25p shares)	10.0	3.0
Reserves	<u>21.0</u>	<u>4.5</u>
<i>Equity</i>	<u>31.0</u>	<u>7.5</u>
Loan stock	20.0	3.0
Current liabilities	<u>1.0</u>	<u>0.5</u>
<i>Total liabilities</i>	<u>21.0</u>	<u>3.5</u>
Total equity and liabilities	<u>52.0</u>	<u>11.0</u>
<i>Market value of share</i>	<i>£1.60</i>	<i>£0.80</i>

Bigtop has agreed to buy 60% of Littletom for a package of 50p plus 3 shares in Bigtop for every 5 shares bought in Littletom.

Calculate the value of goodwill on this transaction. [5]

**X2.19** The following information has been extracted from the bookkeeping records of Z plc:

*Trial balance as at 30 June 20X2*

	£000	£000
Administrative overheads	25	
Advertising	200	
Bank		6
Dividend paid (for year to 30 June 20X1)	50	
Trade payables		54
Trade receivables	90	
Interest	120	
Land and buildings – cost	983	
Land and buildings – depreciation		45
Loan		600
Directors' remuneration	35	
Plant and machinery – cost	550	
Plant and machinery – depreciation		150
Retained earnings as at 1 July 20X1		180
Purchases	450	
Revenue		1,200
Share capital		200
Share premium		300
Inventories as at 1 July 20X1	18	
Wages – administrative staff	44	
Wages – distribution staff	30	
Wages – manufacturing	140	
	2,735	2,735

Notes

1. Inventories at 30 June 20X2 were valued at £19,000.
  2. Depreciation is to be charged on the following bases:
    - Land and buildings – 2% of cost
    - Plant and machinery – 25% of reducing balance.
  3. The corporation tax charge has been estimated at £22,000 for the year.
    - (i) Prepare Z plc's statement of profit or loss for the year ended 30 June 20X2 and its statement of financial position as at that date. These should be in a form suitable for publication insofar as this is possible from the information provided. [15]
    - (ii) Explain why Z plc's cashflow statement is also of importance in understanding the financial health of the company. [5]
- [Total 20]

- X2.20** A friend of yours is considering investing in ordinary shares in either Company A or Company B. Some information is provided below.

	Company A	Company B
Share price	180p	95p
Pre-tax profit	£420,000	£320,000
Profit after tax	£360,000	£240,000
Dividends and interest:		
Preference shareholders	£60,000	£40,000
Ordinary shareholders	£200,000	£150,000
Unsecured loan stock	£75,000	£30,000
Share capital:		
Preference shares	£1,000,000	£500,000
Ordinary shares	£1,000,000	£1,500,000
Reserves	£500,000	£1,000,000
Loan capital	£1,500,000	£500,000

Company A has 1 million £1 preference shares which have a coupon of 6%, 4 million 25p ordinary shares and £1.5 million unsecured loan stock with a coupon of 5%.

Company B has 500,000 £1 preference shares with a coupon of 8%, 6 million 25p ordinary shares and £500,000 unsecured loan stock with a coupon of 6%.

- (i) On the basis of this information, calculate suitable investment ratios that might help your friend to analyse the two companies and assess which company's shares to invest in. [12]
- (ii) Explain, with examples, why your friend should not necessarily rely on the results of such an analysis. [4]
- (iii) Outline the further information that may be needed, explaining how would it help your friend to reach a decision. [4]

[Total 20]

**END OF PAPER**



# **Subject CB1: Assignment X3**

## **2019 Examinations**

*Time allowed: 3¼ hours*

### **Instructions to the candidate**

1. *Please:*

- *attempt all of the questions, as far as possible under exam conditions*
- ***begin your answer to each question on a new page***
- ***leave at least 2cm margin on all borders***
- *write in black ink using a medium-sized nib because we will be unable to mark illegible scripts*
- *show full working to multiple-choice questions so that the marker can give helpful advice if you get any of these questions wrong*
- *note that assignment marking is not included in the price of the course materials. Please purchase Series Marking or a Marking Voucher before submitting your script.*
- *note that we only accept the current version of assignments for marking, ie you can only submit this assignment in the sessions leading to the 2019 exams.*

2. *Please **do not:***

- *use headed paper*
- *use highlighting in your script.*

### **At the end of the assignment**

If your script is being marked by ActEd, please follow the instructions on the reverse of this page.

In addition to this paper, you should have available actuarial tables and an electronic calculator.
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### **Submission for marking**

You should aim to submit this script for marking by the recommended submission date. The recommended and deadline dates for submission of this assignment are listed on the summary page at the back of this pack and on our website at [www.ActEd.co.uk](http://www.ActEd.co.uk).

Scripts received after the deadline date will not be marked, unless you are using a Marking Voucher. *It is your responsibility to ensure that scripts reach ActEd in good time.* If you are using Marking Vouchers, then please make sure that your script reaches us by the Marking Voucher deadline date to give us enough time to mark and return the script before the exam.

When submitting your script, please:

- complete the cover sheet, including the checklist
- scan your script, cover sheet (and Marking Voucher if applicable) and save as a pdf document, then email it to: [ActEdMarking@bpp.com](mailto:ActEdMarking@bpp.com)
- **do not submit a photograph of your script**
- **do not include the question paper in the scan.**

In addition, please note the following:

- Please title the email to ensure that the subject and assignment are clear *eg* 'CB1 Assignment X3 No. 12345', inserting your ActEd Student Number for 12345.
- The assignment should be scanned the **right way up** (so that it can be read normally without rotation) and as a single document. We cannot accept individual files for each page.
- Please set the resolution so that the script is legible and the resulting PDF **is less than 4 MB** in size.
- Do not protect the PDF in any way (otherwise the marker cannot return the script to ActEd, which causes delays).
- Please include the 'feedback from marker' sheet when scanning.
- Before emailing to ActEd, please check that your scanned assignment includes all pages and conforms to the above.

# Subject CB1: Assignment X3

## 2019 Examinations

Please complete the following information:

Name:

Number of following pages: \_\_\_\_\_

Please put a tick in this box if you have solutions and a cross if you do not:

ActEd Student Number (see Note below):

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Please tick here if you are allowed extra time or other special conditions in the profession's exams (if you wish to share this information):

Time to do assignment (see Note below): \_\_\_\_\_ hrs \_\_\_\_\_ mins

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Under exam conditions (delete as applicable):            yes / nearly / no

**Your ActEd Student Number is not the same as your IFoA Actuarial Reference Number or ARN.**

**Note:** If you take more than 3¼ hours, you should indicate how much you completed within this time so that the marker can provide useful feedback on your progress.

**Score and grade for this assignment (to be completed by marker):**

MCQ	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Total	
— 20	— 5	— 5	— 5	— 5	— 5	— 5	— 5	— 5	— 20	— 20	— 100	= _____%

**Grade:**    A   B   C   D   E

**Marker's initials:** \_\_\_\_\_

**Please tick the following checklist so that your script can be marked quickly. Have you:**

- [    ]      Checked that you are using the latest version of the assignments, *ie* 2019 for the sessions leading to the 2019 exams?
- [    ]      Written your full name in the box above?
- [    ]      Completed your ActEd Student Number in the box above?
- [    ]      Recorded your attempt conditions?
- [    ]      Numbered all pages of your script (excluding this cover sheet)?
- [    ]      Written the total number of pages (excluding the cover sheet) in the space above?
- [    ]      Included your Marking Voucher or ordered Series X Marking?
- [    ]      Rated your X2 marker at [www.ActEd.co.uk/marking?](http://www.ActEd.co.uk/marking?)

Please follow the instructions on the previous page when submitting your script for marking.

## Feedback from marker

### ***Notes on marker's section***

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A = Excellent progress    B = Good progress    C = Average progress  
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## CB1 Multiple-Choice Answer Sheet

Please use this answer sheet to answer the multiple-choice questions. Instructions are given below. In addition, your marker will be happy to give you help on your approach to answering the multiple-choice questions. If you would like such comments, please include your workings on a separate sheet.

### Instructions

Mark your answers by striking a line through the relevant box [—]. Do not mark outside the area. For example:

1	[—]	[B]	[C]	[D]
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If you make a mistake, mark **X** through your wrong answer and mark the correct box with a [—]. For example:

2	[X]	[B]	[—]	[D]
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	A	B	C	D	
1	[A]	[B]	[C]	[D]	<i>Marker use only</i>
2	[A]	[B]	[C]	[D]	
3	[A]	[B]	[C]	[D]	
4	[A]	[B]	[C]	[D]	
5	[A]	[B]	[C]	[D]	
6	[A]	[B]	[C]	[D]	
7	[A]	[B]	[C]	[D]	
8	[A]	[B]	[C]	[D]	
9	[A]	[B]	[C]	[D]	
10	[A]	[B]	[C]	[D]	
					Total:

*The assignment starts on the next page.*

For Questions 3.1 to 3.10 indicate on your answer sheet which one of the answers A, B, C or D is correct.

**Having your assignment marked? Your marker will be happy to give you help on your approach to answering the multiple-choice questions if you include your workings.**

- X3.1** A share has a beta of 1.5 relative to the diversified market portfolio. If the risk-free rate of interest over the previous year has been 5%, and the market index has risen 3%, by how much would you expect the share price to have risen?
- A 9.5%  
B 4.5%  
C 2.0%  
D 0.5%
- [2]
- X3.2** The structure of company XYZ is such that the company has \$75 million of shareholders' capital and reserves and \$25 million market value of outstanding debt. These funds are invested in a diversified portfolio of assets, which are expected to earn a return no more or less than the market. The risk-free rate of return in the market is 6% and investors expect the market to give a return of 12%.
- Assuming that the company can borrow at the risk-free rate and that there are no taxes, the return expected from the equity shares in XYZ is:
- A 10.5%.  
B 12%.  
C 14%.  
D 15.5%.
- [2]
- X3.3** Which of the following statements relating to the payback period approach to assessing cashflows is correct?
- A A project with a longer payback period will be preferred.  
B The payback period is of most value when payback periods are greater than 3 years.  
C Payback period tends to be most important for larger companies.  
D none of the above
- [2]
- X3.4** Which of the following is the least likely motive for a leveraged buyout (LBO)?
- A to profit by selling off a firm's assets  
B to put a new management team in place  
C to take a private company into public ownership  
D to benefit from the tax relief on debt finance
- [2]

- X3.5** Which of the following influences is most likely to result in a company having relatively low financial gearing?
- A intangible assets being a high proportion of total assets
  - B high corporation tax rates
  - C high taxable profits
  - D expensive share issue costs [2]
- X3.6** Which of the following statements is false?
- A If a project has a large amount of systematic risk, then the discount rate used to value the cashflows should be raised to reflect the risk.
  - B A large, well-diversified portfolio of projects should have little or no specific risk.
  - C No amount of diversification can remove the systematic risk involved in a project.
  - D Specific risk arises because of the volatility of the market as a whole. [2]
- X3.7** Which of the following would be examples of specific risk for a large domestic house building company?
- A inflation
  - B interest rates
  - C regional variations in house prices
  - D recession [2]
- X3.8** Company JKL is considering using commercial paper to finance a seasonal need for cash. It is considering issuing £25m of 90-day commercial paper at 1.5% *pa*. The broker's fee for selling this issue would be £50,000. What would be Company JKL's annual financing cost of this issue?
- A 1.5% *pa*
  - B 1.7% *pa*
  - C 2.3% *pa*
  - D 2.5% *pa* [2]
- X3.9** Which of the following is NOT a likely consequence of an increase in a company's gearing?
- A The company will benefit from the tax advantages of debt finance.
  - B The company's credit rating will improve.
  - C The return to shareholders of the company will increase.
  - D The company's weighted average cost of capital will fall. [2]
- X3.10** When analysing a project, systematic risk should be allowed for by using:
- A RAMP (Risk Assessment and Management of Projects).
  - B scenario testing.
  - C an appropriate discount rate.
  - D a risk matrix. [2]



**X3.11** Company Y has annual sales revenue of £150m. All of its sales are credit sales and its trade receivables turnover period is 70 days.

The company is considering introducing a 2% discount to customers who pay within 10 days. It estimates that 40% of its customers would make use of this discount and that its trade receivables turnover period would reduce to 50 days as a result.

(i) Calculate the expected reductions in Company Y's trade receivables and sales revenue if it went ahead with the proposal. [2]

(ii) Explain how Company Y should decide whether to go ahead with the proposal. [3]

[Total 5]

**X3.12** Company P is a delivery company. In the most recent year it delivered 5,000 'large' items and 40,000 'small' items. It charged \$5 to deliver a large item and \$3 to deliver a small item. Company P's total costs for the year were \$100,000. 75% of these total costs are variable, with 50% of these varying with the number of 'large' items delivered and 50% varying with the number of 'small' items.

Company P is now starting to budget for the next year. It is using an incremental approach and is assuming:

- costs and prices will increase by 2%
- it will deliver 10,000 'large' items and 35,000 'small' items'.

Construct an initial budget for next year based on these assumptions and suggest decisions Company P's management might make in light of this initial budget. [5]

**X3.13** The directors of two general insurance companies in the same country are considering a possible merger.

Describe the possible motives for the merger. [5]

**X3.14** A company has experienced volatile earnings in the last five years. The underlying business is unpredictable and risky, with profits dependent on weather conditions, and the business involves a high proportion of overseas earnings. Suggest steps the management can take to reduce the volatility in reported earnings for equity shareholders. [5]

**X3.15** You are the financial analyst for a company that experiencing a period of difficult trading. It is just breaking even and is likely to remain in this condition for the next two years until a financial restructuring package has time to take effect. The Chief Executive has asked you to advise on the dividend that should be paid by the company for the financial year just ended.

Describe the additional information you would require before beginning to answer the question. [5]

**X3.16** The company you work for has a financial policy that is written as follows:

'For expenditures of less than £1 million, any project submission that demonstrates an IRR of more than 5% can be put forward for consideration. For projects of between £1 million and £10 million the submission document has to demonstrate an IRR in excess of 10%, and for larger expenditure an IRR of greater than 15% must be demonstrated.'

Explain the disadvantages of this approach. [5]

**X3.17** You have been asked to evaluate a project that involves the purchase of machinery to manufacture a new microchip. It is likely that the microchip technology will be out of date within 3 years, and the estimated cashflows are:

<i>Time in years</i>	0	1	2	3
<i>Cashflow in \$ millions</i>	(6)	1	4	3

Assume that revenues are received at the end of each year.

Calculate and comment on the:

- (i) annual capital charge using a 3-year amortisation period
- (ii) payback period
- (iii) nominal return over three years. [5]

**X3.18** You have been asked to carry out a risk analysis on a large new project being considered by your company. The project is much larger and riskier than any single project the company has ever been involved in. It involves designing and commissioning new machinery and the use of technology in an area where the company lacks expertise. The initial investment required is about half the market capitalisation of the existing company. The chief executive is concerned about the risk that the project may lead the entire company into bankruptcy. The risk-free rate is 4% and the risk premium is 6%. The beta of the project is 0.6.

- (i) Calculate the required rate of return on the project. [2]
  - (ii) Explain why such a very risky project is required to earn a relatively low rate of return. [3]
- [Total 5]

**X3.19** Z plc is an established, successful media company. The Finance Director has raised concerns about the company's low level of gearing. Currently the company raises about one-fifth of its long-term finance from debt finance and the director feels that if the company were to increase this proportion by issuing debt to finance a share buyback operation, the return to the shareholders would increase.

- (i) Describe the methods the company could use to conduct the buyback operation and the practical problems that it might occur. [4]
- (ii) Discuss the advantages and disadvantages to shareholders of such an operation. [8]
- (iii) Discuss the possible effects on the share price of such an operation. [4]

Z plc is about to announce its dividend for the year. Historically it has paid a dividend of 5p per share. A new director has suggested that as there may be good investment opportunities in the future it is a good idea for the company to retain earnings and reduce the dividend to 3p per share.

- (iv) Comment on the director's suggestion. [4]
- [Total 20]

**X3.20** The government of a country that is about to celebrate 100 years of independence is proposing a project to build a Centennial Dome to celebrate the anniversary. The dome will be built using new construction methods and materials and will be located in an industrial site close to the centre of the capital city. It is expected to cost about \$500 million to build – financed as a public-private sector partnership (PPP) for which various private consortiums are expected to bid. It is expected to be a major tourist attraction that will attract both overseas and domestic visitors.

(i) Describe the steps necessary by those considering bidding for the PPP to identify the risks facing such a capital project. [5]

(ii) Describe five major risks facing this project together with a way in which each risk might be mitigated. [10]

The team appraising the project have identified three possible scenarios which may occur.

	<i>Scenario A</i>	<i>Scenario B</i>	<i>Scenario C</i>
Probability of occurrence	30%	50%	20%
	<i>\$m</i>	<i>\$m</i>	<i>\$m</i>
Set up costs	– 500	– 500	– 600
Net revenue			
Year 1	220	200	170
Year 2	165	150	125
Year 3	140	125	125
Year 4	110	100	100

It has been agreed that it is appropriate to evaluate the project over this four-year time horizon. Assume that the initial set-up costs occur on day 1 and that the net revenues occur at the end of each year.

(iii) Calculate the expected Net Present Value of the project, using a discount rate of 5% per annum. [3]

(iv) Comment on the profitability of the project. [2]

[Total 20]

***End of paper***

**For the session leading to the April 2019 exams – CB Subjects****Marking vouchers**

Subjects	Assignments	Mocks
CB1	6 March 2019	13 March 2019
CB2	13 March 2019	20 March 2019

**Series X Assignments**

Subjects	Assignment	Recommended submission date	Final deadline date
CB1	<b>X1</b>	<b>5 December 2018</b>	30 January 2019
CB2		<b>12 December 2018</b>	6 February 2019
CB1	<b>X2</b>	<b>9 January 2019</b>	13 February 2019
CB2		<b>16 January 2019</b>	20 February 2019
CB1	<b>X3</b>	<b>6 February 2019</b>	27 February 2019
CB2		<b>13 February 2019</b>	6 March 2019

**Mock Exams**

Subjects	Recommended submission date	Final deadline date
CB1	<b>27 February 2019</b>	13 March 2019
CB2	<b>6 March 2019</b>	20 March 2019

We encourage you to work to the recommended submission dates where possible.

If you submit your mock on the final deadline date you are likely to receive your script back less than a week before your exam.

**For the session leading to the September 2019 exams – CB Subjects****Marking vouchers**

Subjects	Assignments	Mocks
CB1	28 August 2019	4 September 2019
CB2	4 September 2019	11 September 2019

**Series X Assignments**

Subjects	Assignment	Recommended submission date	Final deadline date
CB1	<b>X1</b>	<b>19 June 2019</b>	24 July 2019
CB2		<b>26 June 2019</b>	31 July 2019
CB1	<b>X2</b>	<b>10 July 2019</b>	7 August 2019
CB2		<b>17 July 2019</b>	14 August 2019
CB1	<b>X3</b>	<b>31 July 2019</b>	21 August 2019
CB2		<b>7 August 2019</b>	28 August 2019

**Mock Exams**

Subjects	Recommended submission date	Final deadline date
CB1	<b>21 August 2019</b>	4 September 2019
CB2	<b>28 August 2019</b>	11 September 2019

We encourage you to work to the recommended submission dates where possible.

If you submit your mock on the final deadline date you are likely to receive your script back less than a week before your exam.

## Assignment X1 Solutions

### Answers to multiple-choice questions

The following table gives a summary of the answers to the multiple-choice questions. The answers are repeated below with explanations.

1	B	6	D
2	B	7	C
3	C	8	B
4	B	9	C
5	B	10	C

#### Solution X1.1

Answer = B

A and C are basic principles of taxation. D is a description of corporation tax.

The marginal rate of income tax is the proportion of an additional unit of income that is taken in tax. This *can* increase with income, *eg* income tax in the UK, but it doesn't *have* to, *ie* the authorities could choose to have constant or decreasing marginal tax rates. [2]

#### Solution X1.2

Answer = B

Only a *public* limited company must have an issued share capital of at least £50,000. [2]

#### Solution X1.3

Answer = C

The effective conversion price is the price per share that an investor (effectively) pay by buying the convertible and then converting it. [2]

#### Solution X1.4

Answer = B

Marketability and credit risk are the key differences between government bonds and loan stock which are of concern to investors. The size of a bond issue affects its marketability. Tax is, however, paid on government bond interest and corporate bond interest in the same way. [2]

**Solution X1.5**

Answer = B

This is the definition of a floating-rate note.

[2]

**Solution X1.6**

Answer = D

The question says that the security for the loan can be changed by the borrower. This refers to a floating charge, rather than a fixed charge.

[2]

**Solution X1.7**

Answer = C

Principal-agent problems arise when there is a conflict of interest between the principal, *eg* the shareholder and the agent, *eg* the manager. These conflicts can be reduced by incentives to encourage the managers to work in the interest of the shareholders, *eg* by executive share options and profit-related bonuses (A and B) ...

... and having written agreements setting out the roles and responsibilities of all stakeholders. (D)

Performance-related pay would be a greater incentive for workers and managers to strive to increase profits than payment by the hour (C).

[2]

**Solution X1.8**

Answer = B

The buyer of an option does not have an obligation and therefore cannot have a liability at expiry.

In the other cases the investor may have an obligation to settle.

For C, the writer of a call may be obliged to sell stock at a price below the current market price.

For A, the seller of a futures contract may be obliged at expiry to sell a bond at a price that is below the then current market price.

For D, the owner of a futures contract may be obliged to buy a bond at a price that is then above the current market price.

[2]



**Solution X1.9**

Answer = C

The financial manager aims to maximise shareholder wealth (or the share price) by investing in projects that display a positive net present value when discounted at the (opportunity) cost of capital. We do not discount at the cost of borrowing, but at the weighted average rate that shareholders and debt holders could have received on equivalent alternative investments. [2]

**Solution X1.10**

Answer = C

Number of issued shares before the rights issue:

$$\frac{£8m}{£0.50} = 16m$$

Current share price:

$$\frac{£60m}{16m} = £3.75$$

Rights issue price =  $(1 - 20\%) \times £3.75 = £3.00$ 

Theoretical ex-rights share price:

$$\frac{4 \times £3.75 + 1 \times £3.00}{5} = £3.60$$

[2]

**Solution X1.11**

Course Reference: *Chapter 1*.

**Shareholders vs debtholders**

Shareholders will benefit from higher profits if the company successfully pursues risky projects, and so may wish the company to undertake risky projects in pursuit of these returns. [1]

Debtholders will see no additional benefit if risky projects succeed but suffer significant consequences if they fail, and so may be less keen for the company to pursue risky ventures. [1]

**Shareholders vs directors and employees**

Shareholders are generally concerned with maximising profit and seeing a rising share price and so may aim to minimise costs, *eg* through implementing more efficient technology or outsourcing some tasks. [1]

Directors and employees however might be concerned that such actions result in their jobs being lost or their terms and conditions of employment deteriorating. [1]

**Shareholders vs the community**

The local community might be concerned about the effect of the company's policies on the physical and economic environment, *eg* traffic noise, congestion, pollution. [1]

In order to maximise profits and dividends, the shareholders may be less concerned with these impacts, preferring not to incur the costs associated with production methods that have minimise environmental impact. [1]

**Shareholders vs the government**

Shareholders will look to exploit tax minimising opportunities when choosing ventures. [1]

The government might be concerned about the company's ventures leading to insufficient contributions to this country's tax revenue. [1]

[Maximum 5]

[Markers: please give credit for other appropriate examples, *eg* shareholders vs customers or suppliers]

## Solution X1.12

Course Reference: [Chapter 1](#).

Capital budgeting relates to a company's decisions as to which real assets to purchase and which projects to invest in (the investment decision). [1]

The capital budgeting decision is likely to fall under the remit of the Chief Financial Officer (CFO) but will also involve input from many other managers in different areas of the company. [1]

Capital budgeting is of importance because:

- The choice of which project should be pursued is rarely obvious and the company is likely to face many alternative choices. [1]
- Projects may be complex to assess and there is the risk that a sub-optimal choice of project is made. [1]
- Projects are likely to involve significant financial investment, so an incorrect capital budgeting decision can have severe consequences for the company. [1]
- The capital budgeting decisions will have a significant bearing on the direction and pace of a firm's growth. [1]

[Maximum 5]

## Solution X1.13

Course Reference: [Chapter 1](#).

Leadership – Every company should be governed by an effective board which is collectively responsible for the long-term success of the company. [1]

Effectiveness – The board and its committees should have the appropriate balance of skills, experience, independence and knowledge of the company to enable them to discharge their duties effectively. [1]

Accountability – The board should present a fair, balanced and understandable assessment of the company's position and prospects. [1]

Remuneration – Executive directors' remuneration should be designed to promote the long-term success of the company. Performance-related elements should be transparent, stretching and rigorously applied. [1]

Relationship with shareholders – The board should ensure there is a dialogue with shareholders based on the mutual understanding of objectives. [1]

[Total 5]

**Solution X1.14**

*Course Reference: Chapter 2.*

The company's limited liability status means investors are likely to be much more willing to provide capital. [1]

People may be reluctant to become involved as a part owner of a partnership since they risk their entire personal wealth. [1]

This is particularly important for business ventures involving, for example, a risk of incurring substantial debts (such as insurance companies) or businesses which require large amounts of capital (such as large industrial firms). [1]

*[Markers: just one example in the above point is sufficient]*

Limited liability allows large numbers of people to invest small amounts of money with relatively minimal checking of the company's prospects. Investors can have shareholdings in a wide range of companies thus spreading their risk. [1]

The board of directors can choose to hire specialist managers to run the company on behalf of the owners, which should increase efficiency. [1]

The separation of owners and managers allows ownership to change without affecting management. [1]

Limited companies have to abide by the Companies Act and (if they are over a certain size) produce audited accounts, thus leading to greater transparency and greater credibility than other types of businesses. [1]

[Maximum 5]

**Solution X1.15**

*Course Reference: Chapter 3.*

Double taxation relief is intended to reduce the extent to which individuals and companies are taxed twice by offsetting tax paid overseas against the liability to domestic tax. [1]

Double taxation relief is available on both income and capital gains. [1]

The maximum offset is the rate of tax that would have been paid locally. [1]

For example, if a UK company has to pay 20% corporation tax and has paid only 15% tax on its profit made in Latvia then it will have to pay an additional 5% in the UK. [1]

If it has paid 25% tax on its profits in Norway, it pays no more tax in the UK. It cannot reclaim the 'additional' tax paid in Norway. [1]

[Total 5]

**Solution X1.16**

*Course Reference: Chapter 5.*

The directors should consider the likely fees payable to underwriters and assess these costs against the benefits of underwriting. [1]

The main benefit of underwriting is that it removes the risk of the company being left with unsold shares, so the directors should assess how likely this risk is to occur. [1]

The company should consider the general prospects for the stock market and the likely market perception of this issue with independent experts and advisors such as the company's investment bank. [1]

In particular, if the share price is likely to fall ahead of the rights issue then this makes the new shares less attractive to investors and bolsters the case for underwriting. [1]

The rights issue is more likely to be successful if the new shares are sold at a large discount, so the directors should consider the level of discount required to ensure a fully-subscribed issue. [1]

The reason for raising the capital is itself a factor influencing the need for underwriting. For example, if the capital is to be used to invest in a project that the market finds attractive then the share price is likely to rise and the rights issue fully subscribed, thus mitigating the need for underwriting. [1]

The directors should also consider the consequences of the issue failing to be fully subscribed. If the rights issue fails and there is no underwriting, then the project being financed could not be undertaken, and the company's reputation could be damaged, leading to a takeover bid. [1]  
[Maximum 5]

**Solution X1.17**

*Course Reference: Chapter 6.*

Non-recourse factoring is where Country Dairy sells on its trade debts to a factor in order to obtain cash payment of the accounts before their actual due date. [1]

With recourse factoring, County Dairy still receives a cash payment up front from the factor, but retains responsibility for collecting the debt. Once the debt is collected, Country Dairy settles their debt (including interest) with the factor. [1]

Advantages of non-recourse factoring for Country Dairy:

- The administration of debt collection would be undertaken by the factor. This may be useful for a small business where there are few (if any) dedicated accounts staff. [1]
- The factor takes all of the credit risk. This would help make cashflow more predictable. [1]

Advantages of recourse factoring for Country Dairy:

- Recourse factoring would be cheaper than non-recourse factoring. If Country Dairy is short of cash, it may be very price sensitive. [1]
  - All contact with customers will be through Country Dairy rather than the factor. For a small business, maintaining amicable customer relations may be very important. [1]
- [Maximum 5]

### Solution X1.18

Course Reference: [Chapter 8](#).

The company will buy currency futures contracts to hedge the exposure . These contracts would be organised by an exchange and would be cash-settled through margin payments rather than delivered. [1]

#### **Advantages**

The hedges mitigate the currency risk because:

- if the overseas currency rises relative to the domestic currency, the extra costs of buying the currency to finance the project will be offset by the profit on the futures contracts [1]
- if the overseas currency falls relative to the domestic currency, the company will make a loss on the futures contracts but it will be cheaper to finance the project. [1]

As this is an exchange-traded contract there is little or no counterparty risk. [1]

#### **Disadvantages**

Using such a hedge does not allow the company to benefit from favourable movements in the exchange rate. If the company wished to achieve this then it could buy call options instead. [1]

It is difficult to estimate the quantity of futures contracts required, as it is difficult to accurately estimate the amounts and timings of the currency required. [1]

Additional contracts may need to be purchased in future if additional currency is needed, or contracts sold if less currency is required. [1]

It is possible that the company will receive foreign currency income from the project, *ie* a natural hedge for its foreign currency costs. However in practice, it is likely that the income will be received much later than the costs will be incurred. [1]

[Maximum 5]

**Solution X1.19***Course Reference: Chapter 5.***(i) Reasons for seeking a listing**

A listing allows the company to sell new shares to a wide market and so to raise capital at the point of listing (the company can choose a method of obtaining a listing that raises capital). [1]

A listing will also make it easier to raise additional equity finance in future from an expanded shareholder base [1]

Listing will also make it easier to raise short- and long-term debt finance in future, because lenders feel safer and happier about lending money to a listed company (since it has to meet the exchange's initial and on-going requirements). [1]

Listing on a stock exchange will give existing shareholders a convenient exit route, *eg* venture capitalists who supported the company in its early years and wish to realise their investment. [1]

A listing makes the company's shares more marketable and more accurately and easily valued. [1]

This increases the attraction of holding the shares, *eg* it enables shareholders to use the shares as backing for their own borrowing. [1]

It enables XYZ to offer its shares to shareholders in a target company in a takeover bid. [1]

A listing will also make employee share participation and/or director share option schemes more attractive. [1]

Listing may improve the status of the company and increase public awareness of the company leading to increased sales. [1]

[Maximum 6]

**(ii) Disadvantages of obtaining a listing (for existing shareholders)**

Any cost that the company incurs in obtaining a listing (both initial cost and on-going cost associated with meeting the continuing obligations) is likely to reduce the returns to its shareholders. [1]

As 25% of the shares must be in public hands, the existing shareholders may see their control over the company reduced. [1]

A listing will make an unwelcome takeover harder to avoid. [1]

These disadvantages are particularly relevant if the company is current owned by a small number of people, *eg* if it is a family-owned business. [1]

[Maximum 3]

**(iii) Relative attraction of various issuing methods***Offer for sale (at a fixed price)*

In an offer for sale at a fixed price, a predetermined number of shares is offered to the general public at a specified price via an issuing house. [1]

This is the most common method for large issues and so is useful to raise lots of cash, as is the company's aim. [1]

It is also widely understood and is the most likely to attract a wide range of shareholders, so is useful to broaden the pool of shareholders, as is the company's aim. [1]

The fixed price and the underwriting by the issuing house result in the amount to be raised being known in advance, enabling XYZ to plan its use of the capital with confidence. [1]

As well as underwriting the issue, the issuing house advises the company about the timing and the pricing of the issue and oversees the whole issue. [1]

Although XYZ will need to pay the issuing house a fee, this fee may be lower than that for an offer for sale by tender, as a fixed price offer is less complex to administer and the allocation process is less complex. [1]

An offer for sale (either at a fixed price or by tender) may be a requirement of the stock exchange on which XYZ is seeking a listing. [1]

*Offer for sale (by tender)*

An offer for sale by tender is similar to an offer for sale at a fixed price but the issuing house invites applicants to submit a tender stating the number of shares that they are prepared to buy, and the price that they are prepared to pay. [1]

If the offer proves popular in the market then this method may raise more capital for XYZ than an offer for sale at a fixed price. [1]

The strike price will be set in the light of the level of demand for shares and can, if necessary, be set lower than intended in order to place all the shares, so reducing the costs of underwriting. [1]

*Offer for subscription*

Subscriptions are similar to offers for sale (at a fixed price or by tender) however, the company sells shares directly to the public and bears (at least part of) the risk of undersubscription. [1]

An offer for subscription should be cheaper to arrange than the other methods of issue because the company issues the shares directly to the public without the help of an issuing house (although it may hire an issuing house as an adviser). [1]

*Placings (selective marketing)*

With a placing, an issuing house first buys the securities from XYZ and then individually approach institutional investors such as pension funds and life offices directly to purchase the shares. [1]



This is the simplest method, and is the most common method for small issues, and so administration and marketing fees should be low. [1]

As with an offer for sale at a fixed price, the fixed issue price means that the amount to be raised is known. [1]

[Maximum 11]

### Solution X1.20

(i) **Directors' suggestions**

*Course Reference: Chapter 4.*

Debentures are loans which are secured on some or all of the assets of the company, whereas an unsecured loan has no specific security to back the loan. [1]

In the event of a coupon not being paid, debenture holders can take possession of the secured assets and sell them to meet the debt, and can take action to wind up the company if the debt is not fully covered by the asset. [1]

Such action would put the company's financial future at stake. [1]

ABC would need to check the covenants on existing debt, which may preclude issuing further secured debt. [1]

ABC would need to possess suitable assets to secure a debenture issue in order to issue one. [1]

If ABC defaults on the interest or capital payments on the loan stock, the company can be sued for the outstanding amounts, again leading to insolvency of the company. [1]

It is likely to be cheaper for the company to raise finance through debentures, since debenture holders face a lower level of default risk than holders of unsecured stock and therefore need a lower level of return as compensation. [1]

Debentures may be less marketable than unsecured stock, which would increase the level of return that needs to be provided to debenture holders to compensate. [1]

The asset providing security for the debenture may only be sold with permission from the debenture holders, giving less flexibility to the business. [1]

[Maximum 5]

**(ii) Risks in investing in debentures***Course Reference: Chapter 4.*

A debenture is generally regarded as a low-risk investment, because it is secured, with either a fixed or a floating charge, against some or all of the company's assets. [1]

There is a risk of falling profitability of the company making coupon payments more difficult and uncertain. [1]

There is a risk of falling values of the assets against which the debenture is secured. [1]

The fixed nominal payments received by the debenture holder may be eroded by inflation (*ie* there is inflation risk). [1]

The market value of the debenture will fluctuate with interest rates. If interest rates rise, the cashflows from the debenture will have to be discounted at a higher rate and hence the price will fall ... [1]

... and so investors may make a capital loss if they sell the debentures. [1]

Even though the issue is quoted, there is a risk that the investor wishes to sell the debentures but is unable to do so as debentures are less marketable than, say, government bonds (as a result of relatively small issue sizes and infrequent trading). [1]

[Maximum 5]

**(iii) Additional risks of loan-based crowdfunding***Course Reference: Chapter 7.*

STU is likely to be a higher-risk company than ABC because STU is a start-up and a high proportion of start-up businesses fail. [1]

A debenture is secured, but the crowdfunding is likely to be unsecured as STU is likely to be using the crowdfunding route as it does not have sufficient financial resources on which to secure a traditional loan. [1]

Being unsecured makes the investment higher risk as investors will rank behind any secured creditors of STU both for interest payments each year ... [1]

... and for repayment of the capital in the event of the company being wound-up. [1]

Uncertainty about the crowdfunding exercise will increase the risk. [1]

For example, there may be uncertainty about:

- if and when the crowdfunding process will start [1]
- whether it will raise the target amount. [1]

If it does not reach the target amount, the whole project may be abandoned and so the investment opportunity may not ultimately be available. [1]

The investor therefore has the risk of being unable to invest and thereby missing out on a return on their capital during the initial promotion and attempted fund-raising period. [1]

There may be no secondary market, *ie* no way for the investor to sell their investment. [1]

There is a risk that they will therefore be required to remain invested until the end of the term, even if their circumstances change and they require earlier access to their funds. [1]

Even if the crowdfunding platform does provide a way of cashing in investments, the investor may not be able to do so quickly or may be forced to accept a lower price in order to sell. [1]

If money passes via a crowdfunding website, there are risks associated with the web platform failing and becoming insolvent or of fraud. [1]

Debentures quoted on an exchange have an easily identifiable, objective valuation. The crowdfunding investment does not and this may be a risk to the investor ... [1]

... for example, if valuing assets to obtain a loan. [1]

Although the crowdfunding may be subject to some regulation (*eg* loan-based crowdfunding in the UK is regulated by the FCA), the overall level of regulation and disclosure is likely to be lower for the crowdfunding than the debenture. [1]

For example, the listing authorities may require a company issuing debentures to publish regular information, to publish its accounts in a certain format, or to disclose directors' shareholdings and dealings. [1]

[Markers: *just one example of regulation is sufficient*]

[Maximum 10]

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## Assignment X2 Solutions

### Answers to multiple-choice questions

The following table gives a summary of the answers to the multiple-choice questions. The answers are repeated below with explanations.

1	C
2	A
3	C
4	A
5	B

6	B
7	B
8	C
9	C
10	C

#### Solution X2.1

Answer = C

As depreciation is calculated using the reducing balance method, we need to find  $r$ , where:

$$r = 1 - (5,000 / 70,000)^{0.1} = 23.195\%$$

After one year, the value of machinery shown under 'non-current assets' will be:

$$= 70,000 \times (1 - 0.23195) = \text{£}53,763 \quad [2]$$

#### Solution X2.2

Answer = A

A cashflow statement is not actually required by the Companies Act, though it is regarded as good practice to produce one and is a requirement for companies who are obliged to use international accounting standards. [2]

#### Solution X2.3

Answer = C

IAS 8 states that in the absence of a specific rule to specify an appropriate accounting policy, the company should select policies on the basis that they yield information that is both relevant and reliable. Information is defined as *relevant* if it informs decisions taken by users of the financial statements. [2]

**Solution X2.4**

Answer = A

An increase in trade payables, *eg* credit offered by trade suppliers, improves the company's cash position. All the other options *reduce* cash. [2]

**Solution X2.5**

Answer = B

Dividends are a payment out of earnings and reduce the amount retained in the business. Equity includes share capital and reserves. Reserves include share premium, revaluation reserves and retained earnings. [2]

**Solution X2.6**

Answer = B

Goodwill is only shown in the consolidated accounts of a parent company with a subsidiary. [2]

**Solution X2.7**

Answer = B

Profit before tax and interest is:  $85 + 6 + 10 = \text{£}101m$ .

Interest on ULS =  $\text{£}10m$ , interest on prior ranking mortgage =  $\text{£}6m$ . Total interest =  $\text{£}16m$ .

Therefore interest cover on the ULS is  $101 \div 16$ . [2]

**Solution X2.8**

Answer = C

$$\text{Dividend yield} = \frac{\text{dividend per share}}{\text{share price}}$$

$$\text{Dividend cover} = \frac{\text{earnings per share}}{\text{dividend per share}}$$

$$\text{Therefore, dividend yield} = \frac{\text{earnings per share}}{\text{share price}} \times \frac{1}{\text{dividend cover}}$$

This expression can then be used to evaluate each of the options. For A and B the dividend yield halved, for C it doubled, and for D it remained the same. [2]

### Solution X2.9

Answer = C

An associate company is defined as one over which the parent has *significant influence* but not a *controlling interest*. Wam is therefore not an associate company – it is a subsidiary company.

A significant influence is often taken to mean a holding of between 20% and 50% of the company's shares. However, a parent company can sometimes hold this proportion of shares but have little influence. On the other hand the parent company can hold less than 20% of the shares and yet still have a significant influence.

Both Wizz and Watt are associate companies. Although Techno only holds 18% of the shares of Watt, it has 1 of the 3 seats on the board and therefore exerts a significant influence. [2]

### Solution X2.10

Answer = C

Intangible assets, *eg* patents, can be sold, and they do depreciate. Although they may be difficult and subjective to value, they do have a value.

Goodwill is an intangible asset that can be created on the consolidated statement of financial position when a parent company buys a subsidiary. [2]

### Solution X2.11

*Course Reference: Chapter 9.*

The aim of the materiality concept is to make the accounts more *user-friendly*. Information should be provided if it is important to the readers' understanding of the company's position. [1]

The usefulness is not improved by providing information too detailed for the intended user. [1]

For example, the statements can be made more useful by showing *totals* such as 'administrative expenses' instead of listing every separate expense. [1]

Also, there is very little point in making small adjustments which have no real effect on the picture portrayed by the financial statements, so the materiality concept might permit *approximations*. [1]

What is, or is not, material however does depend to some extent on the emphasis which the company will put on the relevant figures, *not just the size* of the figures. [1]

The key issue is whether the extra disclosure would help the reader of the statements get a better view of the company. For example, a relatively small regulatory fine, though a small financial amount, would still be material. [1]

The materiality concept reduces both the cost of producing financial statements and the cost of interpreting them, without loss of key information for the users of the accounts. [1]

[Maximum 5]

**Solution X2.12**

Course Reference: [Chapter 11](#).

The two main methods of depreciation are the straight line method and the reducing balance method. [1]

As an example, let us assume a vehicle is purchased at a cost of £20,000, and will have a residual value of £2,000 after ten years.

Using the *straight line method*, the annual depreciation charge is the same amount each year. [1]

The annual figure for depreciation is found as follows:

$$\text{Depreciation} = \frac{\text{cost} - \text{estimated residual value}}{\text{estimated useful life}} \quad [1]$$

Using the example:

$$\text{Depreciation} = \frac{20,000 - 2,000}{10} = \text{£}1,800 \text{ per year} \quad [1]$$

Using the *reducing balance method*, a constant percentage of the outstanding value is charged for depreciation each year. [1]

The percentage,  $r$ , is determined as follows:

$$r = 1 - \sqrt[n]{\frac{\text{estimated residual value}}{\text{cost}}} \quad [1]$$

Using the example:

$$r = 1 - \sqrt[10]{\frac{2,000}{20,000}} = 20.57\%$$

So  $r$  is 20.57% and the depreciation charged in the first year will be £4,113. [1]

[Maximum 5]

[Markers: two appropriate numerical examples must be given to award full marks.]



**Solution X2.13**

Course Reference: [Chapter 9](#).

The main purpose of the auditors' report is to add credibility to the financial statements from an independent third-party, and so reassures shareholders (and other stakeholders even though the auditors' report is addressed specifically to the shareholders). [1]

Variations to the standard wording of the auditors' report:

1. Emphasis of matter paragraphs – where a significant uncertainty exists, the auditor should point this out. It is unnecessary to issue a qualified audit report because the financial statements give a true and fair view. [1]
2. Qualified opinion – issued when a restriction has been placed on the evidence that the auditor can access or where the auditor disagrees with the treatment of a matter. [1]  
Effectively the financial statements give a true and fair view 'except for' the problem that has been described. [1]
3. Disclaimer of opinion – where the auditor is faced with such extreme uncertainty about the financial statements that it is impossible to express an opinion. [1]
4. Adverse opinion – in extreme cases of disagreement where the financial statements have been rendered so misleading that it must be stated that they do not give a true and fair view. [1]

[Maximum 5]

**Solution X2.14**

Course Reference: [Chapter 10](#).

*Revaluation of the factory*

The revaluation reserve is the different between the revalued price of the factory and its current book value, ie  $£500k - (£475k - £75k) = £100k$ . [1]

*Issue of share capital*

Current number of shares =  $£200k \div £0.25 = 800k$

Total new money raised =  $800k \times 0.2 \times £0.55 = £88k$  [1]

Share capital increases by:  $800k \times 0.2 \times £0.25 = £40k$

Share premium account increases by:  $£88k - £40k = £48k$  [1]

## Statement of changes in equity for the year ending 31 December 20Y7 for Sheldon plc

	Attributable to equity holders of the company (£000s)				
	Share capital	Share premium account	Revaluation reserve	Retained earnings reserve	Total equity
<b>Balance at 1 January 20Y7</b>	<b>200</b>	<b>70</b>	<b>0</b>	<b>80</b>	<b>350</b>
Revaluation of factory			100		100
Profit for the year				33	33
<b>Total recognised income for 20Y7</b>			<b>100</b>	<b>33</b>	<b>133</b>
Dividends paid				(25)	(25)
Issue of share capital	40	48			88
<b>Balance at 31 December 20Y7</b>	<b>240</b>	<b>118</b>	<b>100</b>	<b>88</b>	<b>546</b>

[2]

[Total 5]

[Markers: accept combined 'Other reserves' column totalling to 218 in place of separate share premium and revaluation reserve columns]

**Solution X2.15**

Course Reference: [Chapter 13](#).

Whether fully consolidated accounts need to be produced depends upon the relationship between Alpha and Jet:

- If Alpha has a controlling interest in Jet, *ie* Jet is a *subsidiary company* then fully consolidated accounts will be produced. [1]
- If Jet is an *associate company* of Alpha, it is not appropriate to include the value of Jet's assets in the consolidated accounts. [1]
- Instead, Alpha's share of Jet's income and its assets and liabilities are included as single line entries in the consolidated statement of profit or loss and statement of financial position. [1]

Where fully consolidated accounts are produced, they show the business as a single entity adding together the entries for each company's accounts. [1]

Any internal relationships, *eg* Alpha's investment in Jet, must be cancelled out to avoid double counting. [1]

If Alpha paid more than the book value for Jet's shares, then, when consolidated, the difference would be recorded as an intangible non-current asset (*goodwill*) of the group. [1]

If Alpha does not own all of Jet's shares, then the rest of the shareholding is termed the *non-controlling interest*, which must appear separately in the equity section of the statement of financial position, after the capital and reserves attributable to equity holders.

[1]

[Maximum 5]

### Solution X2.16

Course Reference: [Chapter 14](#).

Price earnings ratios:

$$\text{Company X} = \frac{100}{5} = 20 \qquad \text{Company Y} = \frac{216}{8} = 27 \qquad [1]$$

The higher price earnings ratio of Company Y is a sign that the market is prepared to pay a higher price for a given level of current earnings. [1]

These differences may be due to the two companies being in *different sectors* of the market (eg a utility company and a general insurer) where the *risks and growth* prospects are different. [1]

Alternatively there may be some *one-off distortion* to one of the earnings figures, eg exceptional items over the past year that are not expected to recur in future. [1]

If the two companies are in a similar sector and there are no one-off distortions, possible reasons for this difference in price earnings ratio are:

- The earnings of Company Y are more attractive for some reason. For example they may be lower risk, more stable, or have a higher level of cover. [1]
- The earnings of Company Y may be more attractive because the growth prospects for Company Y are better and so its earnings are expected to grow more rapidly than those of Company X. [1]
- Alternatively, the higher price earnings ratio of Company Y may be an indication that the share price of Y is too high or that the share price of Company X is too low. [1]

[Maximum 5]

**Solution X2.17**

Course Reference: [Chapter 13](#).

The timing of the reporting of profit is very different for an insurance company compared with a normal trading company. The insurance contracts are often long-term, longer than the accounting period. [1]

The insurer receives a premium for a policy that might last a number of years. It might have no claims in the first year but this does not mean that all of the premium received is classed as profit, because the company must make provision, *ie* set up reserves, for future claims from this policy. [1]

Future claims are unknown and so reserves need to be estimated based on past history and/or expert judgement. [1]

If the insurer underestimates reserves required and so declares profit early and transfers it to the shareholders then it may not be able to meet its future liabilities. [1]

In order to avoid becoming insolvent, the insurance company is likely to be prudent in its approach to estimating future liabilities. It is likely to overestimate its future liabilities and therefore current profit is likely to be understated. [1]

This practice conflicts with the realistic approach used by most companies and with the requirement to provide a 'true and fair' view of the position of the company. [1]

[Maximum 5]

**Solution X2.18**

Course Reference: [Chapter 13](#).

Goodwill is defined as the amount paid in excess of the nominal value of the shares and reserves acquired. [1]

The nominal value of the shares and reserves in Littletom Ltd is £7.5m. Bigtop plc is going to buy 60% of the company's share capital and reserves. Therefore, the book value of the asset acquired is 60% of £7.5m, *ie* £4.5m. [1]

The share capital of Littletom Ltd is made up of 12 million 25p shares. Bigtop plc will therefore buy 7.2 million shares. [1]

It will pay  $£0.50 + (3 \times £1.60) = £5.30$  for every 5 shares it buys. It will therefore pay:

$$\frac{7.2m}{5} \times £5.30 = £7.632m \quad [1]$$

The goodwill is therefore:

$$£7.632m - £4.5m = £3.132m \quad [1]$$

[Total 5]

**Solution X2.19**

*Course Reference: Chapters 10 and 12. Part (i) of this question is part of a past exam question. It has been updated in line with changes in the Core Reading, reflecting changes in accounting practice since the time it originally appeared.*

*Markers: where possible follow through mistakes to see whether or not the correct principles are being used, and award marks where appropriate.*

**(i) Construction of the statement of profit or loss and the statement of financial position***Statement of profit or loss for Z plc for the year ending 30 June 20X2*

	£000s	£000s	
Revenue		1,200.00	
Cost of sales			
Cost of stock used <sup>1</sup>	449.00		
Wages – manufacturing	140.00		
Depreciation <sup>2</sup>	<u>119.66</u>		
		<u>(708.66)</u>	
Gross profit		491.34	[1]
Administrative expenses <sup>3</sup>		(104.00)	
Distribution costs <sup>4</sup>		<u>(230.00)</u>	
Operating profit		157.34	[1]
Interest on loan stock		<u>(120.00)</u>	
Profit before tax		37.34	
Tax		<u>(22.00)</u>	
Profit for the year attributable to equity holders		<u>15.34</u>	[1]

A dividend of £50,000 was paid to ordinary shareholders during the year in respect of the year ended 30 June 20X1. [1]

**Notes:**

- Opening stock + Purchases – Closing stock = 18 + 450 – 19 = 449 [1]
- Depreciation
  - Land and buildings = 2% of 983 = 19.66 [1]
  - Plant and machinery = 25% of 400 = 100 [1]
- Administrative expenses
  - Administrative overheads 25
  - Wages – administrative staff 44
  - Directors' remuneration 35
  - Total 104 [1]
- Distribution costs
  - Advertising 200
  - Wages – distribution staff 30
  - Total 230 [1]

[Maximum for statement of profit or loss, 8]

*Statement of financial position for Z plc as at 30 June 20X2*

**ASSETS**

<i>Non-current assets</i>	£000s	
Land and buildings <sup>1</sup>	918.34	
Plant & machinery <sup>2</sup>	<u>300.00</u>	
	1,218.34	
 <i>Current assets</i>		
Inventories	19.00	
Trade receivables	<u>90.00</u>	
	<u>109.00</u>	
<b>Total assets</b>	<b><u>1,327.34</u></b>	[1]

**EQUITY AND LIABILITIES***Equity*

Ordinary share capital	200.00	
Share premium account	300.00	
Retained earnings <sup>3</sup>	<u>145.34</u>	
<b>Total equity</b>	645.34	[1]

*Non-current liabilities*

Loan stock	600.00	
 <i>Current liabilities</i>		
Bank overdraft	6.00	
Trade payables	54.00	
Tax	<u>22.00</u>	
	<u>82.00</u>	
<b>Total liabilities</b>	<b><u>682.00</u></b>	[1]
<b>Total equity and liabilities</b>	<b><u>1,327.34</u></b>	[1]

## Notes:

1. Land and buildings = 983 – 45 – 19.66 = 918.34 [1]
2. Plant and machinery = 550 – 150 – 100 = 300 [1]
3. Retained earnings = 180 – 50 + 15.34 = 145.34 [1]

[Total for statement of financial position, 7]

[Total 15]

(ii) **Purpose of a cashflow statement**

The cashflow statement shows the sources and uses of the cash generated by Z during the year, which is useful when assessing whether the company can continue in its present shape. [1]

Cash (and hence the cashflow statement) is important because:

- If Z has too little cash, it could fail. The cashflow statement will highlight the source of these problems. [1]
- On the other hand, if Z has too much cash, it is not making the best use of its resources. The cashflow statement will help the company to consider the reasons for the 'cash pile' and to assess its options. [1]

The cashflow statement highlights the *differences between profit and cash*. A company can be profitable but not sufficiently liquid. [1]

The statement of profit or loss is based on the realisation and accruals concepts which can give a very misleading description of the company's financial health. [1]

The statement of profit or loss is not affected by some transactions such as acquisitions and disposals of non-current assets and changes in loan and equity finance, yet these transactions can have a major effect on the company's cash balances. [1]

The cashflow statement offers an *objective statement* of Z's cash position whereas the statement of profit or loss and the statement of financial position can be manipulated by altering the accounting treatment of particular items and transactions. [1]

[Maximum 5]

**Solution X2.20**

Course Reference: Chapters 14 and 15.

(i) **Investment ratios and analysis**

Ratio	Company A	Company B
Earnings per ordinary share (see Note 1) $= \frac{\text{earnings available for ordinary shareholders}}{\text{number of ordinary shares}}$	$\frac{£300,000}{4,000,000}$ = 7.5p	$\frac{£200,000}{6,000,000}$ = 3.3p
Price earnings ratio $= \frac{\text{market price}}{\text{earnings per share}}$	$\frac{180}{7.5}$ = 24	$\frac{95}{3.33}$ = 28.5
Net dividend yield (see Note 2) $= \frac{\text{net dividend per share}}{\text{market price}}$	$\frac{5}{180}$ = 2.8%	$\frac{2.5}{95}$ = 2.6%
Dividend cover $= \frac{\text{earnings per share}}{\text{dividend per share}}$	$\frac{7.5}{5}$ = 1.5	$\frac{3.33}{2.5}$ = 1.33
Return on capital employed (see Note 3) $= \frac{\text{profit before tax}}{\text{share capital and reserves}}$	$\frac{420,000}{2,500,000}$ = 16.8%	$\frac{320,000}{3,000,000}$ = 10.7%
Return on capital employed (alternative) $= \frac{\text{profit before tax and interest}}{\text{share capital and reserves + long-term debt}}$	$\frac{495,000}{4,000,000}$ = 12.4%	$\frac{350,000}{3,500,000}$ = 10%
Net asset value $= \frac{\text{ordinary shareholders' equity} - \text{intangibles}}{\text{number of ordinary shares}}$	$\frac{1,500,000}{4,000,000}$ = 37.5p	$\frac{2,500,000}{6,000,000}$ = 41.7p
Asset gearing (see Note 4) $= \frac{\text{debt}}{\text{equity}}$	$\frac{1,500,000}{2,500,000}$ = 60%	$\frac{500,000}{3,000,000}$ = 16.7%
Asset gearing (alternative) $= \frac{\text{debt}}{\text{debt} + \text{equity}}$	$\frac{1.5}{1.5+2.5}$ = 37.5%	$\frac{0.5}{2.5+1}$ = 14.3%



## Notes:

1. The earnings for ordinary shareholders of Company A has been calculated as £360,000 less the amount payable to preference shareholders of £60,000.
2. The net dividend per share for Company A has been calculated as:

$$\frac{\text{net dividend}}{\text{number of shares}} = \frac{200,000}{4,000,000} = 5p$$

3. We have included the return on preference shares in this definition. It would have been acceptable to define a ratio only for the ordinary shares of:

$$= \frac{\text{net profit before tax} - \text{preference payment}}{\text{ordinary share capital and reserves}}$$

4. To be consistent with the definitions used in ROCE, preference shares are included as part of equity. It would have been acceptable to treat preference shares as debt if they had been treated as debt in the calculation of ROCE.

[1 mark per pair of ratio calculations to a maximum of 6]

*Comments**Price earnings ratio*

Company A has a lower price earnings ratio than Company B. This means that the investor will pay more for each £ of earnings for Company B. Company A therefore seems a cheaper share. [1]

This could imply any of the following:

- Company A has poorer growth prospects than Company B
- Company A's shares are more risky than Company B's shares
- Company A's earnings are unusually high or Company B's earnings are unusually low
- Company A is undervalued or Company B is overvalued.

[1 mark for any 2 of these bullet points]

*Dividend yield*

Company A has a slightly higher dividend yield, *ie* the income return is a higher proportion of the market price of the share. This supports the view that Company A looks slightly cheaper. [1]

Company A is achieving a higher dividend yield on a lower payout ratio, *ie* Company A is not achieving a higher dividend yield by simply paying a higher proportion of its earnings as dividend. [1]

*Dividend cover*

Company A has a higher dividend cover (and thus a lower payout ratio) than Company B. Thus Company A is retaining more of its profits within the company and distributing less to its shareholders than Company B. This might indicate higher future earnings growth. [1]

*Return on capital employed*

Company A has a higher return on capital than Company B. Company A is using its assets more effectively to generate profits. [1]

*Net asset value*

Company A has a lower net asset value per ordinary share (NAV) than Company B. This is particularly noticeable if we look at the ratio of net asset value and market price per share. [1]

If the company were wound up (at the present time), a shareholder in Company B may receive more than a shareholder in Company A. [1]

This might also mean Company B might be a takeover candidate (although unlikely whilst NAV remains below the market price). [1]

*Gearing ratio*

Company A has a higher gearing ratio than Company B (and considerably above the recommended maximum of 0.4 using the  $= \frac{\text{debt}}{\text{debt} + \text{equity}}$  basis). The additional funds made available by debt finance would give Company A greater potential for growth. [1]

However, the higher gearing also makes it more vulnerable to the downturn in the business cycle and reduces the funds available to shareholders if the company were to be wound up. [1]

*Conclusion*

Thus Company A is a highly geared company that gives greater priority to growth and earns a higher return on capital. It has a lower payout ratio yet has a higher dividend yield – this is in addition to the prospect of a greater capital gain. [1]

Company A might be chosen if the investor seeks growth and can handle the higher risk involved. Company A also looks cheaper (probably because of the higher risk). [1]

Company B appears to be a slower growing company, which takes fewer risks but offers stability and better asset backing, and might be preferable for an investor requiring security. [1]

[Maximum 6 for comments]

[Total 12]

**(ii) Problems in making comparisons**

There is a great deal of subjectivity in the accounts. For example:

- the approach used to depreciate non-current assets or the treatment of intangibles, so the accounting data is not strictly comparable. [1]
- different interpretation and application of the accounting standards. [1]

The use of ratios to make comparisons can divert attention from the wider view of the company. In this case, we have very little information to go on and should not place too much emphasis on the ratio analysis. [1]

Companies operating in different sectors would be expected to have different capital structures and different accounting ratios. For example, an advertising agency is likely to be more lowly geared than a car manufacturer. [1]

Companies in different sectors are exposed to different conditions. For example, a car manufacturer is likely to be more exposed to recessions than a food manufacturer. [1]

One or both of the firms might have engaged in creative accounting, for example a sale might have been brought forward in order to enhance the profit figure for the year. [1]

Care must be taken in using the figures as a basis for predictions since the accounts do not give any indication of the company's future plans. A full reading of the annual report might give the user some indication. [1]

[Maximum 4]

**(iii) Additional information required**

The following information will be useful:

- Other accounting information to enable further ratios to be calculated, *eg* profit margin and the asset utilisation ratio, which would give us further insights into the profitability and efficiency of the businesses. [1]
- Information on the industry sectors the companies are in and whether they are in the same industry. [1]
- The characteristics of the industry / industries and whether there are any special conditions that have affected or are likely to affect the performance of the companies. [1]
- Historic performance to determine whether the current level of performance is typical. [1]
- Background information on the companies, *eg* the quality of management/staff/product in each company. [1]
- Information on the prospects for the two companies, *eg* business plans and expected performance in the commercial, economic, political and technological climate ahead. [1]
- Information on the preferences of the investor *eg* whether your friend prefers a regular dividend or a capital gain and your friend's attitude to risk. [1]

[Maximum 4]

*Markers: reward reasonable suggestions.*

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## Assignment X3 Solutions

### Answers to multiple-choice questions

The following table gives a summary of the answers to the multiple-choice questions. The answers are repeated below with explanations.

1	C	6	D
2	C	7	C
3	D	8	C
4	C	9	B
5	A	10	C

#### Solution X3.1

Answer = C

The return on the share would be described by the following formula:

$$\begin{aligned}
 r_i &= r_f + \beta_i(r_m - r_f) \\
 &= 5\% + 1.5 \times (3\% - 5\%) \\
 &= 2\%
 \end{aligned}$$

[2]

#### Solution X3.2

Answer = C

In a tax-free world, the following formula links the returns:

$$\text{return on assets} = \frac{D}{D+E}(\text{return on debt}) + \frac{E}{D+E}(\text{return on equity})$$

$$\Rightarrow 12\% = (0.25 \times 6\%) + (0.75 \times \text{return on equity})$$

Thus: return on equity = 14%

Alternatively, we could calculate the return on equity directly as  $r_f + \beta_g(r_m - r_f)$ .

We know that  $r_m = 12\%$ ,  $r_f = 6\%$ . We also know that the assets of the company are invested to give a market return.

Therefore, we can say that the beta of the assets must be 1 and  $\beta_u$ , the ungeared beta, is also 1. However, since there is debt, we adjust the beta according to the following formula:

$$\beta_g = \beta_u \times \left[ 1 + \frac{D}{E}(1-t) \right] = 1 \times \left[ 1 + \frac{25}{75}(1-0) \right] = 1.333$$

where  $\beta_g$  is the geared equity beta.

So, the return on the geared shares is:

$$r_f + \beta_g \times (r_m - r_f) = 6\% + 1.333 \times (12\% - 6\%) = 14\% \quad [2]$$

### Solution X3.3

Answer = D

A project with a *shorter* payback period will be preferred. The payback period approach is of most value when payback periods are less than 3 years due to the impact of discounting. The payback period approach tends to be most important for *small* companies which often struggle most with cashflow issues. So all of answers A to C are incorrect. [2]

### Solution X3.4

Answer = C

An LBO will result in a public company de-listing and becoming private. [2]

### Solution X3.5

Answer = A

A company that has a high proportion of intangible assets is likely to have relatively few tangible assets to act as security for a loan.

All of B, C and D would lead to debt being more attractive and so tend to suggest a higher level of gearing. Increased debt interest reduces taxable profits and therefore reduces the tax paid by the company. This becomes more important as tax rates rise. [2]

### Solution X3.6

Answer = D

*Systematic* risk arises because of the volatility of the market as a whole. [2]

**Solution X3.7**

Answer = C

Only the effects of regional price variation can be diversified away by investing in a large portfolio of risky assets and projects. [2]

**Solution X3.8**

Answer = C

$$\text{Interest} = 0.015 \times £25,000,000 \times \frac{90}{365} = £92,466$$

$$\text{Usable funds} = £25,000,000 - \text{interest} - \text{broker's fee} = £24,857,534$$

$$\begin{aligned} \text{Annual financing costs} &= \frac{\text{interest} + \text{broker's fee}}{\text{usable funds}} \times \frac{365}{90} \\ &= \frac{92,466 + 50,000}{24,857,534} \times \frac{365}{90} \\ &= 2.3\% \text{ pa} \end{aligned}$$

[2]

**Solution X3.9**

Answer = B

An increase in gearing increases the risk of default and thus the company's credit rating will fall. It will have to pay more for its debt finance. [2]

**Solution X3.10**

Answer = C

Systematic risk is allowed for by using an appropriate discount rate. Specific risk is allowed for in the other ways mentioned in the question. [2]

**Solution X3.11**

Course Reference: [Chapter 16](#).

**(i) Reductions in trade receivables and sales revenue**

$$\text{trade receivables turnover period} = \frac{\text{trade receivables}}{\text{creditsales}} \times 365$$

Therefore, a 20 day reduction in the trade receivables turnover period reduces trade receivables by:

$$\begin{aligned} & \frac{\text{creditsales}}{365} \times \text{reduction in trade receivables turnover period} \\ & = \frac{\text{£150m}}{365} \times 20 = \text{£8.2m} \end{aligned} \quad [1]$$

$$\begin{aligned} \text{Reduction in sales revenue} &= \text{credit sales} \times \text{discount} \times \text{proportion of customers using discount} \\ &= \text{£150m} \times 0.02 \times 0.4 = \text{£1.2m} \end{aligned} \quad [1]$$

[Total 2]

**(ii) Company Y's decision**

Company Y should go ahead with the proposal if the expected benefits of offering the discount exceed the expected costs, *ie* £1.2m of lost sales revenue. [1]

Company Y may consider that the discount offer, which is equivalent to an annual interest rate of  $1.02^{365/20} = 44\% \text{ pa}$  is too high. [1]

Company Y would benefit from not having to finance £8.2m of trade receivables. It might evaluate this as the interest gained by having this amount in cash on deposit or as the cost of borrowing this amount. [1]

However, other factors may also affect the decision on whether to implement the proposal:

- There may be further benefits, *eg* the company may make additional sales if it offers the discount. [1]
- There may be further costs, *eg* some customers may take the discount, but still pay late on the assumption that Company Y will not chase them and will still let benefit from the discount. [1]
- The level of confidence Company Y has in its assumptions. [1]

[Maximum 3]



**Solution X3.12**

Course Reference: *Chapter 17*.

$$\text{Budget revenue} = 10,000 \times 5 \times 1.02 + 35,000 \times 3 \times 1.02 = \$158,100 \quad [1]$$

Budget costs are made up of:

$$\text{fixed costs} = 100,000 \times 0.25 \times 1.02 = \$25,500$$

$$\text{large item related variable costs} = 100,000 \times 0.75 \times 0.5 \times 1.02 \times \frac{10,000}{5,000} = \$76,500$$

$$\text{small item related variable costs} = 100,000 \times 0.75 \times 0.5 \times 1.02 \times \frac{35,000}{40,000} = \$33,469$$

$$\text{So, total costs} = \$25,500 + \$76,500 + \$33,469 = \$135,469 \quad [1]$$

$$\text{and budgeted operating profit} = \$158,100 - \$135,469 = \$22,631 \quad [1]$$

$$\text{For comparison, last year's profit} = 5 \times 5,000 + 3 \times 40,000 - 100,000 = \$45,000 \quad [1]$$

Decisions Company P's managements might make in light of this include:

- changing the prices of the two types of item by different amounts, in particular increasing the price of large items by more. At present, considering variable cost alone, the large items are making a loss of  $5,000 \times \$5 - \$100,000 \times 0.75 \times 0.5 = -\$12,500$
- implementing efficiency savings to reduce costs
- implementing attempts to increase sales volumes, *eg* more marketing, to benefit from economies of scale
- changing the mix between large and small items, *eg* by targeted marketing, price changes or changing the category definitions (*eg* having small, medium and large categories).

[1 per example, maximum 3]

[Maximum 5]

**Solution X3.13**

Course Reference: [Chapter 18](#).

Possible motives include:

- to benefit from economies of scale (*eg* sharing systems and head offices) [1]
- the resultant larger merged company may be able to access opportunities available only to large organisations, *eg* better terms from reinsurers [1]
- to increase its market share and hence its market power [1]
- to generate opportunities to exploit complementary resources (*eg* the merged company may be able increase sales by cross-selling products to the two sets of existing policyholders) [1]
- to protect the companies from a hostile takeover by another organisation [1]
- if the portfolios of existing policies are complementary the merged company may benefit from diversification of risk ... [1]
- a desire to eliminate inefficiencies (such as underperforming management) [1]
- to be able to offset losses of one company against the profits of the other for taxation purposes [1]
- to improve the security of the company's liabilities, improve its regulatory capital position and / or enhance its credit rating. [1]

The benefits described above may enhance earnings per share or lead to an increase in the company's share price and / or its dividend. [1]

[Maximum 5]

**Solution X3.14**

Course Reference: [Chapter 20](#).

In order to reduce the volatility of profits, the management could do any of the following:

- Reduce the gearing of the company by issuing more equity shares and paying off debt. [1]
- Negotiate contracts with suppliers which involve the suppliers taking some of the risks, and consequently some of the volatility of profits. [1]
- Take out insurance to protect against the weather-related risks. [1]
- Purchase suitable derivatives that provide a payoff for weather-related events, for example derivatives that pay out as the temperature falls if the company suffers poor experience when the weather is colder. [1]
- Organise export guarantees to protect against the default of overseas trading partners. [1]
- Use currency hedging techniques to reduce the effect of currency volatility on profits. [1]
- This could involve options on currencies, or selling an appropriate amount of the foreign currency forward to hedge the value of the profits in the domestic currency. [1]
- Organise its debt so that payments of interest and repayments of capital are in the same currencies as its earnings, *eg* by using Eurobonds. [1]

[Maximum 5]

**Solution X3.15**

Course Reference: [Chapter 20](#).

Information to explain the reasons for the company's current difficulties and verify that they are temporary, rather than a long-term structural problem. [1]

Details of the restructuring package and its likelihood of success. [1]

Previous years' retained profits as the maximum dividend cannot exceed the sum of this figure and any profit from the current year. [1]

Check whether the company has the cash to finance a dividend over the restructuring period. [1]

Consider whether the shareholders are accustomed to the current level of dividends, and whether they will be disappointed the dividend is stopped for a while during the restructuring. [1]

Whether the company is likely to breach any debt covenants if it pays out cash in the form of dividends. [1]

Consider what other companies in the market and in the same sector are doing, in terms of their profitability and dividends. [1]

Following the restructuring, consider by how much the company's level of profitability is likely to rise. If higher than before, it is easier to justify maintaining or increasing the dividend. [1]

[Maximum 5]

**Solution X3.16**

Course Reference: [Chapter 21](#).

If a project's IRR is less than the company's criterion then it is not necessarily loss-making but would not meet the company's financial policy. [1]

The policy favours small projects quite considerably. To demonstrate 15% IRR on a large project might prove impossible, and the company might end up turning down large projects that might have given superior returns for less risk. [1]

The policy may favour one department above another, depending on the structure and size of the typical projects undertaken, causing internal frictions between departments. [1]

The policy may encourage managers to split large projects artificially into many smaller projects. [1]

The high rate of return demanded for larger projects will encourage high-risk projects. Perhaps this is the management's aim, but it should not be by accident. [1]

The low rate of return for smaller projects may mean money is spent on small, unprofitable projects that are not the best use of its limited resources and management time. [1]  
[Maximum 5]

**Solution X3.17**

Course Reference: [Chapter 21](#)

All three methods ignore the time value of money. [1]

(i) **Annual capital charge**

This is very similar to the accounting depreciation charge calculated on a straight line basis. The table below gives the net cashflows after the annual capital charge:

	0	1	2	3
<i>Cashflow in \$ millions</i>	(6)	1	4	3
<i>Initial investment charge</i>		(2)	(2)	(2)
<i>Annual capital charge</i>		(1)	2	1

[1]

This shows the effect on profitability of the investment after depreciation over a three-year time period. [1]

It is appropriate for investments such as this that involve the purchase of machinery, although the company may use the reducing balance to depreciate machinery in its accounts. [1]

[Maximum 2 for this part]

(ii) **Payback period**

For the above project this will be at the end of year 3. [1]

A project that pays back the initial investment within three years can be considered to be good, as it means that the company will not have to finance the cash for a long period. [1]

(iii) **Nominal return over 3 years**

Nominal return is calculated as the ratio of the amount of positive cashflows to the negative cashflows over the specified period, so for this project it equals  $8/6 = 1.33$ . [1]

The fact that this is greater than 1 is a positive sign for the project. [1]

[Maximum 5]

**Solution X3.18**

Course Reference: [Chapter 19](#).

(i) **Required rate of return on project**

The required return on a project is found from the following formula:

$$r_p = r_f + \beta_p (r_m - r_f) \quad [1]$$

In this case, the required return is:

$$4\% + 0.6 \times 6\% = 7.6\% \quad [1]$$

[Total 2]

(ii) **Explanation of a low rate of return on a 'risky' project**

The beta of the project measures the systematic risk only, it ignores specific risk. [1]

Systematic risk reflect the extent to which the project is exposed to market risk. In this case, this risk may be relatively low and therefore reflected in beta. [1]

Specific risk reflects risks that are specific to this particular project, ie risks that could be diversified away if an investor built up a large portfolio of projects. [1]

In this case, specific risk seems very high, given this project involves new machinery and new technology for this particular company ... [1]

... and makes up half of its market capitalisation. [1]

[Maximum 3]

**Solution X3.19**

Course Reference: [Chapter 20](#).

**(i) Methods of conducting the share buyback operation**

The company could:

- inform the shareholders of its wish to repurchase a fixed number of shares at a fixed price (usually above the current market price) and invite shareholders to offer to sell their shares to the company [1]
- inform the shareholders of its wish to repurchase a number of shares in a uniform price auction or Dutch auction. The price that all shareholders accepting the offer would receive is the lowest price at which the company can successfully buy back sufficient shares. [1]
- inform the shareholders of its wish to repurchase a number of shares and do so gradually in the open market [1]
- inform the shareholders of its wish to repurchase a number of shares and to do so by direct negotiation with a number of major shareholders. [1]

**Practical problems encountered**

The company could find it difficult to find sufficient sellers. Reluctance to sell will bid up the price. [1]

The costs of the buyback may be significant, particularly as an investment bank would be involved. [1]

[Maximum 4]

**(ii) Advantages and disadvantages to the shareholders****Advantages to the shareholders**

- The expected rate of return to the shareholders will increase because there will be a higher proportion of cheaper and more tax-efficient debt finance. [1]
- Debt payments are deducted from profits before the calculation of the tax charge. This reduces the tax charge. [1]
- Debt interest rates may be very low at the time, and the company can take advantage of this by issuing more long-term debt. [1]

**Disadvantages to the shareholders**

- The increased gearing increases the risk to the shareholder, eg of the company being wound up after a fall in operating profit or a fall in asset values. [1]
- It also increases the volatility of reported earnings for the equity shareholders. [1]
- This increased risk may result in a fall in the share price. [1]

- There will be a higher risk of default on interest and on capital for the outstanding debt, and so the cost of the new debt is likely to be higher. [1]
  - There will be significant costs in the operation, both in terms of buying back the shares and issuing debt. [1]
  - Potential creditors will bear in mind that Z plc, as a media company, has few tangible assets and may be vulnerable to a downturn in the business cycle. [1]
  - If the company's credit rating falls, it may affect almost all of the company's long-term and short-term borrowings. It may affect the attitude of clients and customers. [1]
  - Shareholders like to make their own buying and selling decisions and may feel that they are being forced (or strongly encouraged) to sell when they do not really want to. [1]
  - There will be fewer shares, so they may become less marketable. [1]
- [Maximum 8]

(iii) ***Effects on the share price***

The share price should rise in the short term as a result of the increased demand for the shares in the market. [1]

In the longer term, the share price depends on the market's reaction to the share buyback. [1]

The market might react positively if the increased gearing is thought appropriate for the company, eg if the company has limited growth possibilities and there is only a small possibility of it being short of cash in the future. [1]

The market might react badly if the new capital structure is thought to be inappropriate for the company. As a media company, Z plc is probably quite susceptible to the business cycle, so the increased gearing could cause significant increases in volatility of earnings. [1]

The share price will increase if the equity holders appreciate the enhanced prospects for the growth of earnings per share (EPS). [1]

But the share price will be unchanged (or fall) if shareholders feel that the increased EPS prospects are only just (or not) sufficient to compensate them for the increase in volatility. [1]

[Maximum 4]

(iv) ***Changing the dividend policy***

If the investment opportunities available within the company offer a return better than offered elsewhere then it is in the shareholders' long-term interest that the money is retained within the business. [1]

However, alternatively the dividend policy could be maintained if money could be raised via debt to finance the investment. [1]

Shareholders will have purchased the shares with an expectation of a certain dividend policy. The dividend reduction may not be in line with shareholders' expectations, causing a negative reaction and the share price to fall. [1]

If the dividends are to be reduced then a clear communication exercise is required. Shareholders must be made aware clearly and in good time of the long-term benefits of the plan to retain funds for new investment opportunities. [1]

If the competition are not reducing their dividends and the company is out of line with the competition, the company's share price could fall. [1]

[Maximum 4]

### Solution X3.20

Course Reference: [Chapter 22](#).

(i) **Steps necessary to identify the risks**

Conduct a high-level preliminary analysis to confirm that the project is not such a high risk that it is not worth analysing further ... [1]

... eg the new construction methods are untested on large buildings. [1]

*Markers: give credit for any appropriate example suggested by the information in the question.*

Hold a brainstorming meeting with project experts and senior internal and external people who have expertise in the important areas required to complete the project. [1]

This may include, for example, engineers, finance experts, tourist attraction owners and managers. [1]

The aim will be to identify project risks, to discuss them and their interdependency, to attempt to place a broad initial evaluation on each risk and to consider initial mitigation options. [1]

Carry out a desktop analysis, to supplement the results of the brainstorm session. [1]

This may involve, identifying further risks and mitigation options, researching similar projects and obtaining opinions from other experts. [1]

Record the information in a risk register / risk matrix showing the risks and their independencies and to which stage of the project they relate. [1]

[Maximum 5]



(ii) **Major risks facing the project and possible mitigations**

Risk: The dome may cost a lot more (or less) to build than anticipated, *eg* due to failures in the state of the art design and/or the novelty of the methods and materials used. [1]

Mitigation: This risk could be mitigated by *transferring* the risks to a sub-contractor on a fixed price contract. [1]

Risk: The number of visitors may be different from that expected, *eg* due to a general *economic* downturn or domestic currency fluctuations [1]

Mitigations: *Further research* or a feasibility study could be undertaken to gain more precise estimates of the possible future visitor numbers ... [1]

... or tickets for a wide range of events could be sold in advance. [1]

Risk: It may prove more difficult or costly than anticipated to raise *finance* for the project, *eg* if institutions are not keen to buy the debt that is issued. [1]

Mitigations: It may be possible to underwrite the raising of the required finance. [1]

Financial backers and investors could be identified in advance, or the government could issue guarantees on some of the debt issued. [1]

Risk: It may prove more costly than anticipated to clear and decontaminate the industrial site, *eg* if toxic chemicals are found at the site. [1]

Mitigation: Some of the risk can be *transferred* to the subcontractor who will carry out the clearance. [1]

Risk: There may be a change in *political* opinion during the life of the project, *eg* a new government may not support the building of the dome, withdraw guarantees or place other restrictions on the dome's operation.

Mitigations: Seek support and commitments to the dome project from major political parties. [1]

*Avoid* political risk by ensuring legal contracts commit the public sector side of the deal for as long a period as necessary. [1]

[Maximum 10]

*Markers: please give credit for other sensible risks and examples, as long as a range of risks is given. Likewise with the mitigations, give credit for other sensible suggestions linked to the risks identified, with a limit of 1 mark per mitigation of each risk.*

**(iii) Expected NPV calculation**

The net present value for Scenario A ( $NPV_A$ ) is:

$$\begin{aligned} NPV_A &= -500 + 220v + 165v^2 + 140v^3 + 110v^4 \\ &= 70.618 \end{aligned} \quad [1]$$

The net present value for Scenario B ( $NPV_B$ ) is:

$$\begin{aligned} NPV_B &= -500 + 200v + 150v^2 + 125v^3 + 100v^4 \\ &= 16.781 \end{aligned} \quad [1]$$

The net present value for Scenario C ( $NPV_C$ ) is:

$$\begin{aligned} NPV_C &= -600 + 170v + 125v^2 + 125v^3 + 100v^4 \\ &= -134.467 \end{aligned} \quad [1]$$

The expected net present value for the project is:

$$\begin{aligned} ENPV &= 70.618 \times 0.3 + 16.781 \times 0.5 - 134.467 \times 0.2 \\ &= 2.68 \end{aligned} \quad [1]$$

*ie* the expected net present value of the project is \$2.68m.

[Maximum 3]

**(iv) Profitability of the project**

The project is expected to be profitable, *ie* the expected net present value for the project is positive. [1]

The project makes a profit with an 80% probability and a (very high) loss with a 20% probability. [1]

However, the expected profit is very small and the range of outcomes is very wide. [1]

For Scenario B, a small change in the discount rate could result in a negative NPV and then the probability of loss would be high, *ie* 70%. [1]

[Maximum 2]