18 RATIO ANALYSIS

Ratio analysis is the technique of interpreting the financial statements of businesses in order to assess strengths and weaknesses. A business needs to be performing well in areas of profitability, liquidity, and capital structure.

In this chapter we examine:

- the importance of interpretation of financial statements
- the main accounting ratios and performance indicators
- the difference between profit and cash
- a commentary on trends shown by the main accounting ratios
- how to report on the overall financial situation of a business
- limitations in the use of ratio analysis

INTERESTED PARTIES

The use of ratio analysis to interpret financial statements is not always made by an accountant; interested parties (stakeholders) include:

- **managers** or **owners** of the business, who need to make financial decisions affecting the future development of the business
- **banks**, who are being asked to lend money to finance the business
- **suppliers**, who want to know if they are likely to get paid
- **customers**, who wish to be assured of continuity of supplies in the future
- **shareholders** of a limited company, who wish to be assured that their investment is sound
- prospective **investors** in a limited company, who wish to compare comparative strengths and weaknesses
- the **owner** of a business, who wishes to make comparisons with other businesses
- **employees** and **trade unions**, who wish to check on the financial prospects of the business
- **government** and **government agencies**, eg HM Revenue & Customs, that wants to check it is receiving the amount due for VAT and the tax payable on the profits of the business

In all of these cases, the interested parties will be able to calculate the main ratios, percentages and performance indicators. By doing this, the strengths and weaknesses of the business will be highlighted and appropriate conclusions can be drawn as to whether or not the business is meeting the expectations of stakeholders.

Types of Accounting Ratios and Performance Indicators

The general term 'accounting ratios' is usually used to describe the calculations aspect of interpretation of financial statements. The term ratio is, in fact, partly misleading because the performance indicators include percentages, time periods, as well as ratios in the strict sense of the word.

The main themes covered by ratio analysis are:

- profitability – the relationship between profit and sales revenue, assets and capital employed
- liquidity – the stability of the business on a short-term basis
- capital structure – the stability of the business on a long-term basis

Making Use of Ratio Analysis

It is important when examining a set of financial statements and using ratio analysis to relate them to reference points or standards. These points of reference might be to:

- establish trends from past years, so providing a standard of comparison
- compare against other businesses in the same industry
- compare with standards assumed to be satisfactory by the interested party, eg a bank

Above all, it is important to understand the relationships between ratios: one ratio may give an indication of the state of the business but, before drawing conclusions, this needs to be supported by other ratios. Ratios can highlight symptoms, but the cause will then need to be investigated.

Another use of ratios is to estimate the likely future profit or balance sheet of a business. For example, it might be assumed that the same gross profit percentage as last year will also apply next year; thus, given an estimated increase in sales revenue, it is a simple matter to estimate gross profit. In a similar way, by making use of ratios, net profit (profit before tax) and the balance sheet can be forecast.

Now study the illustration on the next two pages. It shows the ways in which the profitability of a business is assessed. The first page sets out the calculation of the ratios and the next page highlights the figures that are used in calculating them. Then read the section 'Profitability' which follows on page 340.

PROFITABILITY RATIOS

Gross profit margin = $\frac{\text{Gross profit}}{\text{Revenue}} \times \frac{100}{1}$

Gross profit mark-up = $\frac{\text{Gross profit}}{\text{Cost of sales}} \times \frac{100}{1}$

Overheads in relation to revenue = $\frac{\text{Overheads (expenses)}}{\text{Revenue}} \times \frac{100}{1}$

Net profit margin* = $\frac{\text{Net profit**}}{\text{Revenue}} \times \frac{100}{1}$

* also known as profit in relation to revenue
** use operating profit (ie profit from operations) if the figure is available

Return on capital employed = $\frac{\text{Net profit*}}{\text{Capital employed†}} \times \frac{100}{1}$

* use operating profit (ie profit from operations) if the figure is available
† for limited companies: this is ordinary share capital + reserves + preference share capital + loan capital; for sole traders, capital employed is the owner's capital in the business

Mithian Trading Company Limited

INCOME STATEMENT

for the year ended 31 December 20-7

	£000s	£000s
Revenue		1,430
Opening inventories	200	
Purchases	1,000	
	1,200	
Less closing inventories	240	
Cost of sales		960
Gross profit		470
Overheads:		
Distribution expenses	(150)	
Administration expenses	(140)	
		(290)
Profit from operations		180
Finance costs		(10)
Profit before tax		170
Tax		(50)
Profit for the year		120

Statement of changes in equity

Retained earnings	
Balance at 1 January 20-7	180
Profit for the year	120
	300
Dividends paid	(100)
Balance at 31 December 20-7	200

BALANCE SHEET (extract)

	£000s
Capital employed (share capital + reserves + non-current liabilities)	1,550

Notes: Items used in the ratios on the opposite page are shown in bold type on a blue background

PROFITABILITY

One of the main objectives of a business is to make a profit. Profitability ratios examine the relationship between profit and revenue, assets, equity and capital employed. Before calculating the profitability ratios, it is important to read the income statement in order to review the figures.

The key profitability ratios are illustrated on the previous two pages. We will be calculating the accounting ratios from these figures in a Worked Example (pages 348 - 353).

gross profit margin

$$\frac{\text{Gross profit}}{\text{Revenue}} \times \frac{100}{1}$$

This ratio expresses, as a percentage, the gross profit (revenue minus cost of sales) in relation to sales revenue. For example, a gross profit margin of 20 per cent means that for every £100 of revenue made, the gross profit is £20.

The gross profit margin should be similar from year-to-year for the same business. It will vary between different types of businesses, eg the gross profit margin on jewellery is considerably higher than that on food. A significant change from one year to the next, particularly a fall in the percentage, requires investigation into the buying and selling prices.

Gross profit margin and mark-up (see below) – and also net profit margin (see next page) – need to be considered in context. For example, a supermarket may well have a lower gross profit margin than a small corner shop but, because of the supermarket's much higher sales revenue, the amount of profit will be much higher. Whatever the type of business, gross profit – both as an amount and a percentage – needs to be sufficient to cover the overheads (expenses), and then to give an acceptable return on capital employed (see page 342).

gross profit mark-up

$$\frac{\text{Gross profit}}{\text{Cost of sales}} \times \frac{100}{1}$$

This ratio expresses, as a percentage, the gross profit in relation to cost of sales. For example, a gross profit mark-up of 25 per cent means that for every £100 of purchases made, the gross profit is £25. Gross profit mark-up should be similar from year-to-year for the same business, although it will vary between different types of businesses. Any significant change needs investigation into the buying and selling prices.

It is quite common for a business to establish its selling price by reference to either a margin or a mark-up. The difference between the two is that:

- margin is a percentage profit based on the selling price
- mark-up is a profit percentage added to buying or cost price

For example, a product is bought by a retailer for £100; the retailer sells it for £125, ie

cost price	+	gross profit	=	selling price
£100	+	£25	=	£125

The **margin** is:

$$\frac{\text{gross profit}}{\text{selling price}} \times \frac{100}{1} = \frac{£25}{£125} \times \frac{100}{1} = \mathbf{20\%}$$

The **mark-up** is:

$$\frac{\text{gross profit}}{\text{cost price}} \times \frac{100}{1} = \frac{£25}{£100} \times \frac{100}{1} = \mathbf{25\%}$$

Notice here that gross profit margin and mark-up look at the same information, but from a different viewpoint: with margin, it is the gross profit related to the selling price; with mark-up, it is the gross profit related to the buying price (cost of sales).

overheads in relation to revenue

$$\frac{\textbf{Overheads}}{\textbf{Revenue}} \times \frac{100}{1}$$

Here the overheads (expenses) of a business are expressed as a percentage of revenue. The ratio should fall as revenue increases – this is because not all overheads are variable, ie increase in direct proportion to the increase in revenue.

Note that each overhead or expense falls into one of three categories of cost:

- fixed costs, eg rent, council tax
- variable costs, eg commission
- semi-variable costs, eg car hire, telephone expenses

Fixed costs remain constant despite other changes. Variable costs alter with changed circumstances, such as increased sales. Semi-variable costs combine both a fixed and a variable element, eg hire of a car at a basic (fixed) cost, with a variable cost per mile. It is important to appreciate the nature of costs when interpreting accounts: for example, if revenue this year is twice last year's figure, not all expenses will have doubled.

Any overhead item from the income statement can be expressed as a percentage of revenue. For example, if advertising is £50,000 and revenue is £500,000 then the percentage is 10 per cent; if it is found to be 20 per cent next year then this could indicate that an increase in advertising has failed to produce a proportionate increase in revenue.

net profit margin (or profit in relation to revenue)

$$\frac{\textbf{Net profit*}}{\textbf{Revenue}} \times \frac{100}{1}$$

* *use operating profit (ie profit from operations), if it is available*

As with gross profit margin, the net profit margin should be similar from year-to-year for the same business, and should also be comparable with other firms in the same line of business. Net profit margin should, ideally, increase from year-to-year, which indicates that the income statement overheads are being kept under control. Any significant fall should be investigated to see if it has been caused by

- a fall in gross profit margin
- and/or an increase in one particular overhead, eg wages and salaries, advertising, etc

return on capital employed (ROCE)

This compares the net profit of a business with the amount of capital invested in the business by the owner. The percentage return is best thought of in relation to other investments, eg a bank might offer a return of five per cent on a savings account. A person running a business is investing a sum of money in that business, and the profit is the return that is achieved on that investment. However, it should be noted that the risks in running a business are considerably greater than depositing the money with a bank, and an additional return to allow for the extra risk is needed.

For limited companies, the calculation of return on capital employed must take note of their methods of financing. It is necessary to distinguish between the ordinary shareholders' investment (the equity) and the capital employed by the company, which includes preference shares and loan capital, such as debentures/long-term loans:

	Ordinary share capital
add	Reserves (capital and revenue)
equals	Equity
add	Preference share capital
add	Loan capital (including debentures)
equals	Capital Employed

The reason for including preference shares and loan capital in the capital employed is that the company has the use of the money from these contributors for the foreseeable future, or certainly for a fixed time period. Note that a bank overdraft is not included in the capital employed – this is because it is a current liability which is likely to be repaid sooner than loan capital.

The calculation of return on capital employed is:

$$\frac{\textbf{Net profit*}}{\textbf{Capital employed†}} \times \frac{\textbf{100}}{\textbf{1}}$$

* *use operating profit (ie profit from operations) if it is available*

† *for limited companies: this is ordinary share capital + reserves + preference share capital + loan capital; for sole traders, capital employed is the owner's capital in the business*

the difference between profit and cash

This section has looked at the profitability of a business, ie the ability of the business to generate profit. Many people who use accounts are also interested in cash flows – the ability to generate cash.

There is an important difference between profit and cash – it is possible to have a highly profitable company that is using more cash than it is generating so that its bank balance is falling (or its overdraft is increasing). Liquidity (which we shall be looking at in the next section) is important: it is often a lack of cash (a lack of liquidity) that causes most businesses to fail.

To distinguish between cash and profit:

- **cash** is the actual amount of money held in the bank or as cash
- **profit** is a calculated figure which shows the surplus of income over expenditure for the year; it takes note of adjustments for accruals and prepayments and non-cash items such as depreciation and provision for doubtful receivables.

Various transactions have an unequal effect on cash and profit as shown by the examples in the following diagram:

Effect on profit		Transaction	Effect on cash	
increase	decrease		increase	decrease
		• purchase of non-current assets		✓
	✓	• depreciation of non-current assets		
		• issue of new shares	✓	
		• payment of dividends		✓
		• raising of a loan	✓	
		• repayment of a loan		✓
✓		• increase in inventories		✓
	✓	• decrease in inventories	✓	
		• increase in trade receivables		✓
		• decrease in trade receivables	✓	
	✓	• increase in provision for doubtful receivables		
✓		• reduction in provision for doubtful receivables		
		• increase in trade payables	✓	
		• decrease in trade payables		✓

LIQUIDITY

Liquidity ratios measure the financial stability of the business, ie the ability of the business to operate on a short-term basis. For this we focus our attention on the current assets and current liabilities sections of the balance sheet.

The key liquidity ratios are shown linked to the balance sheet of Mithian Trading Company Limited on the next two pages. The ratios are calculated in the Worked Example on pages 348 - 353.

explanation continued on page 346

LIQUIDITY RATIOS

Net current asset ratio* = Current assets / Current liabilities

* also known as the current ratio, or working capital ratio

Liquid capital ratio* = Current assets – inventories / Current liabilities

* also known as the acid test or quick ratio

Rate of inventory turnover (days) = Average inventory* / Cost of sales x 365 days

* usually taken as: (opening inventories + closing inventories) ÷ 2; alternatively, if opening inventories figure not available, use closing inventories from the balance sheet in the calculation

Trade receivables days = Trade receivables / Revenue x 365 days

Trade payables days = Trade payables / Credit purchases or cost of sales x 365 days

CAPITAL STRUCTURE

Gearing ratio* = Debt (loan capital + preference shares, if any) / Equity (ordinary shares + reserves)

* also known as capital gearing ratio, or debt/equity ratio; for a percentage multiply the ratio by 100

Mithian Trading Company Limited

BALANCE SHEET

as at 31 December 20-7

Non-Current Assets	*Cost* £000s	*Depreciation* £000s	*Net book value* £000s
Premises	950	100	850
Fixtures and fittings	300	120	180
Vehicles	350	100	250
	1,600	320	1,280
Current Assets			
Inventories			240
Trade and other receivables			150
Cash and cash equivalents			135
			525
Current Liabilities			
Trade and other payables			(205)
Tax liabilities			(50)
			(255)
Net Current Assets			(270)
			1,550
Non-Current Liabilities			
10% Debentures			(100)
NET ASSETS			1,450
EQUITY			
Issued Share Capital			
1,250,000 ordinary shares of £1 each, fully paid			1,250
Revenue Reserve			
Retained earnings			200
TOTAL EQUITY			1,450

INCOME STATEMENT (extract)

	£000s
Cost of sales	960
Revenue	1,430
Purchases	1,000

Note: Items used in ratios are shown in bold type with a blue background.

net current assets

Net current assets = Current assets – Current liabilities

Net current assets, or working capital, is needed by all businesses in order to finance day-to-day trading activities. Sufficient net current assets enables a business to hold adequate inventories, allow a measure of credit to its customers (trade receivables), and to pay its suppliers (trade payables) as payments fall due.

net current asset ratio (or current ratio, or working capital ratio)

Net current asset ratio = Current assets : Current liabilities

Net current asset ratio uses figures from the balance sheet and measures the relationship between current assets and current liabilities. Although there is no ideal net current asset ratio, an acceptable ratio is about 2:1, ie £2 of current assets to every £1 of current liabilities. However, a business in the retail trade may be able to work with a lower ratio, eg 1.5:1 or even less, because it deals mainly in sales for cash and so does not have a large figure for trade receivables. A net current asset ratio can be too high: if it is above 3:1 an investigation of the make-up of current assets and current liabilities is needed: eg the business may have too much inventory, too many trade receivables, or too much cash at the bank.

liquid capital ratio (or acid test, or quick ratio)

$$\text{Liquid capital ratio} = \frac{\text{Current assets – inventories}}{\text{Current liabilities}}$$

The liquid capital ratio uses the current assets and current liabilities from the balance sheet, but inventories are omitted. This is because inventory is the most illiquid current asset: it has to be sold, turned into trade receivables, and then the cash has to be collected from the trade receivables. Thus the liquid capital ratio provides a direct comparison between trade receivables/cash and short-term liabilities. The balance between liquid assets, that is trade receivables and cash, and current liabilities should, ideally, be about 1:1, ie £1 of liquid assets to each £1 of current liabilities. This means that a business is expected to be able to pay its current liabilities from its liquid assets; a figure below 1:1, eg 0.75:1, indicates that the firm would have difficulty in meeting pressing demands from trade payables. However, as with the net current asset ratio, some businesses are able to operate with a lower liquid capital ratio than others.

rate of inventory turnover

$$\frac{\text{Average inventories}}{\text{Cost of sales}} \times \text{365 days}$$

Rate of inventory turnover is the number of days' inventory held on average. This figure will depend on the type of goods sold by the business. For example, a market trader selling fresh flowers, who finishes each day when sold out, will have an inventory turnover of one day. By contrast, a jewellery shop – because it may hold large stocks of jewellery – will have a much slower inventory turnover,

perhaps sixty or ninety days, or longer. Nevertheless, inventory turnover must not be too long, bearing in mind the type of business. A business which is improving will seek to reduce the number of days' inventory it holds, when comparing one year with the previous one, or with the inventory turnover of similar businesses. This indicates that it is more efficient at managing its inventories.

Inventory turnover can also be expressed as number of times per year:

$$\textbf{Rate of inventory turnover (times per year)} = \frac{\textbf{Cost of sales}}{\textbf{Average inventories}}$$

An inventory turnover of, say, twelve times a year means that about thirty days' inventory is held. Note that inventory turnover can only be calculated where a business buys and sells goods; it cannot be used for a business that provides a service.

trade receivables days

$$\frac{\textbf{Trade receivables}}{\textbf{Revenue}} \times \textbf{365 days}$$

This calculation shows how many days, on average, trade receivables take to pay for goods sold to them by the business. Trade receivables days can be compared with that for the previous year, or with that of a similar business. In the UK, most trade receivables should make payment within about 30 days; however, with international trade, it will take longer for the proceeds to be received. Over time, a business will seek to reduce the trade receivables days, showing that it is more efficient at collecting the money that is due to it.

trade payables days

$$\frac{\textbf{Trade payables}}{\textbf{Purchases}} \times \textbf{365 days}$$

This calculation is the opposite aspect to that of trade receivables: here we are measuring the speed it takes to pay trade payables. While trade payables can be a useful temporary source of finance, delaying payment too long may cause problems, such as stopping the delivery of supplies. This ratio is most appropriate for businesses that buy and sell goods; it cannot be used for a business that provides a service; it is also difficult to interpret when a business buys in some goods and, at the same time, provides a service, eg an hotel. Generally, though, we would expect to see the trade payables days period longer than the trade receivables days, ie money is being received from trade receivables before it is paid out to trade payables. Over time, a business should seek to maintain the same trade payables payment period, and possibly increase it slightly if better terms can be negotiated with suppliers.

Tutorial note: instead of being stated in days, inventory turnover, trade receivables and trade payables periods can also be calculated in weeks or months. Instead of multiplying by 365, use 52 for weeks, or 12 for months.

Capital Structure

Capital structure focuses on the long-term financing of the business – contained in the balance sheet sections for long-term liabilities and equity.

gearing ratio (or capital gearing, or debt/equity ratio)

$$\textbf{Gearing ratio} = \frac{\textbf{Debt (loan capital + preference shares, if any)}}{\textbf{Equity (ordinary shares + reserves)}}$$

Whilst the net current asset and liquid capital ratios focus on whether the business can pay its way in the short-term, gearing is concerned with long-term financial stability. Here we measure how much of the business is financed by debt (including preference shares) against equity (ordinary shares plus reserves) – the debt/equity ratio. The higher the gearing, the less secure will be the ordinary share capital of the business and, therefore, the future of the business. This is because debt is costly in terms of interest payments (particularly if interest rates are variable). It is difficult to set a standard for an acceptable gearing ratio: in general terms most investors (or lenders) would not wish to see debt exceeding equity (ordinary shares + reserves): thus a gearing ratio of greater than 1:1 is undesirable.

Gearing can also be expressed as a percentage – a gearing ratio of 1:1 is a percentage of 100%.

In Chapter 17 (page 314) we have already seen how the gearing ratio is used to guide a business seeking to expand. The business usually has to make a choice between ordinary shares, or loans – the gearing ratio gives an assessment of the effects on long-term financial stability of each course of action.

Note that an alternative calculation for gearing is to measure debt in relation to the capital employed of the company:

$$\textbf{Gearing ratio} = \frac{\textbf{Debt (loan capital + preference shares, if any)}}{\textbf{Capital employed}\ \text{(see page 342)}}$$

This calculation always gives a lower gearing ratio than debt/equity when using the same figures. Accordingly, a gearing ratio of 0.5:1 (50%) would be a normal maximum when calculated in this way.

WORKED EXAMPLE: RATIO ANALYSIS

Ratio analysis is the calculation of a number of accounting ratios. Interpretation of accounts involves the analysis of the relationships between the figures in the accounts and the presentation of the information gathered in a meaningful way to interested parties.

In the Worked Example which follows, we will look at the set of accounts of a limited company. For clarity, one year's accounts are given although, in practice, more than one year's accounts should be used. The comments given indicate what should be looked for when analysing and interpreting a set of accounts.

situation

The following are the accounts of Mithian Trading Company Limited. The business trades in office supplies and sells to the public through three retail shops in its area; it also delivers direct to businesses in the area from its modern warehouse on a local business park.

Using ratio analysis to analyse the financial statements, prepare a report for a potential investor in the company.

Mithian Trading Company Limited

INCOME STATEMENT

for the year ended 31 December 20-7

	£000s	£000s
Revenue		1,430
Opening inventories	200	
Purchases	1,000	
	1,200	
Less closing inventories	240	
Cost of sales		960
Gross profit		470
Overheads:		
Distribution expenses	(150)	
Administration expenses	(140)	
		(290)
Profit from operations		180
Finance costs		(10)
Profit before tax		170
Tax		(50)
Profit for the year		120

Statement of changes in equity

Retained earnings	
Balance at 1 January 20-7	180
Profit for the year	120
	300
Dividends paid	(100)
Balance at 31 December 20-7	200

Mithian Trading Company Limited

BALANCE SHEET

as at 31 December 20-7

Non-Current Assets	*Cost*	*Depreciation*	*Net book value*
	£000s	£000s	£000s
Premises	950	100	850
Fixtures and fittings	300	120	180
Vehicles	350	100	250
	1,600	320	1,280
Current Assets			
Inventories			240
Trade and other receivables			150
Cash and cash equivalents			135
			525
Current Liabilities			
Trade and other payables			(205)
Tax liabilities			(50)
			(255)
Net Current Assets			(270)
			1,550
Non-Current Liabilities			
10% Debentures			(100)
NET ASSETS			1,450
EQUITY			
Issued Share Capital			
1,250,000 ordinary shares of £1 each, fully paid			1,250
Revenue Reserve			
Retained earnings			200
TOTAL EQUITY			1,450

solution

REPORT

To: Potential investor
From: Student Accountant
Date: Today
Subject: Mithian Trading Company Limited – report on financial statements

I have used accounting ratios to analyse the financial statements using the main themes of profitability, liquidity and capital structure.
Please note that all money amounts shown are in £000s.

PROFITABILITY

Gross profit margin

$$\frac{£470}{£1,430} \times \frac{100}{1} = 32.87\%$$

Gross profit mark-up

$$\frac{£470}{£960} \times \frac{100}{1} = 48.96\%$$

Overheads in relation to revenue

$$\frac{£290}{£1,430} \times \frac{100}{1} = 20.28\%$$

Net profit margin

$$\frac{£180^*}{£1,430} \times \frac{100}{1} = 12.59\%$$

Return on capital employed

$$\frac{£180^*}{£1,250 + £200 + £100} \times \frac{100}{1} = 11.61\%$$

* *profit from operations*

The gross profit margin and mark-up, and net profit margin seem to be acceptable figures for the type of business, although comparisons should be made with those of the previous accounting period. A business should always aim at least to hold its margin and mark-up with, ideally, a small improvement. A significant fall may indicate a poor buying policy, poor pricing (perhaps caused by competition), and the causes should be investigated.

Overheads seem to be quite a high percentage of revenue – comparisons need to be made with previous years to see if they are increasing. As they are likely to be a relatively fixed cost, it would seem that the business could increase sales revenue without a corresponding increase in overheads.

Return on capital employed is satisfactory, but could be better. At 11.61% it is less than two percentage points above the ten per cent cost of the debentures.

LIQUIDITY

Net current asset ratio

$$\frac{£525}{£255} = 2.06:1$$

Liquid capital ratio

$$\frac{(£525 - £240)}{£255} = 1.12:1$$

Rate of inventory turnover

$$\frac{(£200 + £240) \div 2 \times 365}{£960} = 83.6 \text{ days (or 4.36 times per year)}$$

Trade receivables days

$$\frac{£150 \times 365}{£1,430} = 38.3 \text{ days}$$

Trade payables days

$$\frac{£205 \times 365}{£1,000} = 75 \text{ days}$$

The net current asset and liquid capital ratios are excellent: they are slightly higher than the expected 'norms' of 2:1 and 1:1 respectively (although many companies operate successfully with lower ratios).

The inventory, trade receivables and trade payables ratios show up the main weakness of the company: not enough business is passing through for the size of the company. The rate of inventory turnover is very low for an office supplies business: the inventory is turning over only every 83 days – surely it should be faster than this. Trade receivables days are acceptable on the face of it – 30 days would be better – but quite a volume of the revenue will be made through the retail outlets in cash. This amount should, if known, be deducted from the sales revenue before calculating trade receivables days: thus the period is, in reality, longer than that calculated. Trade payable days is very slow for this type of business – long delays could cause problems with suppliers in the future.

CAPITAL STRUCTURE

Gearing ratio

$$\frac{£100}{£1,250 + £200} = 0.69:1 \text{ or } 6.9\%$$

The gearing ratio is low: anything up to 1:1 (100%) could be seen. With a low ratio of 0.69:1 this indicates that the company could borrow more money if it wished to finance expansion plans. There are plenty of non-current assets for a lender – such as a bank – to take as security for a loan.

CONCLUSION

This appears to be a profitable business, although there may be some scope for cutting down somewhat on the income statement expenses. The business offers a reasonable return on capital employed, although things could be improved.

The company is liquid and has good net current asset and liquid capital ratios. The main area of weakness is in the use of inventories, trade payables and trade receivables. It appears that the company could do much to reduce the days for inventory turnover and trade receivable days; at the same time trade payables could be paid faster.

Gearing is low – a good sign during times of variable interest rates – and there is scope for borrowing more money to finance expansion plans.

It does seem that there is much scope for expansion within the structure of the existing company. As the benefits of expansion flow through to the final accounts, the ratios will show an improvement from their present leisurely performance.

A potential investor must consider whether the directors of Mithian Trading Company Limited have the ability to focus on the weaknesses shown by ratio analysis and take steps to improve the business.

Limitations in the Use of Ratio analysis

Although ratio analysis can usefully highlight strengths and weaknesses, it should always be considered as a part of the overall assessment of a business, rather than as a whole. We have already seen the need to place ratios in context and relate them to a reference point or standard. The limitations of ratio analysis should always be borne in mind.

retrospective nature of ratio analysis

Accounting ratios are usually retrospective, based on previous performance and conditions prevailing in the past. They may not necessarily be valid for making forward projections: for example, a large customer may become insolvent, so threatening the business with a bad debt, and also reducing sales revenue in the future.

differences in accounting policies

When the accounts of a business are compared, either with previous years' figures, or with figures from a similar business, there is a danger that the comparative accounts are not drawn up on the same basis as those currently being worked on. Different accounting policies, in respect of depreciation and inventory valuation for instance, may well result in distortion and invalid comparisons.

inflation

Inflation may prove a problem, as most financial statements are prepared on an historic cost basis, that is, assets and liabilities are recorded at their original cost. As a result, comparison of figures from one year to the next may be difficult. In countries where inflation is running at high levels any form of comparison becomes practically meaningless.

reliance on standards

We have already mentioned guideline standards for some accounting ratios, for instance 2:1 for the net current asset ratio. There is a danger of relying too heavily on such suggested standards, and ignoring other factors in the balance sheet. An example of this would be to criticise a business for having a low net current asset ratio when the business sells the majority of its goods for cash and consequently has a very low trade receivables figure: this would in fact be the case with many well-known and successful retail companies.

other considerations

Economic: The general economic climate and the effect this may have on the nature of the business, eg in an economic downturn retailers are usually the first to suffer, whereas manufacturers feel the effects later.

State of the business: The director's report for a limited company should be read in conjunction with the financial statements to ascertain an overall view of the state of the business. Of great importance are the products of the company and their stage in the product life cycle, eg is a car manufacturer relying on old models, or is there an up-to-date product range which appeals to buyers?

Comparing like with like: Before making comparisons between 'similar' businesses we need to ensure that we are comparing 'like with like'. Differences, such as the acquisition of assets – renting premises compared with ownership, leasing vehicles compared with ownership – will affect the profitability of the business and the structure of the balance sheet; likewise, the long-term financing of a business – the balance between debt and equity – will also have an effect.

CHAPTER SUMMARY

The key accounting ratios are summarised in this chapter on pages 338 and 344.

- Ratio analysis uses numerical values – percentages, time periods, ratios – extracted from the final accounts of businesses.
- Accounting ratios can be used to measure:
  - profitability
  - liquidity
  - capital structure
- Comparisons need to be made with previous final accounts, or those of similar businesses.
- There are a number of limitations to be borne in mind when drawing conclusions from accounting ratios:
  - retrospective nature, based on past performance
  - differences in accounting policies
  - effects of inflation when comparing year-to-year
  - reliance on standards
  - economic and other factors

QUESTIONS

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An asterisk (*) after the question number means that the answer is given at the end of this book.

18.1* The following information is taken from the income statements of two plcs:

	Amero plc	Britz plc
	£m	£m
Sales revenue	55.7	32.3
Cost of sales	(49.1)	(20.2)
GROSS PROFIT	6.6	12.1
Overheads	(5.0)	(7.4)
PROFIT BEFORE TAX	1.6	4.7
Note: Capital employed	£8.8m	£34.3m

You are to calculate, for each company:

- gross profit margin
- gross profit mark-up
- overheads in relation to revenue
- net profit margin (profit in relation to revenue)
- return on capital employed

18.2* The following is taken from the balance sheets of two plcs:

	Cawston plc	Dunley plc
	£m	£m
Inventories	3.8	4.1
Trade receivables	4.5	0.7
Bank/(bank overdraft)	(0.4)	6.3
Trade payables	5.1	10.7
Long-term loan	3.2	2.1
Ordinary share capital	4.5	8.4
Reserves	1.4	4.7
Notes:		
Sales revenue for year	43.9	96.3
Purchases for year	32.4	85.1
Cost of sales for year	33.6	84.7

(a) You are to calculate, for each company:

- net current asset (current) ratio
- liquid capital (acid test) ratio
- trade receivable days

- trade payable days
- rate of inventory turnover
- gearing ratio

(b) One company runs department stores, the other is a chemical manufacturer. Which is which? Why is this?

18.3 The following information relates to two businesses, Exton and Frimley:

	Exton £000s	Frimley £000s
INCOME STATEMENT (EXTRACTS)		
Sales revenue	3,057	1,628
Cost of sales	(2,647)	(911)
Gross profit	410	717
Overheads	(366)	(648)
Profit for the year	44	69

	Exton £000s	Frimley £000s
SUMMARISED BALANCE SHEETS		
Non-Current Assets	344	555
Current Assets		
Inventories	242	237
Trade and other receivables	6	269
Cash and cash equivalents	3	1
	251	507
Current Liabilities	(195)	(212)
Net Current Assets	56	295
NET ASSETS	400	850
EQUITY		
Capital	400	850

One business operates a supermarket; the other is an engineering company. You are to calculate the following accounting ratios for both businesses:

(a) gross profit margin

(b) gross profit mark-up

(c) overheads in relation to revenue

(d) net profit margin (profit in relation to revenue)
(e) rate of inventory turnover (use balance sheet figure as average inventory)
(f) net current asset (current) ratio
(g) liquid capital (acid test) ratio
(h) trade receivable days
(i) return on capital employed

Indicate which business you believe to be the supermarket and which the engineering company. Briefly explain the reasons for your choice based on the ratios calculated and the accounting information.

18.4 Distinguish between the following terms:

(a) gross profit margin and gross profit mark-up
(b) net current assets and liquid capital
(c) cash and profit
(d) return on capital employed and gearing

18.5* The following figures are extracted from the trial balance of Haque Limited as at 31 December 20-8:

	Dr	Cr
	£	£
Sales revenue		96,000
Purchases	56,000	
Inventory at 1 January 20-8	8,400	
Trade receivables	10,250	
Trade payables		6,000
Bank		1,865
Cash	450	

Notes:

- Inventory at 31 December 20-8 was valued at £5,200
- A customer who owes £2,450 has gone into liquidation and is not expected to be able to pay off any of the debt. No adjustment has been made for this in the above figures.

REQUIRED

(a) Define the terms:
  - net current assets
  - liquid capital

(b) State the formula to be used for:
- net current asset ratio
- liquid capital ratio
- trade receivable days
- trade payable days

(c) Calculate the following for Haque Limited (showing your workings to two decimal places):
- net current asset (current) ratio
- liquid capital (acid test) ratio
- trade receivable days
- trade payable days

(d) Assess the effect on the liquidity and liquidity ratios of Haque Limited of
- writing off the debt for £2,450
- reducing the value of inventories over the year

18.6 Season Suppliers Ltd sell Christmas gifts. The following information is available for the last two years.

	As at 31 October 20-1	As at 31 October 20-2
	£	£
Trade receivables	43,000	32,550
Trade payables	28,500	38,500

	For the year ended 31 October 20-1	For the year ended 31 October 20-2
Sales revenue*	680,000	660,000
Purchases*	520,000	540,000

*all on credit

REQUIRED

(a) State the formula for trade receivable days.

(b) State the formula for trade payable days.

(c) Calculate the trade receivable days for the years ended 31 October 20-1 and 31 October 20-2. Show your workings.

(d) Calculate the trade payable days for the years ended 31 October 20-1 and 31 October 20-2. Show your workings.

(e) Briefly evaluate Season Suppliers Ltd's management of credit control. Base your answers on your calculations from (c) and (d).

Assessment and Qualifications Alliance (AQA), 2003 (with amendments)

18.7 The following accounting ratios have been calculated for two different businesses for the year ended 30 June 20-7:

	Green Ltd	Hawke Ltd
Net current asset (current) ratio	1.1:1	1.8:1
Liquid capital (acid test) ratio	0.6:1	0.9:1
Net profit margin (profit in relation to revenue)	3%	12%
Rate of inventory turnover	20 times	5 times
Return on capital employed	3%	6%

One business is a supermarket; the other is a furniture store.

REQUIRED

(a) State the formula used to calculate each accounting ratio.

(b) Indicate which business you believe to be the supermarket and which the furniture store. Briefly explain the reasons for your choice based on the ratio analysis.

(c) Write a note to the owner of Green Limited suggesting two ways in which the performance of the business could be improved.

18.8* Susie Ng owns a small manufacturing business. Information for the years ended 31 December 2004 and 31 December 2005 is as follows:

	2004	2005
	£	£
Sales revenue	320,000	280,000
Cost of sales	160,000	160,000
Overheads	140,000	90,000
Current assets	420,000	360,000
Current liabilities	140,000	180,000

REQUIRED

(a) Calculate a relevant ratio to show the liquidity of the business for each of the two years. State the formula used.

(b) Calculate **one** relevant ratio to show the profitability of the business for **each** of the two years. State the formula used.

(c) Write a report to Susie explaining the significance of the ratios calculated.

Assessment and Qualifications Alliance (AQA), 2006

18.9* The following information is available for Eurometics Ltd.

	Year ended 30 April 20-3		Year ended 30 April 20-4	
	£	£	£	£
Sales revenue		300,000		400,000
Opening inventories	40,000		50,000	
Purchases	250,000		340,000	
	290,000		390,000	
Closing inventories	(50,000)		(60,000)	
Cost of sales		240,000		330,000
Gross profit		60,000		70,000

REQUIRED

(a) Calculate the rate of inventory turnover for each year. State the formula used.

(b) Calculate the gross profit margin for each year. State the formula used.

(c) Assess the profitability of Eurometics Ltd by comparing the performance for the years ended 30 April 20-3 and 30 April 20-4.

Assessment and Qualifications Alliance (AQA), 2004 (with amendments)

18.10 The following information relates to Aaron and Associates Ltd as at 31 December 2004.

	£
Ordinary shares of £1 each	200,000
Share premium	40,000
Retained earnings as at 31 December 2004	140,000

During the next financial year the business intends to expand.

The directors are considering two proposals to raise finance:

Proposal 1 – to issue 100,000 ordinary shares of £1 each at a price of £2.20 per share

or Proposal 2 – to arrange a long-term bank loan of £160,000 and an overdraft of £60,000.

The forecast net profit for the year ending 31 December 2005 is £30,000.

REQUIRED

(a) State the formula used to calculate the Return on Capital Employed (ROCE).

(b) Calculate the Return on Capital Employed (ROCE) for **each** of the proposals.

(c) Write a report to an existing shareholder of Aaron and Associates Ltd analysing the effects of each proposal.

Assessment and Qualifications Alliance (AQA), 2005

18.11 The following trial balance has been extracted from the books of account of Falcon Ltd at 31 March 2007 **after** the preparation of the income statement.

	Dr	Cr
	£	£
Bank	1,058	
Debenture (2011 - 2013)		28,000
Fixtures and fittings – net book value	17,500	
Issued ordinary shares of £1 each, fully paid		50,000
Premises – net book value	80,000	
Provision for corporation tax		7,900
Retained earnings at 31 March 2007		19,832
Share premium account		5,000
Inventory at 31 March 2007	14,560	
Trade payables		7,842
Trade receivables	5,456	
	118,574	118,574

The following adjustments need to be made before the preparation of a balance sheet.

1. The directors have had the premises valued and wish to include the revaluation in the final accounts. The premises are to be valued at £200,000.
2. The directors made a rights issue of ordinary shares, at a premium of 20p, on the basis of 1 new share for every 2 shares held. The rights issue was fully subscribed.

REQUIRED

(a) Prepare a balance sheet at 31 March 2007 after making any necessary adjustments.

(b) Calculate the gearing ratio **before** and **after** making any necessary adjustments. State the formula used.

(c) Assess the impact of the rights issue and the revaluation of the premises on the gearing of Falcon Ltd.

Assessment and Qualifications Alliance (AQA), Specimen Paper for 2009 (with amendments)

18.12 A friend of yours, Samantha Smith, owns a shop selling children's clothes. You are helping Samantha to understand her financial statements which have been prepared by her accountant. She says to you: "I cannot understand why my bank overdraft has increased in a year when I have made such a good profit."

REQUIRED

(a) Explain to Samantha the difference between profit and cash.

(b) Give two examples to explain how a business can make a good profit during a year when the bank balance reduces or the bank overdraft increases.