Chapter 13

Ratio analysis

REAL WORLD CASE

Five year summary

	2005 £'000	2004 £'000	2003* £'000	2002 £'000	2001* £'000
Consolidated profit and loss account					
Turnover – continuing operations	**187,704**	178,746	167,095	163,800	159,921
Profit before interest	**10,520**	9,584	9,444	10,410	10,148
Net interest payable	**(2,366)**	(2,578)	(3,049)	(3,296)	(4,063)
Profit before taxation	**8,154**	7,006	6,395	7,114	6,085
Taxation	**(2,584)**	(2,037)	(1,972)	238	(1,570)
Profit after taxation	**5,570**	4,969	4,423	7,352	4,515
Dividends	**(4,460)**	(4,426)	(4,422)	(4,435)	(4,490)
Retained profit	**1,110**	543	1	2,917	25

	2005 £'000	2004 £'000	2003 £'000	2002 £'000	2001 £'000
Group balance sheet and key ratios					
Net assets	**42,728**	41,406	41,668	43,015	40,097
Net borrowings	**(18,843)**	(15,930)	(19,191)	(28,139)	(36,299)
Net debt	**(29,171)**	(25,996)	(28,864)	(37,193)	(44,515)
Gearing ratio	**68.3%**	62.8%	69.3%	86.5%	111.0%
Additions to fixed assets	**11,204**	10,359	6,813	5,379	6,142
Basic earnings per share (excluding exceptional items)	**8.6p**	7.6p	6.8p	11.2p	6.8p
Dividends per share	**6.80p**	6.80p	6.80p	6.80p	6.80p
Net assets per share	**64.1p**	62.2p	62.5p	64.6p	60.2p
Number of outlets – continuing operations					
Own stores	**369**	378	389	395	400
Franchises	**216**	203	198	181	163

Dividends and shareholder returns

Basic earnings per share have increased by 11.9% from 7.64p per share to 8.55p per share. Despite the increase in profits, the level of dividend cover remains low and, therefore, the Directors are recommending that the fully year dividend per share should remain at 6.80p per share which means that a final dividend of 4.85p per share will be paid in November.

Source: Thorntons plc Annual Report 2005, pp. 43, 5.

Discussion points

1 What does the reader learn from the ratios and performance measures presented by the company?

2 What major ratios are not shown in this summary?

Contents

Learning outcomes

After reading this chapter you should be able to:

- Define, calculate and interpret ratios that help analyse and understand (a) performance for investors, (b) management performance, (c) liquidity and working capital, and (d) gearing.
- Explain investors' views of the balance of risk and return, and the risks of investing in a geared company when profits are fluctuating.
- Explain how the pyramid of ratios helps integrate interpretation.
- Describe the uses and limitations of ratio analysis.
- Carry out a practical exercise of calculating and interpreting ratios.

13.1 Introduction

Ratios are widely used as a tool in the interpretation of financial statements. The ratios selected and the use of the resulting information depend on the needs of the person using the information. What investors really want to do is choose the best moment to sell shares when the share price is at its highest. To choose that best moment, the investors will monitor the company's performance. Bankers lending to the company will also monitor performance, and look for indicators of solvency and ability to repay interest and capital.

Many users will rely on others to monitor ratios on their behalf. Employees will look to their advisers, perhaps union officials, to monitor performance. Small private investors with limited resources will rely heavily on articles in the financial sections of newspapers. Professional fund managers will look to their own research resources and may also make use of the analysts' reports prepared by the brokers who act for the fund managers in buying and selling shares. Each broker's analyst seeks as much information as possible about a company so that he or she can sell information which is of better quality than that of any other broker's analyst. There is fierce competition to be a highly rated analyst because that brings business to the broking firm and high rewards for the analyst.

In monitoring performance the expert analysts and fund managers will use ratios rather than absolute amounts. A figure of £100m for sales (revenue) means nothing in isolation. The reader who knows that last year's sales (revenue) amounted to £90m sees immediately an increase of 11.1%. The reader who knows that fixed (non-current) assets remained constant at £75m knows that the fixed (non-current) assets this year have earned their value in sales (revenue) 1.33 times (100/75 = 1.33) whereas last year they earned their value in sales (revenue) 1.2 times (90/75 = 1.2). Ratios show changes in relationships of figures which start to create a story and start to generate questions. They do not provide answers.

The fund managers and analysts all have their own systems for calculating ratios and some keep these a carefully guarded secret so that each may hopefully see an important clue before the next person does so. That means there is no standard system of ratio analysis. There are, however, several which are used frequently. A selection of these will be used here as a basic framework for analysis. As you start to read more about company accounts you will find other ratios used but you should discover that those are largely refinements of the structure presented here.

13.2 A note on terminology

Ratio analysis is not a standardised exercise. It is often taught in finance courses and management accounting courses as well as in financial accounting courses. Businesses use ratios to describe their own performance. There is a tendency towards creating ratios that suit the purpose and towards using descriptions that are personal choices of the presenter. This chapter gives commonly used names for ratios (such as 'gross profit percentage') and links these to the terminology of the IASB system of accounting by using additional descriptions in brackets. For example, the title 'gross profit percentage' is used as a name for a ratio and it is defined as follows:

$$\frac{\text{Gross profit}}{\text{Sales (revenue)}} \times 100\%$$

In the denominator of this ratio the word 'sales' describes the activity that creates gross profit; the additional word (revenue) in brackets reminds you that the information will be found in financial statements under 'revenue'. Similarly 'fixed assets (non-current assets)' uses the commonly established words 'fixed assets' with the addition of (non-current assets) in brackets to remind you of where the information will be found in the balance sheet.

13.3 Systematic approach to ratio analysis

A systematic approach to ratio analysis seeks to establish a broad picture first of all, and then break that broad picture down until there are thumbnail sketches of interesting areas. Four key headings commonly encountered in ratio analysis are:

1 *Investor ratios*. Ratios in this category provide some measure of how the price of a share in the stock market compares to key indicators of the performance of the company.
2 *Analysis of management performance*. Ratios in this category indicate how well the company is being run in terms of using assets to generate sales (revenue) and how effective it is in controlling costs and producing profit based on goods and services sold.
3 *Liquidity and current assets*. The management of cash and current assets and the preservation of an adequate, but not excessive, level of liquidity is an essential feature of business survival especially in difficult economic circumstances.
4 *Gearing (referred to in American texts as 'leverage')*. Gearing is a measure of the extent to which there is financial risk indicated in the balance sheet and in the profit and loss account (see section 13.4 on risk and return). Financial risk means the risk associated with having to pay interest and having an obligation to repay a loan.

In the following sections key ratios for each of these aspects of a systematic analysis are specified by the name of the ratio and the definition in words. Below each definition there is a brief discussion of the meaning and interpretation of the ratio.

13.3.1 Investor ratios

Investors who buy shares in a company want to be able to compare the benefit from the investment with the amount they have paid, or intend to pay, for their shares. There are two measures of benefit to the investors. One is the profit of the period (usually given the name **earnings** when referring to the profit available for equity holders (ordinary shareholders)). The other is the **dividend** which is an amount of cash that is paid to the shareholders. Profit indicates wealth created by the business. That wealth may be accumulated in the business or else paid out in the form of dividend. Four ratios are presented with a comment on each.

Earnings per share	$\dfrac{\text{Profit after tax for ordinary equity holders}}{\text{Number of issued ordinary shares}}$

Comment. **Earnings per share** is the most frequently quoted measure of company performance and progress. The percentage change from year to year should be monitored for the trend. Criticisms are that this strong focus on annual earnings may cause 'short-termism' among investors and among company managers. The IASB and the UK ASB would like to turn the attention of preparers and users of accounts away from reliance on earnings per share as a single performance measure, but the earnings per share remains a strong feature of comments on company results.

Price–earnings ratio	$\dfrac{\text{Share price}}{\text{Earnings per share}}$

Comment. The **price–earnings ratio** (often abbreviated to 'p/e ratio') compares the amount invested in one share with the earnings per share. It may be interpreted as the number of years for which the currently reported profit is represented by the current share price. The p/e ratio reflects the market's confidence in future prospects of the company. The higher the ratio, the longer is the period for which the market believes the current level of earnings may be sustained.

In order to gain some feeling for the relative magnitude of the p/e ratio of any individual company, it should be compared with the average p/e ratio for the industry, given daily in the *Financial Times*. The p/e ratio is quite commonly used as a key item of input information in investment decisions or recommendations.

Dividend per share	$\dfrac{\text{Dividend of the period}}{\text{Number of issued ordinary shares}}$

Comment. The **dividend per share** is one of the key measures announced by the company at the end of the financial year (and sometimes as an interim dividend during the year as well). Shareholders immediately know how much to expect in total dividend, depending on the number of shares held. The figure of dividend per share is the cash amount paid by the company. It may or may not be subject to tax in the hands of the recipient, depending on whether or not the recipient is a taxpayer.

The dividend of the period is equal to any interim dividend paid plus the final recommended dividend (see section 12.7). To find the recommended dividend you will have to look beyond the financial statements. The Directors' Report will contain a note on the recommended dividend which is to be paid to shareholders following their agreement at the annual general meeting. There may also be a description of the recommended dividend in the Chairman's Statement, or a Highlights Statement, or the Operating and Financial Review (OFR).

Dividend cover (payout ratio)	$\dfrac{\text{Earnings per share}}{\text{Dividend per share}}$

Comment. Companies need cash to enable them to pay dividends. For most companies the profits of the business must generate that cash. So the dividend decision could be regarded as a two-stage question. The first part is, 'Have we made sufficient profits?' and the second stage is, 'Has that profit generated cash which is not needed for reinvestment in fixed or current assets?' The **dividend cover** helps in answering the first of these questions. It shows the number of times the dividend has been covered by the profits (earnings) of this year. It could be said that the higher the dividend cover, the 'safer' is the dividend. On the other hand, it could be argued that a high dividend cover means that the company is keeping new wealth to itself, perhaps to be used in buying new assets, rather than dividing it among the shareholders.

The dividend policy of the company is a major decision for the board of directors. Many companies like to keep to a 'target' dividend cover with only minor fluctuations from one year to the next. The evidence from finance research is that company managers have two targets, one being the stability of the dividend cover but the other being a desire to see the dividend per share increase, or at least remain stationary, rather than decrease. Dividends are thought to carry a signal to the market of the strength and stability of the company.

Dividend yield	$\dfrac{\text{Dividend per share}}{\text{Share price}} \times 100\%$

Comment. The **dividend yield** is a very simple ratio comparing dividend per share with the current market price of a share. It indicates the relationship between what the investor can expect to receive from the shares and the amount which is invested in the shares. Many investors need income from investments and the dividend yield is an important factor in their decision to invest in, or remain in, a company. It has to be noted that dividends are not the only benefit from share ownership. Section 13.4 on risk and return presents a formula for return (yield) which takes into account the growth in share price as well as the dividend paid. Investors buy shares in expectation of an increase in the share price. The directors of many companies would take the view that the dividend yield should be adequate to provide an investment income, but it is the wealth arising from retained profits that is used for investment in new assets which in turn generate growth in future profits.

13.3.2 Analysis of management performance

Management of a business is primarily a function requiring **stewardship**, meaning careful use of resources for the benefit of the owners. There are two central questions to test this use of resources:

1 How well did the management make use of the investment in assets to create sales (revenue)?
2 How carefully did the management control costs so as to maximise the profit derived from the sales (revenue)?

Return on shareholders' equity	$\frac{\text{Profit after tax for ordinary equity holders}}{\text{Share capital + Reserves}} \times 100\%$

Comment. A key measure of success, from the viewpoint of shareholders, is the success of the company in using the funds provided by shareholders to generate profit. That profit will provide new wealth to cover their **dividend** and to finance future expansion of the business. The **return on shareholders' equity** is therefore a measure of company performance from the shareholders' perspective. It is essential in this calculation to use the profit for ordinary equity holders, which is the profit after interest charges and after tax. The formula uses the phrase **equity holders** which will probably be the wording that you see in the financial statements. It has the same meaning as **ordinary shareholders**.

Return on capital employed	$\frac{\text{Operating profit (before interest and tax)}}{\text{Total assets} - \text{Current liabilities}} \times 100\%$

Return on capital employed	$\frac{\text{Operating profit (before interest and tax)}}{\text{Ordinary share capital + reserves + long-term loans}} \times 100\%$

Comment. **Return on capital employed** (ROCE) is a broader measure than return on shareholders' equity. ROCE measures the performance of a company as a whole in using all sources of long-term finance. Profit before interest and tax is used in the numerator as a measure of operating results. It is sometime called 'earnings before interest and tax' and is abbreviated to EBIT. Return on capital employed is often seen as a measure of management efficiency. The denominator can be written in two ways, as shown in the alternative formulae. Think about the accounting equation and rearrange it to read:

Total assets – current liabilities = Ordinary share capital plus reserves plus long-term loans

The ratio is a measure of how well the long-term finance is being used to generate operating profits.

Return on total assets	$\frac{\text{Operating profit (before interest and tax)}}{\text{Total assets}} \times 100\%$

Comment. Calculating the **return on total assets** is another variation on measuring how well the assets of the business are used to generate operating profit before deducting interest and tax.

Operating profit as % of sales (revenue)	$\frac{\text{Operating profit (before interest and tax)}}{\text{Sales (revenue)}} \times 100\%$

Comment. The ratio of operating profit as a percentage of sales (revenue) is also referred to as the **operating margin**. The aim of many successful business managers is to make the margin as high as possible. The margin reflects the degree of competitiveness in the market, the economic situation, the ability to differentiate products and the ability to control expenses. At the end of this section it is shown that companies are not obliged to seek high **margins**. Some cannot, because of strong competitive factors. Yet they still make a satisfactory return on capital employed by making efficient use of the equipment held as fixed (non-current) assets.

Gross profit percentage	$\frac{\text{Gross profit}}{\text{Sales (revenue)}} \times 100\%$

Comment. The gross profit as a percentage of sales (revenue) is also referred to as the **gross margin**. It has been seen in earlier chapters that the gross profit is equal to sales (revenue) minus all cost of sales. That gross profit may be compared with sales (revenue) as shown above. The gross profit percentage concentrates on costs of making goods and services ready for sale. Small changes in this ratio can be highly significant. There tends to be a view that there is a 'normal' value for the industry or for the product that may be used as a benchmark against which to measure a company's performance.

Because it is such a sensitive measure, many companies try to keep secret from their competitors and customers the detailed breakdown of gross profit for each product line or area of activity. Companies do not want to give competitors any clues on how much to undercut prices and do not want to give customers a chance to complain about excessive profits.

Total assets usage	$\frac{\text{Sales (revenue)}}{\text{Total assets}} \times 100\%$

Comment. **Total assets usage** indicates how well a company has used its fixed and current assets to generate sales (revenue). Such a ratio is probably most useful as an indication of trends over a period of years. There is no particular value which is too high or too low but a sudden change would prompt the observer to ask questions.

Fixed assets (non-current assets) usage	$\frac{\text{Sales (revenue)}}{\text{Fixed assets (non-current assets)}} \times 100\%$

Comment. **Fixed assets usage** is a similar measure of usage, but one which concentrates on the productive capacity as measured by fixed assets, indicates how successful the company is in generating sales (revenue) from fixed assets (non-current assets). The ratio may be interpreted as showing how many £s of sales (revenue) have been generated by each £ of fixed assets.

13.3.3 Liquidity and working capital

Liquidity is a word which refers to the availability of cash in the near future after taking account of immediate financial commitments. Cash in the near future will be available from bank deposits, cash released by sale of stocks and cash collected from customers. Immediate financial commitments are shown in current liabilities. The first ratio of liquidity is therefore a simple comparison of current assets with current liabilities.

Current ratio	Current assets:Current liabilities

Comment. If the current assets amount to £20m and the current liabilities amount to £10m the company is said, in words, to have 'a current ratio of 2 to 1'. Some commentators abbreviate this by saying 'the current ratio is 2'. Mathematically that is incorrect wording but the listener is expected to know that the words 'to 1' have been omitted from the end of the sentence.

The current ratio indicates the extent to which short-term assets are available to meet short-term liabilities. A current ratio of 2:1 is regarded, broadly speaking, as being a reasonable order of magnitude. As with other ratios, there is no 'best' answer for any particular company and it is the trend in this ratio which is more important. If the ratio is worsening over time, and especially if it falls to less than 1:1, the observer would look closely at the cash flow. A company can survive provided it can meet its obligations as they fall due. Some companies therefore operate on a very tight current ratio because they are able to plan the timing of inflows and outflows of cash quite precisely.

Companies which generate cash on a daily basis, such as retail stores, can therefore operate on a lower current ratio. Manufacturing businesses which have to hold substantial stocks would operate on a higher current ratio.

Acid test	Current assets minus inventories (stock):Current liabilities

Comment. In a crisis, where short-term creditors are demanding payment, the possibility of selling stocks (inventories) to raise cash may be unrealistic. The **acid test** takes a closer look at the liquid assets of the current ratio, omitting the stocks (inventories). For many companies this ratio is less than 1:1 because it is unlikely that all creditors will require payment at the same time. As with the current ratio, an understanding of the acid test has to be supported by an understanding of the pattern of cash flows. Analysts in particular will often ask companies about the peak borrowing requirements of the year and the timing of that peak in relation to cash inflows.

Stock holding period (inventories holding period)	$\frac{\text{Average inventories (stock) held}}{\text{Cost of sales}} \times 365$

Comment. The **stock holding period** (inventories holding period) measures the average period during which stocks (inventories) of goods are held before being sold or used in the operations of the business. It is usually expressed in days, which is why the figure of 365 appears in the formula. If months are preferred, then the figure 12 should be substituted for the figure 365. One point of view is that the shorter the period, the better. An opposite point of view is that too short a period may create a greater risk of finding that the business is short of a stock item.

In calculating the stock holding period it is preferable to use the average of the stock (inventories) held at the start of the year and the stock (inventories) held at the end of the year. Some analysts use only the year-end figure if the start-of-year figure is not available. Whatever variation is used, it is important to be consistent from one time period to the next.

Customers (trade debtors) collection period	$\frac{\text{Trade receivables (trade debtors)}}{\text{Credit sales (revenue)}} \times 365$

Comment. The **customers'** (trade debtors') **collection period** measures the average period of credit allowed to credit customers. An increase in this measure would indicate that a company is building up cash flow problems, although an attempt to decrease the period of credit allowed might deter customers and cause them to seek a competitor who gives a longer period of credit. It is important to be aware of the

normal credit period for the industry. Some companies offer discount for prompt payment. Any offer of discount should weigh the cost of the discount against the benefit of earlier receipt of cash from customers. When you are looking for information in the annual report of companies using the IASB system you will probably have to start on the face of the balance sheet with the heading 'trade and other receivables' and then read the corresponding Note to the balance sheet to find the amount of trade receivables. If you are looking at the balance sheet of a company that does not use the IASB system you will have to find the Note to the balance sheet that gives detailed information about trade debtors.

Suppliers (trade creditors) payment period	$\frac{\text{Trade payables (trade creditors)}}{\text{Credit purchases}} \times 365$

Comment. The **suppliers'** (trade creditors') **payment period** measures the average period of credit taken from suppliers of goods and services. An increase in this measure could indicate that the supplier has allowed a longer period to pay. It could also indicate that the company is taking longer to pay, perhaps because of cash flow problems. If payment is delayed then the company may lose discounts available for prompt payments. A reputation for being a slow payer could make it more difficult to obtain supplies in future. Some large companies have gained a reputation for delaying payment to smaller suppliers. Company law now requires company directors to make a statement of policy in relation to creditor payment.

Companies do not usually report **purchases** directly, so the figure must be calculated as follows:

$$\text{Purchases} = \text{Cost of goods sold} + \text{Closing stock} - \text{Opening stock}$$

Analysts often use **cost of goods** sold rather than calculate purchases, arguing that stock levels are broadly similar at corresponding period-ends.

Working capital cycle	Stock (inventories) holding period PLUS Customers (trade debtors) collection period MINUS Suppliers (trade creditors) payment period

Comment. You saw in Chapter 9 (Exhibit 9.1) the **working capital cycle** whereby stocks (inventories) are purchased on credit, then sold to customers who eventually pay cash. The cash is used to pay suppliers and the cycle starts again. We can now put some timings into the diagram. The working capital represents the long-term finance needed to cover current assets that are not matched by current liabilities. The longer the total of the stock holding period and customer collection period, compared to the suppliers payment period, the greater the need for working capital to be financed long term.

13.3.4 Gearing

The term **gearing** is used to describe the mix of loan finance and equity finance in a company. It is more properly called **financial gearing** and in American texts is called **leverage**. There are two main approaches to measuring gearing. The first looks at the balance sheet and the second looks at the profit and loss account.

Debt/equity ratio	$\frac{\text{Long-term liabilities plus Preference share capital*}}{\text{Equity share capital + reserves}} \times 100\%$

* where preference share capital is in existence

Comment. From the balance sheet perspective the **gearing** measure considers the relative proportions of long-term (non-current) loans and equity in the long-term financing of the business. The precise meaning of long-term liabilities will vary from one company to the next. It is intended to cover the loans taken out with the aim of making them a permanent part of the company's financing policy. As they come due for repayment, they are replaced by further long-term finance. The starting point is the loans (but not the provisions) contained in the section headed *non-current liabilities*. However the accounting rules require separate reporting of loans due for repayment within one year, reported as current liabilities. It is necessary to look in the *current liabilities* for bank loans that are becoming due for repayment. In some companies the bank overdraft is a semi-permanent feature and so is included in this ratio calculation.

Preference share capital is included in the numerator because it has the characteristics of debt finance even although it is not classed as debt in company law. The preference shareholders have the first right to dividend, before the ordinary shareholders receive any dividend. This is why they are called 'preference' shares. The amount of the dividend is usually fixed as a percentage of nominal value of shares. The amount repaid to preference shareholders on maturity is the amount of the share capital only. They do not normally take a share of accumulated profits.

Different industries have different average levels, depending on the types of assets held and the stability or otherwise of the stream of profits. A low gearing percentage indicates a low exposure to financial risk because it means that there will be little difficulty in paying loan interest and repaying the loans as they fall due. A high gearing percentage indicates a high exposure to financial risk because it means that there are interest charges to be met and a requirement to repay the loans on the due date.

Interest cover	$\dfrac{\text{Operating profit (before interest and tax)}}{\text{Interest}}$

Comment. The importance of being able to meet interest payments on borrowed funds is emphasised by measuring gearing in terms of the profit and loss account. If the profit generated before interest and tax is sufficient to give high cover for the interest charges, then it is unlikely that the company is overcommitting itself in its borrowing. If the interest cover is falling or is low, then there may be increasing cause for concern.

Activity 13.1

Write down the name of each ratio given in this section. Close the book and test your knowledge by writing down the formula for each ratio. Then write one sentence for each ratio which explains its purpose. Be sure that you know each ratio and understand its purpose before you proceed with the rest of the chapter.

13.4 Investors' views on risk and return

Uncertainty about the future means that all investments contain an element of risk. For investors who are averse to risk, there is a fear of income falling below an acceptable level and a fear of losing the capital invested in the company. Given a choice between two investments offering the same expected return, risk-averse investors will choose the least risky investment.

13.4.1 Return

The word **return** has many meanings but for an investor the basic question is, 'What have I gained from owning these shares?' One simple formula which answers that question is:

$$\frac{(\textit{Market price of share today} - \textit{Price paid for share}) + \textit{Dividends received}}{\textit{Price paid for share}} \times 100\%$$

Investors in a company which is in a low-risk industry may be willing to accept a low rate of return. Investors in a company which is in a high-risk industry will be seeking a higher rate of return to compensate for the additional risk they take.

Research has shown that share prices react very rapidly to any item of information which is sufficiently important to affect investors' decisions. This phenomenon is sometimes referred to as the **efficient markets hypothesis**, which is a statement that share prices react immediately to make allowance for each new item of information made available. The annual results of a listed company are announced through the Stock Exchange by means of a document called a **preliminary announcement**, issued approximately two months after the accounting year-end. The annual report then goes to the printers and is distributed to shareholders about three months after the related year-end.

When investors evaluate share price by calculating return, they take the most up-to-date price available.

13.4.2 Risk

There are two main types of risk: operating risk and financial risk.

Operating risk exists where there are factors which could cause sales (revenue) to fluctuate or cause costs to increase. Companies are particularly vulnerable to operating risk when they have a relatively high level of fixed operating costs. These fixed costs are incurred independently of the level of activity. If sales (revenue) fall, or the direct costs of sales increase, the fixed costs become a greater burden on profit.

Financial risk exists where the company has loan finance, especially long-term loan finance where the company cannot relinquish its commitment. Loan finance carries an obligation to pay interest charges and these create a problem similar to the fixed costs problem. If the sales (revenue) are strong and the direct costs of sales are well under control, then interest charges will not be a problem. If sales (revenue) fall, or the direct costs of sales rise, then a company may find that it does not have the cash resources to meet the interest payments as they fall due. Repaying the loan could become an even greater worry.

Both operating risk and financial risk are important to the company's shareholders because they have the residual claim on assets after all liabilities are met. If the company's assets are growing then these risks will not pose a problem but if the business becomes slack then the combination of high fixed operating costs and high interest charges could be disastrous. As a rule of thumb, investors look for low financial risk in companies which have high operating risk and, conversely, will tolerate a higher level of financial risk where there is relatively low operating risk.

The terms **operating gearing** and **financial gearing** are frequently used to describe the extent of operating risk and financial risk. (Financial gearing has been explained in the previous section.) In terms of the profit and loss account they are defined as follows:

Operating gearing	$\dfrac{\text{Profit before fixed operating costs}}{\text{Fixed operating costs}}$

Financial gearing	$\frac{\text{Profit before interest charges}}{\text{Interest charges}}$

In analysis of published accounting information, it is not possible to estimate the operating gearing because detailed information on fixed costs is not provided. Thus the term **gearing** is applied only in measuring financial gearing. Despite the lack of published information, professional investors will be aware of the importance of operating gearing and will try to understand as much as possible about the cost structure of the company and of the industry. The next section illustrates the benefits to shareholders of having gearing present when operating profits are rising and the risks when operating profits are falling.

13.4.3 Impact of gearing when profits are fluctuating

In a situation of fluctuating profits the presence of a fixed charge, such as an interest payment, will cause the profit for ordinary shareholders to fluctuate by a greater percentage. Exhibit 13.1 sets out data to illustrate this fluctuation. Company X has no gearing but company Y has loan finance in its capital structure.

Exhibit 13.1
Data to illustrate the effect of gearing on profits for ordinary shareholders

	X plc £m	*Y plc* £m
Summary balance sheet		
Total assets minus current liabilities	1,000	1,000
Ordinary shares (£1 nominal value per share)	1,000	500
Loan stock (10% per annum)	–	500
	1,000	1,000
Expected level of profit		
Operating profit	100	100
Interest	–	(50)
Net profit for ordinary shareholders (A)	100	50

Exhibit 13.2 uses the data to ask 'what happens to earnings per share if there is an increase or a decrease in operating profit?'

Exhibit 13.2
Fluctuations in profit

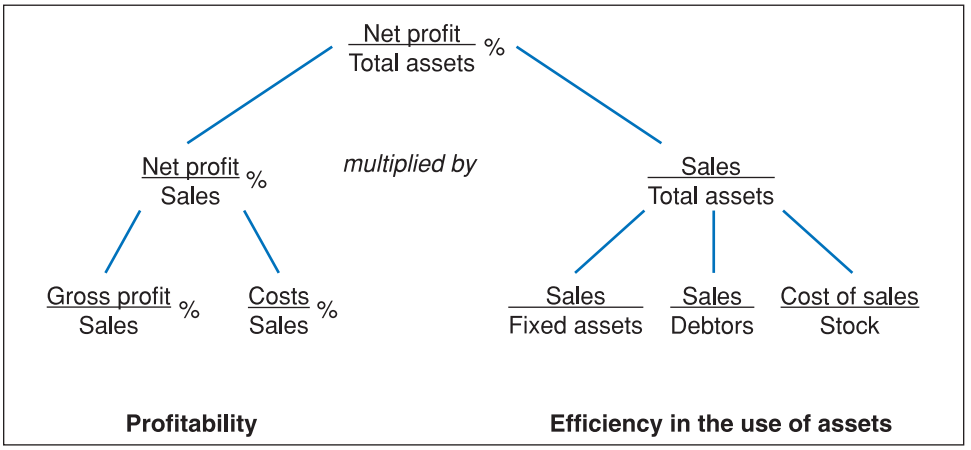
(a) Effect of 20% decrease in operating profit		
Operating profit	80	80
Interest		(50)
Net profit for ordinary shareholders (B)	80	30
Percentage decrease of (B) on (A)	20%	40%
(b) Effect of 20% increase in operating profit		
Operating profit	120	120
Interest	–	(50)
Net profit for ordinary shareholders (C)	120	70
Percentage increase of (C) on (A)	20%	40%

The conclusion to be drawn from Exhibit 13.2, panels (a) and (b), is that a 20% increase or decrease in operating profit causes a corresponding 20% increase or decrease in profit for ordinary shareholders in the ungeared company but a 40% increase or decrease in profit for ordinary shareholders in the geared company. It would appear preferable to be a shareholder in a geared company when profits are rising but to be a shareholder in an ungeared company when profits are falling.

13.5 Pyramid of ratios

The various ratios which contribute to the analysis of management performance may be thought of as forming a pyramid, as in Exhibit 13.3.

Exhibit 13.3
Pyramid of ratios for analysis of management performance



At the apex is the **return on capital employed** (measuring capital employed here as total assets). As the pyramid spreads out there are more detailed explanations of how the pyramid is built up. Net profit as a percentage of total assets has two components. One is the net profit as a percentage of sales (revenue) and the other is sales (revenue) as a multiple of total assets. Multiply these two together and you return to the net profit as a percentage of total assets. This relationship indicates that there could be two quite different types of business, both of which may be highly successful. One business trades on low margins, charging prices which look highly competitive, and succeeds by having a high level of sales (revenue) so that the assets are being used very effectively. The other business trades on high margins and sells goods or services less frequently. You could contrast the discount furniture store on the outskirts of town, where the car park is always full and the prices are unbeatable, with the old-world charm of the retail furnisher in the town centre whose prices look high but which attracts customers preferring extra service and attention. Both businesses are able to earn sufficient return on total assets to satisfy the owners.

The pyramid then spreads out into two areas: profitability and efficiency in the use of assets. The relationships here are additive – each component explains a little of the profitability of sales (revenue) or the efficiency in the use of assets. The pyramid is a useful tool of detective work to trace the cause of a change in return on capital employed.

13.6 Use and limitations of ratio analysis

The important feature of ratios is that they indicate trends and deviations from expected patterns. Ratios taken in isolation for a single company or a single period of time are of limited usefulness. The first requirement is to find a benchmark against which to compare ratios calculated for one period only.

13.6.1 Evaluating ratios by comparison

The comparison could be made with any or all of the following:

- the company's prior expectations of the outcome
- external observers' prior expectations of the outcome
- ratios based on previous years' figures for this company
- ratios calculated from this year's figures for other companies
- ratios calculated from previous years' figures for other companies
- industry averages published by commercial organisations.

The company's prior expectations are set out in a budget which is usually kept confidential. It is therefore unlikely that the user of the financial statements will have access to such a high-quality source of comparison. External observers may also have prior expectations. Professional analysts make forecasts of profits to help them or their clients in making investment decisions. The forecasts may be sent to clients of professional advisers, by way of investment advice bulletins. There are directories which publish such forecasts.

In the absence of information based on expectations, the user of the annual report may have to rely on the past as a possible predictor of the future, or on comparisons with other companies and industry norms. Professional investment advisers will collect data from annual reports and calculate ratios in their preferred manner. Advisory services will process the information and sell the results in the form of directories, on-line search facilities or CD-ROM with regular updates. One of the most widely used sources of ratio analysis of company accounts is Datastream, available in many colleges and universities and also used commercially. Organisations such as Reuters publish regular analyses of company information but usually charge a commercial fee. Newspapers and weekly journals such as the *Financial Times* and the *Investors Chronicle* are yet another source of information which will include ratios.

It could be argued that companies should themselves publish the norms against which their own particular results may be compared, but most would claim that their business is unique and no comparisons would be entirely valid.

13.6.2 Limitations

No two companies are exactly alike in the nature of their operations. Comparisons must make allowances for differences in the types of business or the relative weighting of different types of business. Many companies operate in more than one industry so that comparison with industry norms has to be treated with care.

Accounting numbers are used in ratio analysis and it has been a theme of the preceding chapters that accounting numbers may be affected by different accounting policies. The most common causes of variation due to accounting policy differences lie in depreciation and stock valuation, both of which are highly subjective.

Ratios are primarily a starting point from which to identify further questions to ask about the present position and future directions of the operations and the financing of a company. They do not provide answers in themselves.

13.7 Worked example of ratio analysis

In the following worked example, information is provided about a company buying and selling television and video equipment. Data are given for the current year in the first pair of columns and there are comparative figures for the previous year in the second pair of columns. Ratios are calculated for the two years as an indication of trends. Tentative comments are provided as to the possible interpretation of the resulting figures.

13.7.1 Financial statements to be analysed

Peter (Television) plc
Profit and loss account
for the year ended 31 December Year 2

	Year 2		*Year 1*	
	£m	£m	*£m*	*£m*
Revenue		720		*600*
Cost of sales		(432)		*(348)*
Gross profit		288		*252*
Distribution costs	(72)		*(54)*	
Administrative expenses	(87)		*(81)*	
		(159)		*(135)*
Operating profit		129		*117*
Interest payable		(24)		*(24)*
Profit before taxation		105		*93*
Taxation		(42)		*(37)*
Profit for the period for ordinary equity holders		63		*56*

Balance sheet as at 31 December Year 2

	£m	£m	*£m*	*£m*
Non-current (fixed) assets:				
Land and buildings		600		*615*
Plant and equipment		555		*503*
		1,155		*1,118*
Current assets:				
Inventories (stock)	115		*82*	
Trade receivables (debtors)	89		*61*	
Prepayments	10		*9*	
Bank	6		*46*	
	220		*198*	
Current liabilities				
Trade payables (creditors)	(45)		*(30)*	
Taxation	(21)		*(19)*	
Accruals	(29)		*(25)*	
	(95)		*(74)*	
Net current assets		125		*124*
		1,280		*1,242*
6% debentures		(400)		*(400)*
		880		*842*
Ordinary shares of £1 each		500		*500*
Retained earnings		380		*342*
Share capital and reserves		880		*842*

Extract from directors' report

The directors propose a dividend of 6.0 pence per share in respect of Year 2 (Year 1: 5.0 pence), amounting to £30m in total (Year 1: £25m).

Notes to the financial statements: Reconcilation of movements in equity

	£m
Share capital and reserves at the end of year 1	842
Less dividend paid in respect of year 1	(25)
Add profit for year 2	63
Share capital and reserves at the end of year 2	880

13.7.2 Share price information

When investors evaluate share price, they take the most up-to-date price available. However, for the exercise of comparing financial ratios it is useful to take the share prices immediately after the preliminary announcement at the end of February or beginning of March, representing the market's opinion when the accounting information has not become too much out of date.

Market price at 1 March Year 2	202 pence
Market price at 1 March Year 3	277 pence

13.7.3 Presenting the ratio calculations

Because there are so many variations on the methods of calculating ratios in accounting, it is extremely important to practise a useful and informative layout. That must include, at a minimum:

- the name of each ratio
- the formula in words
- the workings to show how the formula has been applied
- the value of the ratio
- a narrative comment.

Exhibits 13.4 to 13.7 present this information in a set of ratio calculations for Peter (Television) plc, each exhibit covering one of the main headings explained earlier. The calculations are given first for the more recent year, Year 2, followed by the comparative figures for Year 1. A commentary is provided for each exhibit.

Activity 13.2

Use the ratios explained in section 13.6 to carry out a full analysis of the Year 2 column of the accounts of Peter (Television) plc. Prepare your analysis before you read Exhibits 13.4 to 13.7. When you have finished, compare your analysis with the ratios calculated. Where your answers differ, be sure that you understand whether it is due to an arithmetic error or a more fundamental point. Keep a note of your score of the number of items calculated correctly.

Then go back to Year 1 and repeat the exercise. Hopefully your score of correct items will have increased.

Exhibit 13.4
Investor ratios

Ratio	*Definition in words*	*Year 2*		*Year 1*	
		Workings	*Result*	*Workings*	*Result*
Earnings per share	$\frac{\text{Profit after tax for ordinary equity holders}}{\text{Number of issued ordinary shares}}$	$\frac{63}{500}$	12.6 pence	$\frac{56}{500}$	11.2 pence
Price earnings ratio	$\frac{\text{Share price}}{\text{Earnings per share}}$	$\frac{277}{12.6}$	22	$\frac{202}{11.2}$	18
Dividend per share	$\frac{\text{Dividend of the period}}{\text{Number of issued ordinary shares}}$	$\frac{30}{500}$	6.0 pence	$\frac{25}{500}$	5.0 pence
Dividend cover (payout ratio)	$\frac{\text{Earnings per share}}{\text{Dividend per share}}$	$\frac{12.6}{6.0}$	2.1 times	$\frac{11.2}{5.0}$	2.24 times
Dividend yield	$\frac{\text{Dividend per share}}{\text{Share price}} \times 100$	$\frac{6.0}{277} \times 100\%$	2.17%	$\frac{5.0}{202} \times 100\%$	2.48%

Comment: Earnings per share increased over the period, indicating an improved profit performance for shareholders. The price earnings ratio rose, indicating greater confidence in the stock market about the sustainability of this new level of profit. The dividend cover has fallen marginally, but is still more than twice covered. This marginal decrease in dividend cover is caused by increasing the dividend per share from 5 pence to 6 pence. The dividend yield has fallen, despite the increased dividend per share, because the market price has risen. The fall in yield may not be significant if it reflects a general trend in the market where, possibly, all shares have risen in price over the year. To say anything more about these ratios requires comparative figures for the industry and for the market as a whole. Both types of data would be found in the *Financial Times*.

Exhibit 13.5
Analysis of management performance

Ratio	*Definition in words*	*Year 2*		*Year 1*	
		Workings	*Result*	*Workings*	*Result*
Return on shareholders' equity	$\frac{\text{Profit after tax for ordinary equity holders}}{\text{Share capital + Reserves}} \times 100\%$	$\frac{63}{880} \times 100\%$	7.2%	$\frac{56}{842} \times 100\%$	6.7%
Return on capital employed	$\frac{\text{Operating profit (before interest and tax)}}{\text{(Total assets – Current liabilities)}} \times 100\%$	$\frac{129}{1{,}280} \times 100\%$	10.1%	$\frac{117}{1{,}242} \times 100\%$	9.4%
Operating profit on sales (revenue)	$\frac{\text{Operating profit (before interest and tax)}}{\text{Sales (revenue)}} \times 100\%$	$\frac{129}{720} \times 100\%$	17.9%	$\frac{117}{600} \times 100\%$	19.5%
Gross profit percentage	$\frac{\text{Gross profit}}{\text{Sales (revenue)}} \times 100\%$	$\frac{288}{720} \times 100\%$	40%	$\frac{252}{600} \times 100\%$	42%
Total assets usage	$\frac{\text{Sales (revenue)}}{\text{Total assets}} \times 100\%$	$\frac{720}{(1{,}155 + 220)}$	0.52 times	$\frac{600}{(1{,}118 + 198)}$	0.46 times
Fixed assets (non-current assets) usage	$\frac{\text{Sales (revenue)}}{\text{Fixed assets (non-current assets)}} \times 100\%$	$\frac{720}{1{,}155}$	0.62 times	$\frac{600}{1{,}118}$	0.54 times

Comment: The return on shareholders' equity and the return on capital employed both show an improvement on the previous year. This is due to an improvement in the use of assets (total assets and fixed assets) which more than offsets a fall in the operating profit as a percentage of sales (revenue). The gross profit percentage fell by a similar amount, which suggests that the price charged for goods and services is not keeping pace with increases in costs. The company should look carefully at either increasing prices or attempting to control costs of goods sold more effectively.

Exhibit 13.6
Liquidity and working capital

Ratio	*Definition in words*	*Year 2*		*Year 1*	
		Workings	*Result*	*Workings*	*Result*
Current ratio	Current assets:Current liabilities	220:95	2.3:1	198:74	2.7:1
Acid test	(Current assets – Inventories):Current liabilities	(220 – 115):95	1.11:1	(198 – 82):74	1.11:1
Stock holding period (inventories holding period)	$\frac{\text{Average inventories (stock) held}}{\text{Cost of sales}} \times 365$	$\frac{(115 + 82)/2}{432} \times 365$	83.2 days	$\frac{(*82 + 82)/2}{348} \times 365$	86 days
Customers' (trade debtors') collection period	$\frac{\text{Trade receivables (trade debtors)}}{\text{Credit sales (revenue)}} \times 365$	$\frac{89}{720} \times 365$	45.1 days	$\frac{61}{600} \times 365$	37.1 days
Suppliers' (trade creditors') payment period	$\frac{\text{Trade payables (trade creditors)}}{\text{Credit purchases}} \times 365$	$\frac{45}{432 + 115 - 82} \times 365$	35.3 days	$\frac{30}{348 + 82 - *82} \times 365$	31.5 days

Note: *Assuming the opening inventories are the same as the closing inventories.

Comment: The current ratio has fallen over the period while the acid test ratio remains constant. The ratios appear relatively high and are probably still within acceptable ranges (although this needs to be confirmed by comparison with industry norms). One cause of the relatively high current ratio at the start and end of the period appears to be in the combination of stock holding period and customers collection period compared to the suppliers payment period. The period of credit taken by customers has increased and this should be investigated as a matter of urgency. There is a marginal decrease in the stock holding period but it remains relatively long, compared to the creditors payment period. The acid test remains similar because there is an increase in the number of customer days for payment and a similar increase in the number of supplier days for payment.

Exhibit 13.7
Gearing (leverage)

Ratio	*Definition in words*	*Year 2*		*Year 1*	
		Workings	*Result*	*Workings*	*Result*
Debt/equity ratio	$\frac{\text{Long-term liabilities plus Preference share capital}}{\text{Equity share capital + reserves}} \times 100\%$	$\frac{400}{880} \times 100\%$	45.5%	$\frac{400}{842} \times 100\%$	47.5%
Interest cover	$\frac{\text{Operating profit (before interest and tax)}}{\text{Interest}}$	$\frac{129}{24}$	5.38 times	$\frac{117}{24}$	4.88 times

Comment: Gearing in the balance sheet has remained almost constant and the interest cover has increased marginally. The relative stability of the position indicates that there is probably no cause for concern but the ratios should be compared with those for similar companies in the industry.

13.8 Linking ratios to the cash flow statement

In Chapter 7 the cash flow statement of a company was illustrated and discussed. Any ratio analysis which seeks to interpret liquidity, management performance or financial structure should be related to the information provided by the cash flow statement. Ratios give a measure of position at a particular point in time while the cash flow statement gives some understanding of the movements in cash and cash-related items.

The operating cash flow will be explained by a note showing the movements in working capital and these may usefully be linked to changes in the rate of movement of stock or the period of credit allowed to customers and taken from suppliers. The ratio will give the change in terms of number of days, while the cash flow statement will indicate the overall impact on liquid resources.

If the efficiency in the use of fixed assets appears to have fallen, it may be that new assets were acquired during the year which, at the balance sheet date, were not fully effective in generating sales. That acquisition will appear in the cash flow statement. If the gearing has changed, the impact on cash flow will be revealed in the cash flow statement.

Activity 13.3

Read again the sections of Chapters 3, 4 and 7 on cash flow statements. What is the purpose of the cash flow statement? What are the main headings? Which ratios may be used in conjunction with the cash flow statement to help understand the financial position of the company?

13.8.1 Explanation of a cash flow statement

The cash flow statement in Exhibit 13.8 is calculated from the balance sheets and profit and loss account of Peter (Television) plc (see section 13.6). It is presented using headings similar to those of Safe and Sure in Chapter 7. The headings are taken from the international accounting standard IAS 7.

In Chapters 3, 5 and 6 you saw simple cash flow statements prepared using the information entered in the cash column of a spreadsheet. Those were examples of what is called the **direct method** of preparing a cash flow statement because the figures came directly from the cash column of the transaction spreadsheet. The cash flow statement in Exhibit 13.8 is said to be prepared using the **indirect method** because it takes an indirect route of starting with an accruals-based profit figure and then making adjustments to arrive at the cash figure. Consider each line in turn.

One purpose of the cash flow statement is to answer the question, 'Why do we have a cash problem despite making an operating profit?' We saw in Exhibit 3.7 of Chapter 3 that profit and cash flow can be different because the cash generated in making a profit is spent in various ways. The cash flow statement emphasises ways in which cash has come into, or moved out of, the company. So we start with profit before taxation of £129m.

Depreciation is an expense in the profit and loss account which represents cost being shared across accounting periods. There is no cash flow and so there should be no deduction for this item. To correct the position, depreciation of £50m is 'added back' as an adjustment to the accounting profit.

Next we consider how changes in working capital have affected cash flow. Looking first at current assets, we find that the inventories (stocks) have increased from £82m to £115m. Allowing inventories (stocks) to increase has reduced the cash available for other purposes. Trade receivables (debtors) have increased from £61 to £89. This means the cash is flowing less fast and so cash is reducing. Prepayments have increased

Exhibit 13.8
Cash flow statement

Peter (Television) plc
Cash flow statement
for the year ended 31 December Year 2

Notes: Assume depreciation charge for year is £50m.
No non-current (fixed) assets were sold.

[The words and figures printed in italics are not normally shown in published cash flow statements – they are to help you with interpretation.]

	£m	£m
Cash flows from operating activities		
Profit before taxation		129
Adjustment for items not involving a flow of cash:		
Depreciation		50
		179
Increase in inventories (stocks) *(115 – 82)*	33	
Increase in trade receivables (debtors) *(89 – 61)*	28	
Increase in prepayments *(10 – 9)*	1	
Reduction in cash due to increases in current assets	62	
Increase in trade payables (creditors) *(45 – 30)*	(15)	
Increase in accruals *(29 – 25)*	(4)	
Increase in cash due to increases in liabilities	(19)	
Reduction in cash due to working capital changes		(43)
Cash generated from operations		136
Interest paid		(24)
Taxes paid *(42 +19 – 21)*		(40)
Net cash inflow from operating activities		72
Cash flows from investing activities		
Capital expenditure *(1,155 – 1,118 + 50)*		(87)
		(15)
Cash flows from financing activities		
Equity dividends paid (*dividend proposed at end of Year 1)*		(25)
Decrease in cash		(40)
Check in balance sheet Decrease in bank (46 – 6) = 40		

from £9m to £10m. This is also using up cash. In total the increases in current assets have used up £62m of the cash generated in making profit.

Looking next at current liabilities, we see that trade payables (creditors) have increased from £30m to £45m. If payables (creditors) are increasing, it means they are not being paid. This helps cash flow by not spending it. Accruals have increased by £4m, again helping cash flow by not making a payment. It is not a good idea to help cash flow indefinitely by not paying creditors, but where stocks and debtors are expanding to use up cash flow, it is helpful if current liabilities are expanding in a similar way to hold back cash flow.

Interest paid is taken from the profit and loss account as £24m. There is no liability for unpaid interest at either the start of end of the period so the amount in the profit and loss account must equal the amount paid.

The taxation payment involves more calculation. Cash has been required to meet the liability of £19m remaining in the Year 1 balance sheet, and also to pay half of the tax expense of Year 2, which is £21m. The calculation is: tax expense of the year as shown in the income statement (profit and loss account), minus liability at the end of the year (balance sheet), plus liability at the start of the year (balance sheet).

Capital expenditure is calculated by comparing the book values at the beginning and end of the year and adjusting for changes during the year. We are told there were no sales of fixed assets so any increase must represent an addition. The balance started at £1,118m, fell by £50m for depreciation, increased by the unknown figure for additions, and finished at £1,155m. The missing figure is calculated as £87m.

The dividend paid during year 2 was the dividend proposed at the end of Year 1. If you look back to section 13.7.1, you will see the dividend paid as an entry in the 'reconciliation of movements on equity'.

Finally the right-hand column of the cash flow statement is added and produces a figure of £40m which is then checked against the balance sheet figures. This shows that cash has fallen from £46m to £6m and so the calculation is confirmed as being correct.

13.8.2 Analyst's commentary

Here is the comment made by one analyst in a briefing note to clients.

Despite making a profit before taxation of £129,000, the cash balances of the company have decreased by £40,000 during the year.

The cash generated by operating profit is calculated by adding back depreciation of £50,000 because this is an accounting expense which does not involve an outflow of cash. The resulting cash flow of £179,000 was eroded by allowing current assets to increase by more than the increase in current liabilities. This suggests that we should ask questions about the rate of usage of inventories (stocks) and the period of credit allowed to credit customers (debtors). Our analysis [see section 13.7] *shows that the inventories (stocks) holding period reduced marginally from 86 to 83 days, which is not unexpected in the industry. The period of credit taken from suppliers increased by 4 days but the customers collection period increased by 8 days. Our attention should focus on the control of credit customers to look for any weaknesses of credit control and a potential risk of bad debts.*

After paying interest charges and taxation the company was still in cash surplus at £72,000 but swung into cash deficit through capital expenditure of £87,000. Taking in the dividend payment of £25,000 the positive cash flow of £72,000 changed to a negative cash flow of £40,000.

We take the view that in the short run it is reasonable to run down cash balances in this way. The company probably had excessive liquidity at the end of Year 1. However if there is to be a further major investment in fixed assets we would want to see long-term finance being raised, either through a share issue or through a new long-term loan.

13.8.3 EBITDA

EBITDA stands for earnings before interest, taxation, depreciation and amortisation. It is increasingly used by analysts as an approximate measure of cash flow because it removes the non-cash expenses of depreciation and amortisation from profit. Instead of a price–earnings multiple based on earnings per share, the analyst will relate share price to EBITDA. The reason appears to be a desire to get away from the subjectivity of accruals-based profit and closer to cash flow as something objectively measured.

13.8.4 Free cash flow

'Free cash flow' is a phrase that you may encounter in company reports, particularly in the narrative discussions by the chief executive and the finance director. It is a term that is used differently by different people and so you have to read it in the setting where it is used. A common theme is to say, 'We have calculated our operating cash

flow and allowed for investment in working capital and we have deducted the amount of cash invested in capital expenditure.' How much cash does that leave free to pay dividends or to invest in new ideas for expansion?

Following this theme, the calculation of free cash flows generally start with the net cash flow generated from operations (operating cash flow after tax) and then deducts the capital expenditure of the period. This leaves an amount of 'free' cash (in the sense of 'freely available' for future planning). The free cash is available to pay dividends to shareholders and to pay for further investment to expand the business. Directors have to decide their priorities and allocate the cash accordingly. If the free cash flow is a negative figure then the company will need to borrow to pay dividends or finance expansion.

13.9 Summary

The main areas of ratio analysis explained in this chapter are:

- investor ratios (summarised in Exhibit 13.4)
- analysis of management performance (summarised in Exhibit 13.5)
- liquidity and working capital (summarised in Exhibit 13.6)
- gearing (summarised in Exhibit 13.7).

Section 13.8 explains how the interpretation of ratios may be linked to an understanding of cash flows.

It is essential to treat ratio analysis with great caution and to understand the basis of calculation and the nature of the data used. For that reason the illustrations have been set out in detail using a layout that allows you to demonstrate your knowledge of the formula, your ability to collect data for calculation, and the result of that calculation which can then be interpreted. In this chapter all the information has been made available to you as and when you required it. In Chapter 14 we move on to consider published financial statements where more exploration may be required to find the most useful information.

The general principles explained in this chapter can be applied to the annual report of any profit-seeking business. The precise formulae may require adaptation to suit particular national characteristics. However international comparison requires great caution. Accounting policies and practices are not yet harmonised entirely. If the underlying data are not comparable then neither are the ratios.

The key is to ask first, 'What value do we expect for this ratio?' Then calculate the ratio and seek an interpretation of the similarity or difference.

QUESTIONS

The Questions section of each chapter has three types of question. 'Test your understanding' questions to help you review your reading are in the 'A' series of questions. You will find the answers to these by reading and thinking about the material in the book. 'Application' questions to test your ability to apply technical skills are in the 'B' series of questions. Questions requiring you to show skills in problem solving and evaluation are in the 'C' series of questions. A letter **[S]** indicates that there is a solution at the end of the book.

A Test your understanding

A13.1 Which ratios provide information on performance for investors? (Section 13.3.1)

A13.2 Which ratios provide information on management performance? (Section 13.3.2)

A13.3 Which ratios provide information on liquidity and working capital? (Section 13.3.3)

A13.4 Which ratios provide information on gearing? (Section 13.3.4)

A13.5 What is the view of investors on risk and return? (Section 13.4)

A13.6 Why is financial gearing riskier for a company which has fluctuating profits? (Section 13.4.3)

A13.7 Explain the use of the pyramid of ratios in analysis of performance. (Section 13.5)

A13.8 What are the limitations of ratio analysis? (Section 13.6)

B Application

B13.1 [S]

The following financial statements relate to Hope plc:

Income statement (profit and loss account) for the year ended 30 June Year 4

	£000s	£000s
Revenue		6,200
Cost of sales		(2,750)
Gross profit		3,450
Administration and selling expenses		(2,194)
Operating profit		1,256
Debenture interest		(84)
Profit before taxation		1,172
Taxation		(480)
Profit for equity holder		692

The directors have recommended a dividend of 36.7 pence per share in respect of Year 4, to be paid following approval at the next annual general meeting.

Balance sheet as at 30 June Year 4

	£000s	£000s	£000s
Non-current (fixed assets) net of depreciation			1,750
Current assets:			
Stocks and work-in-progress	620		
Trade receivables (debtors)	1,540		
Cash	200	2,360	
less: Current liabilities:			
Trade payables (creditors)	(300)		
Other creditors and accruals	(940)	(1,240)	
Net current assets			1,120
Total assets *less* current liabilities			2,870
Non-current liabilities			
6% debentures			(1,400)
Total net assets			1,470
Share capital and reserves			
Issued share capital:			
900,000 ordinary shares of 50p nominal value			450
Retained earnings			1,020
			1,470

Required

(a) Calculate ratios which measure:
  (i) liquidity and the use of working capital;
  (ii) management performance; and
  (iii) gearing.

(b) Explain how each ratio would help in understanding the financial position and results of the company.

(c) The market price is currently 1,100 pence per share. Calculate ratios which are useful to investors.

B13.2

The following financial statements relate to Charity plc:

Profit and loss account for year ended 30 September Year 4

	£000s	£000s
Revenue		2,480
Cost of sales		(1,100)
Gross profit		1,380
Administration and selling expenses		(678)
Operating profit		702
Debenture interest		(31)
Profit before taxation		671
Taxation		(154)
Profit for equity holders		517

Note: The directors have recommended a dividend of 11.4 pence per share in total in respect of Year 4, to be paid following approval at the next annual general meeting.

Balance sheet as at 30 September Year 4

	£000s	£000s	£000s
Non-current assets, net of depreciation			785
Current assets:			
Inventories (stocks)	341		
Trade receivables (debtors)	801		
Cash	110	1,252	
less: Current liabilities			
Trade payables (creditors)	(90)		
Other payable and accruals	(654)	(744)	
Net current assets			508
Total assets *less* current liabilities			1,293
Non-current liabilities			
7% debentures			(440)
Total net assets			853
Share capital and reserves			
Issued share capital			
(1,360,000 ordinary shares of 25p nominal value)			340
Retained earnings			513
			853

Required

(a) Calculate ratios which measure:
  (i) liquidity and the use of working capital;
  (ii) management performance; and
  (iii) gearing.

(b) Explain how each ratio would help in understanding the financial position and results of the company.

(c) The market price of one share is 800 pence. Calculate ratios which will be of interest to investors.

C Problem solving and evaluation

C14.1

Carry out a ratio analysis of Safe and Sure plc, using the financial statements set out in Appendix I (at the end of this book) and applying the method of analysis set out in section 13.6. Making a comparison of Year 7 with Year 6, write a short commentary on each ratio separately and then summarise the overall themes emerging from the ratios. Assume a share price of 260 pence is applicable at 31 December Year 7 and a share price of 210 pence is applicable at 31 December Year 6.