CHAPTER 28

Analytical analysis – selective use of ratios

28.1 Introduction

The main purpose of this chapter is to explain the selective use of ratios required to satisfy specific user objectives.

Objectives

By the end of the chapter, you should be able to:

- prepare and interpret common size statements of income and financial position;
- explain the use of ratios in determining whether a company is shariah compliant;
- explain the use of ratios in debt covenants;
- critically discuss various scoring systems for predicting corporate failure;
- critically discuss remuneration performance criterion;
- calculate the value of unquoted investments;
- critically discuss the role of credit rating agencies.

28.2 Improvement of information for shareholders

There have been a number of discussion papers, reports and voluntary code provisions from professional firms and regulators making recommendations on how to provide additional information. These have some common themes which include: (a) making financial information more understandable and easier to analyse; (b) improving the reliability of the historical financial data; and (c) the opportunity for investors to form a view as to the business's future prospects.

28.2.1 Making financial information more understandable and easier to analyse

There has been a view that users should bring a reasonable level of understanding when reading an annual report. This view could be supported when transactions were relatively simple. It no longer applies when even professional accountants comment that the only people who understand some of the disclosures are the technical staff of the regulator and

the professional accounting firms. Users need the financial information to be made more accessible and easier to interpret.

28.2.2 Making the information accessible

The ICAS (the Institute of Chartered Accountants in Scotland) produced a report in 1999, *Business Reporting: the Inevitable Change?* which proposed that financial and non-financial business information should be more timely, more forward looking and more accessible to non-expert users to assist them to understand the drivers of corporate performance. This would also help ensure the equal treatment of all investors and improve accountability for stewardship, investor protection and the usefulness of financial reporting. Such information would improve the level of transparency but there would be constraints arising from commercial confidentiality and potential litigation.

28.2.3 Making the information easier to interpret

Investors do not currently have the means to analyse the financial data easily. Traditionally attention has focused on financial data which have been paper-based. Investors have had to be dependent on analysts or access to the various commercial databases, e.g. Datastream, for data in electronic format for further analysis.

The Internet is about to change this by focusing on how to report rather than what to report. It has the capacity to give investors the means to readily analyse the financial data by providing it in a uniform format which can be easily transported into other systems, e.g. Excel. It achieves this through the Extensible Business Reporting Language (XBRL) which has been developed to allow information to be described uniformly and tagged. A demonstration website has been developed by Microsoft, NASDAQ and PricewaterhouseCoopers.[1] This is discussed in Chapter 29.

28.2.4 The reliability of current financial information

Investors rely on annual reports and the various mid-year reports and are entitled to assume that these give a fair view of a company's financial performance and position. However, following various accounting scandals such as Enron, there is a lack of confidence among investors that the information provided is a fair representation. There is a need for greater transparency, for example, reporting the commercial effect of any off balance sheet transactions that have a material impact on a company's viability and continuing existence.

28.2.5 Audit independence needs to be strengthened

Many of the schemes which have kept liabilities off the statement of financial position have been actively promoted by the auditors. This has meant that the auditors are not seen as protecting the interests of the shareholders. The profession is aware of this view held by the public and of the existence of an expectation gap that needs addressing. This is discussed further in Chapter 30.

28.2.6 Future business prospects

Shareholders rely on information provided by companies when they make their investment decisions. Traditionally this information has been historical and the narrative in the annual report has been to explain what has happened commercially during the financial year and provide sensitive information such as the make-up of directors' remuneration. The pressure

now is for managers to share their assessment of future business prospects so that investors can make informed investment decisions.

28.2.7 Disclosure of strategies

In 1999 the ICAEW produced a report *No Surprises: The Case for Better Risk Reporting*. This report recognised the need for management to disclose their strategies and how they managed risk whilst stating that the intention was not to encourage profit smoothing but rather a better management of risk and a better understanding by investors of volatility.

28.3 Disclosure of risks and focus on relevant ratios

The ICAEW has proposed that listed companies should be at the forefront of improved risk reporting in financial statements. In a 1998 discussion paper, *Financial Reporting of Risk*,[2] it attempted to encourage the inclusion of better-quality information on business risks so that users of accounts had a better understanding of the risks underlying a business's activity. There is a benefit to the company in that the cost of capital is lower where there is more transparency and disclosure of risk management. With specific reference to ratio analysis, the discussion paper argued that 'the preparation of a statement of business risk should help preparers and users to focus on the ratios that are most relevant to the particular business risks that are most relevant to individual companies' (para. 6.16).

28.3.1 Focus on relevant ratios

In the previous chapter we applied a pyramid approach to the calculation of ratios covering profitability, liquidity and asset turnover rates.

In this chapter we are looking at targeting the ratios that are relevant to the particular interests of the user. We look at the use of techniques which raise flags indicating which of the ratios might be particularly relevant to the analysis of a specific individual company's financial statements.

We will start with the initial analytical overview that an auditor or potential investor might carry out. This will be followed by the use of ratios when identifying shariah compliant investments, companies at risk of failing and valuing shares in an unquoted company.

28.3.2 The initial overview

When beginning to analyse a company's financial statements it is a good starting point to prepare a common size statement of financial position which is simply a vertical analysis to assess the strength of the statement of financial position with assets and liabilities each shown as a percentage of a base figure.

A horizontal analysis is then carried out on areas that require further investigation.

28.3.3 Vertical analysis – common size statements

The vertical analysis approach highlights the structure of the statement of financial position by presenting non-current assets, working capital, debt and equity as a percentage of debt plus equity. It allows us to form a view on the financing of the business. In particular the extent to which a business is reliant on debt to finance its non-current assets. In times of recesssion this is of particular interest and is described as indicating the strength of the financial position.

Illustration – Vertigo plc

We will illustrate with using the statement of financial position of Vertigo plc as at 1 April 20X7. Let us assume that you are a trainee in an accounting firm that has been approached by a client to give an initial view on a possible investment in Vertigo. Vertigo is a family company. The major shareholder is nearing retirement and the younger family members are not interested in managing the business. The client is concerned that, with companies failing in the recession, the business might not be financed adequately and, with an older management team, might not be as efficient as she would hope. Apparently, Vertigo is seeking additional funds to replace some of its equipment which will soon need to be replaced.

There is a draft statement of financial position available and the auditors are soon due to start their audit.

Draft statement of financial position as at 1 April 20X7

	£000
Non-current assets:	
Equipment	2,240
Motor vehicles	441
Investments	340
	3,021
Current assets:	
Inventory	398
Trade receivables	912
Cash and bank	11
	4,342

	£000
Equity and reserves:	
Ordinary shares of 50p each	3,000
Retained earnings	262
5% Debentures	600
Current liabilities:	
Trade payables	398
Accrued expenses	12
Taxation	29
Bank overdraft	41
	4,342

Common size statement – making an initial assessment of the financial structure

as at 1 April 20X7

	£000	*%*
Non-current assets	3,021	78.2
Working capital	841	21.8
Total	3,862	100
Equity	3,262	84.5
Debt	600	15.5
Total	3,862	100

From this we can see that the company has a strong statement of financial position in that the long-term assets are fully financed by shareholders with a contribution also made towards funding the working capital. We can then express this in terms of the ratios from the previous chapter by calculating the debt/equity ratio – in this example it is reasonably low at 18.4%. First impression is that the financial structure is sound.

We can then extend this by restating assets, liabilities and equity as a percentage of total assets to see the relationships within the total assets, as follows:

	£000	%
Non-current assets	3,021	69.5
Current assets	1,321	30.5
Total	4,342	100
Equity	3,262	75.1
Debt	600	13.8
Current liabilities	480	11.1
Total	4,342	100

The long-term debt to total liabilities ratio is 13.8% and we can see the current position appears relatively high with a current ratio of 2.75:1.

Vertigo, to support its search for additional funds, has also produced a forecast statement for the following year as shown below.

Vertigo's statements for 20X7 and 20X8 are as follows:

	20X7	*20X8*
	£000	*£000*
Non-current assets:		
Machinery	2,240	2,100
Motor vehicles	441	394
Investments	340	340
	3,021	2,834
Current assets:		
Inventory	398	563
Trade receivables	912	1,181
Cash and bank	11	9
	4,342	4,587
		£000
Equity and reserves:		
Ordinary shares of 50p each	3,000	3,000
Retained earnings	262	353
	3,262	3,353
5% Debentures (repayable in 8 years)	600	600
Current liabilities:		
Trade payables	398	498
Accrued expenses	12	15
Taxation	29	24
Bank overdraft	41	97
	4,342	4,587

Inter-period comparisons of financial structure

Both years are restated in common size format as follows:

	20X7 £*000*	*20X7* %	*20X8* £*000*	*20X8* %
Non-current assets	3,021	69.5	2,834	61.8
Current assets	1,321	30.5	1,753	38.2
Total	4,342	100	4,587	100
Equity	3,262	75.1	3,353	73.1
Debt	600	13.8	600	13.1
Current liabilities	480	11.1	634	13.8
Total	4,342	100	4,587	100

This indicates that the financial strength is maintained in terms of the debt/equity relationship. The financing from current liabilities has increased and we need to review the current position. The current ratio has increased slightly to 2.78:1 and needs to be investigated and compared with an industry average.

There is no indication of a financing problem. However, it doesn't tell us whether the working capital is properly controlled. For that we would resort to the turnover ratios discussed in the previous chapter in relation to inventory, receivable and payable turnover rates.

28.3.4 Horizontal analysis

A horizontal analysis looks at the percentage change that has occurred. In this case it would be helpful to prepare this for the area that seems to require closer investigation i.e. current asset and liabilities. The anlysis is as follows:

	20X7 £*000*	*20X8* £*000*	*% change*
Current assets:			
Inventory	398	563	+41.5
Trade receivables	912	1,181	+29.5
Cash and bank	11	9	–18.1
Trade payables	398	498	+25.1
Accrued expenses	12	15	+25.0
Taxation	29	24	–17.2
Bank overdraft	41	97	+136.5

This indicates that although there has been a 5% increase in sales, there has been a build up of inventory and the credit allowed and taken has increased significantly.

The next step would be to extract the turnover ratios for inventory, trade receivables and payables and ascertain the terms and limit of the overdraft.

These would be as follows showing that receivables credit period has been extended from 101 days to 126 days and payables period extended from 60 days to 69 days.

	20X7 *Times*	*20X8* *Times*
Current assets:		
Inventory turnover:		
Cost of sales/Average inventory		
2,240/((253 + 398)/2)	6.9	
2,458/((398 + 563)/2)		5.1
Trade receivables turnover		
Sales/closing trade receivables		
3,296/912	3.6	
3,461/1,181		2.9
Trade payables:		
Purchases/Closing trade payables		
2,385/398	6.0	
2,623/498		5.3

The financial position is strong in relation to long-term debt to equity in both years. However, the increase in working capital has led to a greater reliance on bank overdraft facilities and is a cause for concern.

Further information is required to determine the risks arising from the inventory. Why has the increase occurred? Is there a greater risk of obsolescence or further pressure to reduce the gross profit margin to move the inventory?

Also with regard to the trade receivables build up. Has there been a change in the credit terms? Has that been a formal arrangement? Has the company changed its criteria for creating an allowance for bad debts? Bad debts have fallen but is this due to a reluctance to chase late payment?

28.3.5 Overview of the cost structures – vertical analysis

Preparing a common size statements of income gives an indication of the cost structure so that we an see the relative significance of costs.

The income statements of Vertigo plc for 20X7 and 20X8 are as follows:

	20X7 *£000*	*20X8* *£000*
Sales revenue	3,296	3,461
Inventory – 1.4.20X7	253	398
Purchases	2,385	2,623
Inventory – 31.3.20X8	(398)	(563)
Cost of goods sold	(2,240)	(2,458)
Gross profit	1,056	1,003
Distribution costs:		
Depreciation	239	187
Bad debts	32	17
Advertising	94	24
Administrative expenses:		
Rent	60	60
Salaries & wages	316	362
Miscellaneous expenses	212	237
Operating profit	103	116
Dividend received	51	
Profit before taxation	154	116
Taxation	(39)	(25)
Profit after taxation	115	91

An overview is obtained by restating by function into a common size statement format as follows:

	20X7 £*000*	*20X7* %	*20X8* £*000*	*20X8* %
Sales	3,296	100.0	3,461	100.0
Cost of sales	2,240	68.0	2,458	71.0
Total gross profit	1,056	32.0	1,003	29.0
Distribution costs	365	11.1	228	6.6
Administration expenses	588	17.8	659	19.0
Net profit before tax	103	3.1	116	3.4

We can see that there has been a change in the cost structure with a fall in the gross profit from 32% to 29% compensated for by a significant fall in the distribution costs.

28.3.6 Overview of the cost structures – horizontal analysis

An overview is obtained by calculating the percentage change as follows:

	20X7 £*000*	*20X8* £*000*	*% change*
Sales	3,296	3,461	+5.0
Cost of sales	2,240	2,458	+9.7
Total gross profit	1,056	1,003	-5.0
Distribution costs	365	228	-37.8
Administration expenses	588	659	+12.1
Net profit before tax	103	116	+12.6

Sales have increased by 5% and operating profit by 12.6%. The gross profit margin has fallen with the 9.7% increase in the cost of sales. This requires further enquiry. Has there been a change in the selling price? Has there been a change to maintain sales volume at the expense of the profit margin? Has there been discounting or longer running sales? Has there been a change in the sales mix? Have purchase prices risen? Have there been currency effects? Has there been a change in suppliers? If so, why?

Targeted for further enquiry

The change in both distribution costs and administrative expenses are significant and not in line with the increase in sales. This means that the detailed costs within both these headings require further analysis.

28.3.7 Analysis of the percentage changes in individual expenses

For our illustration we have assumed that it is an enquiry for a client considering investing. The detailed analysis that we are now preparing would also be a routine procedure when designing audit tests as it targets areas of significant change.

Horizontal analysis

	20X7	*20X8*	
	£000	*£000*	*% change*
Sales revenue	3,296	3,461	+5.0
Inventory – Opening	253	398	
Purchases	2,385	2,623	+10.0
Inventory – Closing	(398)	(563)	+41.5
Cost of goods sold	(2,240)	(2,458)	+9.7
Gross profit	1,056	1,003	–5.0
Distribution costs:			
Depreciation	239	187	–2.2
Bad debts	32	17	–46.9
Advertising	94	24	–74.5
Administrative expenses:			
Rent	60	60	
Salaries and wages	316	362	+14.6
Miscellaneous expenses	212	237	+11.8
Operating profit	103	116	+12.6

The changes are then reviewed for (a) distribution costs an (b) administrative expenses.

(a) Review of distribution costs

It is interesting to see that discretionary costs in the form of Advertising have been reduced by 74.5%. If the Advertising had been maintained at 20X7 levels the opertaing profit would be reduced by £70,000 to £46,000 which would have shown a fall from the previous year of 55% rather than an an increase of 12.6%.

There should be further enquiry to establish whether (a) the normal level over the previous three years – whether there was heavier advertising in 20X7 to achieve the 5% increase in sales in the light of the company's intention to attempt to obtain further investment in 20X8 and (b) whether this is likely to have an adverse effect on 20X9 sales and (c) what the company's reason was for reduced spending. This is more of a commercial relevance than audit relevance.

Bad debts have fallen although there has been an increase in sales and the credit period has increased to 126 days. This raises a query as to the company's credit control and possibility of more bad debts.

(b) Review of administration expenses

Salaries and administration expenses have increased significantly.

Administration costs have risen. Enquire whether this is due to salary increases or taking on extra staff – possibly connected with the increase in trade receivables and inventory holding.

From an audit point of view, attention would be directed towards the audit implications for salaries. For example, verification of existence of staff, approval of any rate increases and internal control over payments. Miscellaneous expenses were found to include loan interest.

28.3.8 Report following common size exercise

The long-term financing as evidenced by the debt/equity ratio is sound. There is not an excessive level of debt.

The current position needs further enquiry. There is a growing overdraft. However, the current ratio is high at 2.75:1 and if the trade receivables are recoverable and if the credit period were reduced to 90 days the overdaft would be eliminated.

The control over working capital requires further enquiry. The days credit allowed and taken and inventory turnover rates have been calculated. This appears to indicate a lack of control with the build up of receivables – it is uncertain if this is deliberate or a sign of difficulty in obtaining payment. There is also a decrease in the inventory turnover rate – this might be due to inefficiency or, of more concern, indicate that the market for the product is slipping.

The costs need exploring further. In particular the commercial impact of the fall in advertising needs to be assessed.

Stress testing

There needs to be a sensitivity check to see the effect of a fall in sales. For example, if there were to be a fall of 10% in 20X9 resulting from the cut in advertising, what would be the impact on operating profit and interest cover? Assuming that cost of sales remains at 71% and distribution costs and administrative expenses (excluding loan interest) are relatively fixed, then the operating profit would fall to £45,700 (20X8 £146,000 being £116,000 + interest £30,000) and interest cover would fall to 1.5 (45,700/30,000) from 4.9 (146,000/30,000).

28.4 Shariah compliant companies – why ratios are important

This use of ratios is included because of the growing importance of investment in shariah compliant companies. Islamic banking is gaining popularity all over the world with a forecast that investments worth $100 billion will be made globally in this system by 2010. There are many major multinationals included in shariah indices including companies such as Google Inc., TOTAL SA, BP plc, Exxon Mobil Corp., Petroleo Brasileiro, Novartis AG, Roche Holding, GlaxoSmithKline plc, BHP Billiton Ltd, Siemens AG, Samsung Eectronics, International Business Machines Corp, Nestle SA, and Coca-Cola. There are also major private equity investors. For example, the following is an extract titled *Shari'ah Compliant Private Equity Finance*:[3]

> Major private equity investors in the Gulf include the Gulf Finance House and Investment Dar of Kuwait . . . Investment Dar and Dubai based investment companies have Shari'ah boards . . . Investment Dar is perhaps the best known internationally as a result of its purchase of Aston Martin, the British based luxury sports car manufacturer. It has extensive interests in real estate . . . With its working capital exceeding KD 500 million, ($1.85 billion) Investment Dar is well positioned to undertake strategic private equity investments.

28.4.1 The criteria for determining that a company is shariah compliant

Islam, like some other religions, commands followers to avoid consumption of alcohol and pork and so Muslims do not condone investments in those industries. There is screening to check that (a) business activities are not prohibited and (b) certain of the financial ratios do not exceed specified limits.

Investors interested in establishing whether a company is shariah compliant are assisted by the service provided by various Islamic Indices where the constituent companies have been screened to confirm that they are shariah compliant with reference to the nature of the business and debt ratios.

A number of indices have been created which only include companies that are shariah compliant such as the MSCI[4] Global Islamic Indices and the Dow Jones[5] Islamic index. It is interesting to look at the methodology in preparing these two indices.

28.4.2 The MSCI Islamic Indices – methodology

The indices are compiled after:

- screening companies to confirm that their business activities are not prohibited (or fall within the 5% permitted threshold);
- calculating three financial ratios based on total assets; and
- calculating a dividend adjustment factor which results in more relevant benchmarks, as they reflect the total return to an Islamic portfolio net of dividend purification.

MCSI explains its methodology as follows.

Business activity screening

Shariah investment principles do not allow investment in companies which are directly active in, or derive more than 5% of their revenue (cumulatively) from, the following activities ('prohibited activities'):

- Alcohol: distillers, vintners and producers of alcoholic beverages, including producers of beer and malt liquors, owners and operators of bars and pubs.
- Tobacco: cigarettes and other tobacco products manufacturers and retailers.
- Pork-related products: companies involved in the manufacture and retail of pork products.
- Conventional financial services – an extensive range including commercial banks, investment banks, insurance companies, consumer finance such as credit cards and leasing.
- Defence/weapons: manufacturers of military aerospace and defence equipment, parts or products, including defence electronics and space equipment.
- Gambling/casino: owners and operators of casinos and gaming facilities, including companies providing lottery and betting services.
- Music: producers and distributors of music, owners and operators of radio broadcasting systems.
- Hotels: owners and operators of hotels.

Financial screening

Shariah investment principles do not allow investment in companies deriving significant income from interest or companies that have excessive leverage. MSCI Barra uses the following three financial ratios to screen for these companies:

- total debt over total assets;
- sum of a company's cash and interest-bearing securities over total assets;
- sum of a company's accounts receivables and cash over total assets.

None of the financial ratios may exceed 33.33%.

Dividend purification

If a company does derive part of its total income from interest income and/or from prohibited activities, shariah investment principles state that this proportion must be deducted from the dividend paid out to shareholders and given to charity. MSCI Barra will apply a 'dividend adjustment factor' to all reinvested dividends.

The 'dividend adjustment factor' is defined as: (total earnings – (income from prohibited activities + interest income)) / total earnings. In this formula, total earnings are defined as gross income, and interest income is defined as operating and non-operating interest.

MSCI Barra will review the 'dividend adjustment factor' on an annual basis at the May Semi-Annual Index Review.

28.4.3 Dow Jones Islamic Indexes

The Dow Jones Islamic Market Indexes were introduced in 1999 as the first benchmarks to represent Islamic-compliant portfolios. Today the series encompasses more than 70 indexes. The indexes are maintained based on a stringent and published methodology. An independent Shariah Supervisory Board counsels Dow Jones Indexes on matters related to the compliance of index-eligible companies.

The business activities screening carried out to confirm that shariah principles have been followed is the same as that which is carried out by MCSI. The financial ratios are calculated differently as follows:

All of the following should be less than 33%:

- total debt divided by trailing 12-month average market capitalisation;
- the sum of a company's cash and interest-bearing securities divided by trailing 12-month average market capitalisation;
- accounts receivables divided by trailing 12-month average market capitalisation.

MCSI explains that it uses total assets as the base rather than market capitalisation as this results in lower index volatility and lower index turnover, as market capitalisation can be more volatile than total assets.

It follows that the ratios of certain sectors, such as property developing companies that are frequently highly geared, would exceed the 33% criteria.

Subsequent screening

After the initial investment, subsequent screening would be similar to the checks that banks make to confirm that debt covenants have not been breached.

Other indices

There are a number of other indices including the FTSE Global Islamic Index Series; the FTSE SGX Shariah Index Series; the FTSE DIFX Shariah Index Series and the FTSE Bursa Malaysia Index Series.

28.5 Ratios set by lenders in debt covenants

Lenders may require borrowers to do certain things by affirmative covenants or refrain from doing certain things by negative covenants.

Affirmative covenants may, e.g. include requiring the borrower to:

- provide quarterly and annual financial statements;
- remain within certain ratios whilst ensuring that each agreed ratio is not so restrictive that it impairs normal operations:
  - maintain a current ratio of not less than an agreed ratio – say 1.6 to 1;
  - maintain a ratio of total liabilities to tangible net worth at an agreed rate – say no greater than 2.5 to 1;
  - maintain tangible net worth in excess of an agreed amount – say £1 million;
- maintain adequate insurance.

Negative covenants may, for example, include requiring the borrower **not** to:

- grant any other charges over the company's assets;
- repay loans from related parties without prior approval;
- change the group structure by acquisitions, mergers or divestment without prior agreement.

28.5.1 What happens if a company is in breach of its debt covenants?

Borrowers will normally have prepared forecasts to assure themselves and the lenders that compliance is reasonably feasible – such forecasts will also normally include the worst case scenario, e.g. taking account of seasonal fluctuations that may trigger temporary violations with higher borrowing required to cover higher levels of stock and debtors.

If any violation has occurred, the lender has a range of options, such as:

- amending the covenant, e.g. accepting a lower current ratio; or
- granting a waiver period when the terms of the covenant are not applied; or
- granting a waiver but requiring the loans to be restructured; or
- requiring the terms to be met within a stipulated period of grace, or, as a last resort;
- declaring that the borrower is in default and demanding repayment of the loan.

However, since the credit crisis it is unlikely that banks will be as relaxed about any breach as they might have been pre-2008 and serious thought has to be given to the risk to an entity's going concern if a breach has occurred.

In times of recession a typical reaction is for companies to take steps to reduce their operating costs, align production with reduced demand, tightly control their working capital and reduce discretionary capital expenditure.

In addition, steps may be taken to reduce interest by paying down overdrafts and loans. For example, the following is an extact from the Xstrata 2008 Annual Report:

> Our announcement of a 2 for 1 rights issue to raise £4.1 billion (approximately $5.9 billion) excluding costs, will provide a significant injection of capital, mitigate the risks presented by the current uncertainty and remove this potential constraint. The proceeds of the rights issue will be used to repay bank debt.

28.5.2 Risk of aggressive earnings management

In 2001, before the collapse of Enron, there was a consensus amongst respondents to the UK Auditing Practices Board Consultation Paper *Aggressive Earnings Management* that aggressive earnings management was a significant threat and actions should be taken to diminish it. It was considered that aggressive earnings management could occur when there was a need to meet or exceed market expectations and when directors' and managements'

remuneration were linked to earnings – also, but to a lesser extent, to understate profits to reduce tax liabilities or to increase profits to ensure compliance with loan covenants.

In 2004, as a part of the *Information for Better Markets* initiative, the Audit and Assurance Faculty commissioned a survey[6] to check whether views had changed since 2001. This showed that the vulnerability of corporate reporting to manipulation is perceived as being always with us but at a lower level following the greater awareness and scrutiny by non-executive directors and audit committees.

The *analysts* interviewed in the survey believed the potential for aggressive earnings management varied from sector to sector, e.g. in the older, more established sectors followed by the same analysts for a number of years, they believed that company management would find it hard to disguise anything aggressive even if they wanted to – however, this was not true of newer sectors (e.g. IT) where the business models may be imperfectly understood.

Whilst analysts and journalists tend to have low confidence in the reported earnings where there are pressures to manipulate, there is a research report[7] which paints a rather more optimistic picture. This report aimed to assess the level of confidence investors had in different sources of company information, including audited financial information, when making investment decisions. As far as audited financial information was concerned, the levels of confidence in UK audited financial information amongst UK and US investors remained very high, with 87% of UK respondents having either a 'great deal' or a 'fair amount' of confidence in UK audited financial information.

The auditing profession continues to respond to the need to contain aggressive earnings management. This is not easy because it requires a detailed understanding not only of the business but also of the process management follow when making their estimates. The proposed ISA 540 Revised, *Auditing Accounting Estimates, including Fair Value Accounting Estimates, and Related Disclosures*, requires auditors to exercise greater rigour and scepticism and to be particularly aware of the cumulative effect of estimates which in themselves fall within a normal range but which, taken together, are misleading.

28.5.3 Audit implications when there is a breach of a debt covenant

Auditors are required to bring a healthy scepticism to their work. This applies particularly at times such as when there is a potential debt covenant breach. There may then well be a temptation to manipulate to avoid reporting a breach. This will depend on the specific covenant, e.g. if the current ratio is below the agreed figure, management might be more optimistic in setting inventory obsolescence and accounts receivable provisions and have a lower expectation of the likelihood of contingent liabilities crystallising.

28.5.4 Impact on share price

If there is a risk of bank covenants being breached, there can be a significant adverse effect on the share price, e.g. the Jarvis share price tumbled 24%, wiping £64 million off the engineering services group's stock market value as a result of fears that bank covenants would be breached.[8]

28.6 Predicting corporate failure

In the preceding chapter we extolled the virtues of ratio analysis for the interpretation of financial statements. However, ratio analysis is an excellent indicator only when applied properly. Unfortunately, a number of limitations impede its proper application. How do we know which ratios to select for the analysis of company accounts? Which ratios can be

combined to produce an informative end-result? How should individual ratios be ranked to give the user an overall picture of company performance? How reliable are all the ratios – can users place more reliance on some ratios than others?

We will now discuss how Z-scores, H-scores and A-scores address this.

Z-score analysis can be employed to overcome some of the limitations of traditional ratio analysis. It evaluates corporate stability and, more importantly, predicts potential instances of corporate failure. All the forecasts and predictions are based on publicly available financial statements.[9] The aim is to identify potential failures so that 'the appropriate action to reverse the process [of failure] can be taken before it is too late'.[10]

28.6.1 What are Z-scores?

Inman describes what Z-scores are designed for:

> Z-scores attempt to replace various independent and often unreliable and misleading historical ratios and subjective rule-of-thumb tests with scientifically analysed ratios which can reliably predict future events by identifying bench marks above which 'all's well' and below which there is imminent danger.[11]

Z-scores provide a single-value score to describe the combination of a number of key characteristics of a company. Some of the most important predictive ratios are weighted according to perceived importance and then summed to give the single Z-score. This is then evaluated against the identified benchmark.

The two best known Z-scores are Altman's Z-score and Taffler's Z-score.

Altman's Z-score

The original Z-score equation was devised by Professor Altman in 1968 and developed further in 1977.[12] The original equation is:

$$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

where

X_1 = Working capital/Total assets
(Liquid assets are being measured in relation to the business's size and this may be seen as a better predictor than the current and acid test ratios which measure the interrelationships within working capital. For X_1 the more relative Working Capital, the more liquidity.)

X_2 = Retained earnings/Total assets
(In early years the proportion of retained earnings used to finance the total asset base may be quite low and the length of time the business has been in existence has been seen as a factor in insolvency. In later years the more earnings that are retained the more funds that could be available to pay creditors. Also acts an indication of a company's dividend policy – a high dividend payout reduces the retained earnings with impact on solvency and creditors' position.)

X_3 = Earnings before interest and tax/Total assets
(Adequate operating profit is fundamental to the survival of a business.)

X_4 = Market capitalisation/Book value of debt
(This is an attempt to include market expectations which may be an early warning as to possible future problems. Solvency is less likely to be threatened if shareholders' interest is relatively high in relation to the total debt.)

X_5 = Sales/Total assets
(This indicates how assets are being used. If efficient, then profits available to meet interest payments are more likely. It is a measure that might have been more appropriate when Altman was researching companies within the manufacturing sector. It is a relationship that varies widely between manufacturing sectors and even more so within knowledge-based companies.)

Altman identified two benchmarks. Companies scoring over 3.0 are unlikely to fail and should be considered safe, while companies scoring under 1.8 are very likely to fail. The value of 3.0 has since been revised down to 2.7.[13] Z-scores between 2.7 and 1.8 fall into the grey area. The 1968 work is claimed to be able to distinguish between successes and failures up to two or three years before the event. The 1977 work claims an improved prediction period of up to five years before the event.

The Zeta model

This was a model developed by Altman and Zeta Services Inc in 1977. It is the same as the Z-score for identifying corporate failure one year ahead but it is more accurate in identifying potential failure in the period two to five years ahead. The model is based on the following variables:

X_1 return on assets:earnings before interest and tax/total assets;

X_2 stability of earnings:normalized return on assets around a five- to ten-year trend;

X_3 debt service:earnings before interest and tax/total interest;

X_4 cumulative profitability:retained earnings/total assets;

X_5 liquidity:the current ratio;

X_6 capitalisation:equity/total market value;

X_7 size:total tangible assets.

Zeta is available as a subscription service and the coefficients have not been published.

Taffler's Z-score

The exact definition of Taffler's Z-score[14] is unpublished, but the following components form the equation:

$$Z = c_0 + c_1X_1 + c_2X_2 + c_3X_3 + c_4X_4$$

where

X_1 = Profit before tax/Current assets (53%)

X_2 = Current assets/Current liabilities (13%)

X_3 = Current liabilities/Total assets (18%)

X_4 = No credit interval = Length of time which the company can continue to finance its operations using its own assets with no revenue inflow (16%)

c_0 to c_4 are the coefficients, and the percentages in brackets represent the ratios' contributions to the power of the model.

The benchmark used to detect success or failure is 0.2.[15] Companies scoring above 0.2 are unlikely to fail, while companies scoring less than 0.2 demonstrate the same symptoms as companies that have failed in the past.

PAS-score: performance analysis score

Taffler adapted the Z-score technique to develop the PAS-score. The PAS-score evaluates company performance relative to other companies in the industry and incorporates changes in the economy.

The PAS-score ranks all company Z-scores in percentile terms, measuring relative performance on a scale of 0 to 100. A PAS-score of X means that $100 - X\%$ of the companies have scored higher Z-scores. So, a PAS-score of 80 means that only 20% of the companies in the comparison have achieved higher Z-scores.

The PAS-score details the relative performance trend of a company over time. Any downward trends should be investigated immediately and the management should take appropriate action. For other danger signals see Holmes and Dunham.[16]

SMEs and failure prediction

The effectiveness of applying a failure prediction model is not restricted to large companies. This is illustrated by research[17] conducted in New Zealand where such a model was applied to 185 SMEs and found to be useful. As with all models, it is also helpful to refer to other supplementary information that may be available, e.g. other credit reports, credit managers' assessments and trade magazines.

28.6.2 H-scores

An H-score is produced by Company Watch to determine overall financial health. The H-score is an enhancement of the Z-score technique in giving more emphasis to the strength of the statement of financial position. The Company Watch system calculates a score ranging from 0 to 100 with below 25 being in the danger zone. It takes into account profit management, asset management and funding management using seven factors – these are profit from the profit and loss account, three factors from the asset side of the statement of financial position, namely, current asset cover, inventory and trade receivables management and liquidity; and three factors from the liability side of the statement of financial position, namely, equity base, debt dependence and current funding.

The factors are taken from published financial statements which makes the approach taken by the ASB to bring off balance sheet transactions onto the statement of financial position particularly important.

A strength of the H-score is that it can be applied to all sectors (other than the financial sector) and there is clear evidence that it can predict possible failures, e.g. the model indicated that European Home Retail (the parent company of Farepack, the Christmas hamper company) was at risk as far back as 2001 when its H-score was nine.

The ability to chart each factor against the sector average and to twenty-five level criteria over a five-year period means that it is valuable for a range of user needs from trade creditors considering extending or continuing to allow credit to potential lenders and equity investors and the big four accounting firms in reviewing audit risk. The model also has the ability to process 'what-ifs'. This is referred to in an article that gives as an example the fact that the impact on the H-score can be measured for a potential rights issue which is used to repay debt:

> That is a feature which Paul Woodley, a director of Postern, the group that provides company doctors for distressed companies, also finds useful. If a company is in trouble, the H score can be used to show exactly what needs to be done to sort it out.[18]

It appears to be a robust, useful and exciting new tool for all user groups. It is not simply a tool for measuring risk. It can also be used by investors to identify companies whose

share price might have fallen but which might be financially strong with the possibility of the share price recovering – it can indicate buy situations. It is also used by leading firms of accountants for purpose of targeting companies in need of turnaround. Further information appears on the company's website at www.companywatch.net which includes additional examples.

28.6.3 A-scores

A-scores concentrate on non-financial signs of failure.[19] This method sets out to quantify different judgmental factors. The whole basis of the analysis is that financial difficulties are the direct result of management defects and errors which have existed in the company for many years.

A-scores assume that many company failures can be explained by similar factors. Company failure can be broken down into a three-stage sequence of events:

1 **Defects**. Specific defects exist in company top management. Typically, these defects centre on management structure; decision making and ability; accounting systems; and failure to respond to change.
2 **Mistakes**. Management will make mistakes that can be attributed to the company defects. The three mistakes that lead to company failure are very high leverage; over-trading; and the failure of the company's main project.
3 **Symptoms**. Finally, symptoms of failure will start to arise. These are directly attributable to preceding management mistakes. Typical symptoms are financial signs (e.g. poor ratios, poor Z-scores); creative accounting (management might attempt to 'disguise' signs of failure in the accounts); non-financial signs (e.g. investment decisions delayed; market share drops); and terminal signs (when the financial collapse of the company is imminent).

To calculate a company A-score, different scores are allocated to each defect, mistake and symptom according to their importance. Then this score is compared with the benchmark values. If companies achieve an overall score of over 25, or a defect score of over 10, or a mistakes score of over 15, then the company is demonstrating typical signs leading up to failure. Generally, companies not at risk will score below 18, and companies which are at risk will score well over 25.

The scoring system attaches a weight to individual items within defects, mistakes and symptoms. By way of illustration we set out the weights applied within defects which are as follows:

Defects in management:	*Weight*
The chief executive is an autocrat	8
The chief executive is also the chairman	4
There is a passive board	2
The board is unbalanced, e.g. too few with finance experience	2
There is poor management depth	1
Defects in accountancy:	
There are no budgets for budgetary control	3
There are no current cash flow plans	3
There is no costing system or product costs	3
There is a poor response to change, e.g. out-of-date plant, old-fashioned products, poor marketing	15

Consider our A-score assessment of DNB Computer Systems plc:

Defects:	Weak finance director	2	
	Poor management depth	1	
	No budgeting control	3	
	No current updated cash flows	3	
	No costing system	3	
			12
Mistakes:	Main project failure	15	
			15
Symptoms:	Financial signs – adverse Z-scores	4	
	Creative accounting – unduly low debtor provisions	4	
	High staff turnover	3	
			11
Total A-score:			38

According to our benchmarks, DNB Computer Systems plc is at risk of failure because the mistakes score is 15 and the overall A-score is 38. Therefore, there is some cause for concern, e.g. Why did the main project fail? To which of the symptoms was it due?

Whilst it is difficult to see the rationale for either the weightings or the additive nature of the A-score, and whilst the process can be criticised for being subjective, the identification of a defect or mistake can in itself be a warning light and give direction to further enquiry.

It is interesting to see the weighting given to the chief executive being an autocrat which is supported by the experience in failures such as WorldCom in 2002 with the following comment:[20]

> **'Autocratic style'**
> WorldCom pursued an aggressive strategy under Ebbers . . . In 1998, Ebbers cemented his reputation when Worldcom purchased MCI for $40bn – the largest acquisition in corporate history at that time . . . But according to one journalist in Mississippi who followed Worldcom from its inception, the seeds of the disaster were sown from the start by Ebbers' aggressive autocratic management style.

28.6.4 Failure prediction combining cash flow and accrual data

There is a continuing interest in identifying variables which have the ability to predict the likelihood of corporate failure – particularly if this only requires a small number of variables. A recent study[21] indicated that a parsimonious model that included only three financial variables, namely, a cash flow, a profitability and a financial leverage variable, was accurate in 83% of the cases in predicting corporate failure one year ahead.

28.6.5 Use of prediction models by auditor reporting on going concern status

Auditors are required to assess whether a company has any going concern problems which would indicate that it might not be able to continue trading for a further financial year. They are assisted in forming an opinion by the use of failure prediction models such as the scoring systems and analytical techniques discussed in this and the previous chapter when assessing solvency and future cash flows.

The following is an extract from the Notes to the 2008 Financial Statements of Independent International Investment Research plc:

> The accounts have been prepared under the assumption that the Company is a going concern. The Company is engaged in an industry where losses represent the Company's investment in its development and it has remained the directors' policy to ensure that adequate finance is available to support this development. At the date of approving these accounts there exists a fundamental uncertainty concerning the Company's ability to continue as a going concern.
>
> This fundamental uncertainty relates to the Company's ability to meet its future working capital requirements and therefore continue as a going concern.
>
> The application of the going concern concept in preparing the accounts assumes the Company's ability to continue activities in the foreseeable future which in turn depends on the ability to generate free cash flow. The directors believe that sufficient revenue and free cash flow will be generated to meet the Company's working capital requirements for at least the next twelve months.
>
> On this basis, in the opinion of the directors, the accounts have been properly prepared on the assumption that the Company is a going concern.
>
> The accounts do not include any adjustments that would result from the Company's ability to generate sufficient free cash flow. It is not practical to quantify the adjustment that might be required but should any adjustment be required it would be significant.

The auditors accept that there has been adequate disclosure by the directors in modifying their report as follows:

> **Fundamental uncertainty – Going concern**
> In forming our opinion, we have considered the adequacy of the disclosure made in note 1 of the accounts concerning the fundamental uncertainty as to whether or not the Company can be considered a going concern. The validity of the going concern basis is dependant on the Company's ability to meet its future working capital requirements and generate free cashflow.
>
> The accounts do not include any adjustments that would result from a failure to generate a free cash flow. It is not practical to quantify the adjustments that might be required, but should any adjustments be required they would be significant. In view of the significance of this fundamental uncertainty we consider that it should be drawn to your attention but our opinion is not qualified in this respect.

Following the uncertainties that have resulted from the credit crisis there were two concerns that needed to be addressed.

The first was the fear that the market would react badly if there were more reports of fundamental uncertainty in the audit report and assume that this meant that the company was insolvent. This risk could be reduced by making investors aware of the significance of the modified audit report, i.e. it did not mean that liquidation was imminent. Without such awareness general business confidence might be damaged and individual companies could suffer in a number of ways. For example, suppliers might stop allowing credit and lenders might call in their loans thinking that covenants had been breached.

The second concern was that auditors should exercise even greater attention when testing that the company is in fact a going concern. For example, at a macro level reviewing the industry to assess if it is likely to be adversely affected and at a company level reviewing the customers and suppliers to see if there is any indication that they are in difficulties that could materially affect the company.

28.7 Performance related remuneration – shareholder returns

The Greenbury Report recommended that,

> In considering what the performance criteria should be, remuneration committees should consider criteria which measure company performance relative to a group of comparator companies . . . reflecting the company's objectives such as shareholder return . . . Directors should not be rewarded for increases in share prices or other indicators which reflect general price inflation, general movements in the stock market, movements in a particular sector of the market or the development of regulatory regimes.

28.7.1 Shareholder value (SV)

It has been a longstanding practice for analysts to arrive at shareholder value of a share by calculating the internal rate of return (IRR %) on an investment from the dividend stream and realisable value of the investment at date of disposal, i.e. taking account of dividends received and capital gains. However, it is not a generic measure in that the calculation is specific to each shareholder. The reason for this is that the dividends received will depend on the length of period the shares are held and the capital gain achieved will depend on the share price at the date of disposal – and, as we know, the share price can move significantly even over a week.

For example, consider the SV for each of the following three shareholders, Miss Rapid, Mr Medium and Miss Undecided, who each invested £10,000 on 1 January 20X6 in Spacemobile Ltd which pays a dividend of £500 on these shares on 31 December each year. Miss Rapid sold her shares on 31 December 20X7. Mr Medium sold his on 31 December 20X9, whereas Miss Undecided could not decide what to do with her shares. The SV for each shareholder is as follows:

Shareholder	*Date acquired*	*Investment at cost*	*Dividends amount (total)*	*Date of disposal*	*Sale proceeds*	*IRR%*
Miss Rapid	1.1.20X6	10,000	1,000	31.12.20X7	11,000	10%*
Mr Medium	1.1.20X6	10,000	2,000	31.12.20X9	15,000	15%
Miss Undecided	1.1.20X6	10,000	2,000	Undecided		

* $((500 \times 9091) + (11{,}500 \times 8265)) - 10{,}000 = 0$

We can see that Miss Rapid achieved a shareholder value of 10% on her shares and Mr Medium, by holding until 31.12.20X9, achieved an increased capital gain raising the SV to 15%. We do not have the information as to how Miss Rapid invested from 1.1.20X8 and so we cannot evaluate her decision – it depends on the subsequent investment and the economic value added by that new company.

28.7.2 Total shareholder return

Miss Undecided has a notional SV at 31.12.20X9 of 15% as calculated for Mr Medium. However, this has not been realised and, if the share price changed the following day, the SV would be different. The notional 15% calculated for Miss Undecided is referred to as the total shareholder return (TSR) – it takes into account market expectation on the assumption that share prices reflect all available information but it is dependent on the assumption made about the length of the period the shares are held.

TSR has been used for performance monitoring, as a criterion for performance-based remuneration and, recently, to satisfy statutory requirements.

Performance monitoring

It has been used by companies to monitor their performance by comparing their own TSR with that of comparator companies. It is also used to set strategic targets. For example, Unilever set itself a TSR target in the top third of a reference group of twenty-one international consumer goods companies. Unilever calculates the TSR over a three-year rolling period which it considers 'sensitive enough to reflect changes but long enough to smooth out short-term volatility'.

Remuneration performance criterion

It is also used by companies as part of their remuneration package. For example, Vodafone in its 2009 Annual Report states:

> The long term incentive measures performance against free cash flow, which is believed to be the single most important operational measure; and total shareholder return ('TSR') relative to Vodafone's key competitors.

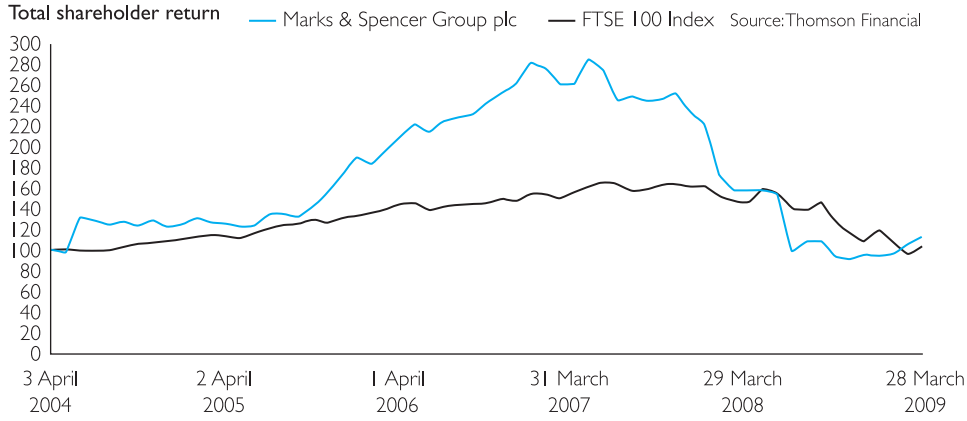
The choice of comparator companies rests with the directors.

Appropriate comparator companies are chosen by the Remuneration Committee taking into account their relative size and the markets in which they operate with a review before each performance cycle to maintain its relevance.

Statutory requirement

The Directors' Report Regulations 2002 now require a line graph to be prepared showing such a comparison. Marks & Spencer Group's 2009 Annual Report contained the following:

> **Performance graph**
> The graph illustrates the performance of the Company against the FTSE 100 over the past five years. The FTSE 100 has been chosen as it is a recognised broad equity market index of which the Company has been a member throughout the period. It looks at the value, at 28 March 2009, of £100 invested in Marks & Spencer Group plc on 3 April 2004 compared with the value of £100 invested in the FTSE 100 Index over the same period. The other points plotted are the values at the intervening financial period-ends.



The above graph looks at the value, at 28 March 2009, of £100 invested in Marks & Spencer Group plc on 3 April 2004 compared with the value of £100 invested in the FTSE 100 Index over the same period. The other points plotted are the values at the intervening financial period-ends.

28.7.3 Performance related remuneration – Economic Value Added (EVA)

Need to generate above average returns

Companies are increasingly becoming aware that investors need to be confident that the company can deliver above average rates of return, i.e. achieve growth, and that communication is the key. This is why companies are using the annual report to provide shareholders and potential shareholders with a measure of the company's performance that will give them confidence to maintain or make an investment in the company.

EVA and managers' performance

In some organisations EVA has been used as a basis for determining bonus payments made to managers. There is some evidence that managers rewarded under such a scheme do perform better than those operating under more traditional schemes. However, research[22] indicated that this occurs when managers understand the concept of EVA and that it is not universally appropriate as other factors need to be taken into account such as the area of the firm in which a manager is employed. The following is an extract from the ThyssenKrupp 2009 Annual Report:

> This management and controlling system is linked to the bonus system in such a way that the amount of the performance-related remuneration is determined by the achieved EVA.

28.7.4 Formula for calculating economic value added

The formula applied is explained by Geveke nv Amsterdam in its 1999 Annual Report:

> EVA measures economic value achieved over a specific period. It is equal to net operating profit after tax (NOPAT), corrected for the cost of capital employed (the sum of interest bearing liabilities and shareholders' equity). The cost of capital employed is the required yield R times capital employed (CE).
>
> In the form of a formula: NOPAT – (R × CE) = EVA
>
> A positive EVA indicates that over a specific period economic value has been created. Net operating profit after tax is then greater than the cost of finance (i.e. the company's weighted average cost of capital). Research has shown that a substantial part of the long-term movement in share price is explained by the development of EVA. The concept of EVA can be a very good method of performance measurement and monitoring of decisions.

We will illustrate the formula for Alpha nv, which has the following data (in euros):

	31 March 20X1	*31 March 20X2*	*31 March 20X3*
NOPAT	10m	11m	13m
Weighted average cost of capital (WACC)	12%	11.5%	11%
Capital employed	70m	77m	96m

The EVA is:

	% change
31 March 20X1 EVA = 10m – (12% of 70m) = 1.6m	—
31 March 20X2 EVA = 11m – (11.5% of 77m) = 2.145m	34%
31 March 20X3 EVA = 12.5m – (11% of 96m) = 1.94m	(10%)

The formula allows weight to be given to the capital employed to generate operating profit. The percentage change is an important management tool in that the annual increase is seen

as the created value rather than the absolute level, i.e. the 34% is the key figure rather than the 2.145 million. Further enquiry is necessary to assess how well Alpha nv will employ the increase in capital employed in future periods.

It is useful to calculate rate of change over time. However, as for all inter-company comparisons of ratios, it is necessary to identify how the WACC and capital employed have been defined. This may vary from company to company.

WACC calculation

This figure depends on the capital structure and risk in each country in which a company has a significant business interest. For example, the following is an extract from the 2003 Annual Report of the Orkla Group:

> **Capital structure and cost of capital**
> The Group's average cost of capital is calculated as a weighted average of the costs of borrowed capital and equity. The calculations are based on an equity-to-total-assets ratio of 60%. The cost of equity is calculated with the help of the Capital Asset Pricing Model. The cost of borrowed capital is based on a long-term, weighted interest rate for relevant countries in which Orkla operates . . .
>
> The table shows how Orkla's average cost of capital is calculated:

Description	*Rates*	*Relative %*	*Weighted cost*
Weighted average beta	1.0		
× Market risk premium	4.0%		
= Risk premium for equity	4.0%		
+ Risk free long-term interest rate	4.9%		
= Cost of equity	8.9%	60%	5.3%
Imputed borrowing rate before tax	5.9%		
Imputed tax charge	28%		
= Imputed borrowing rate after tax	4.2%	40%	1.7%
WACC after tax			7.0%

Capital employed definition

The norm is to exclude non-interest-bearing liabilities including current liabilities when determining net total assets. However, there are variations in the treatment of intangible assets, e.g. goodwill may be excluded from the net assets or included at book value or included, as by Koninkleijke Wessanen, at market value rather than the historically paid goodwill.

Achieving increases in EVA

EVA can be improved in three ways: by increasing NOPAT, reducing WACC and/or improving the utilisation of capital employed.

- Increasing NOPAT: this is achieved by optimising strategic choices by comparing the cash flows arising from different strategic opportunities, e.g. appraising geographic and product segmental information, cost reduction programmes, appraising acquisitions and divestments.
- Reducing WACC: this is achieved by reviewing the manner in which a company is financed, e.g. determining a favourable gearing ratio and reducing the perceived risk factor by a favourable spread of products and markets.
- Improving the utilisation of capital employed: this is achieved by consideration of activity ratios, e.g. non-curent asset turnover, working capital ratio.

28.8 Valuing shares of an unquoted company – quantitative process

The valuation of shares brings together a number of different financial accounting procedures that we have covered in previous chapters. The assumptions may be highly subjective, but there is a standard approach. This involves the following:

- Estimate the maintainable income flow based on earnings defined in accordance with the IIMR guidelines, as described in Chapter 25. Normally the profits of the past five years are used, adjusted for any known or expected future changes.
- Estimate an appropriate dividend yield, as described in Chapter 27, if valuing a non-controlling holding; or an appropriate earnings yield if valuing a majority holding. In the UK there is now a Valuation Index focused on SMEs which is the result of UK200s Corporate Finance members providing key data on actual transactions involving the purchase or sale of real businesses (in the form of asset or share deals) over the past five years. The median P/E ratio at November 2009 stood at 5.2
- Make a decision on any adjustment to the required yields. For example, the shares in the unquoted company might not be as marketable as those in the comparative quoted companies and the required yield would therefore be increased to reflect this lack of marketability; or the statement of financial position might not be as strong with lower current/acid test ratios or higher gearing, which would also lead to an increase in the required yield.
- Calculate the economic capital value, as described in Chapter 3, by applying the required yield to the income flow.
- Compare the resulting value with the net realisable value (NRV), as described in Chapter 4, when deciding what action to take based on the economic value.

EXAMPLE ● The Doughnut Ltd is an unlisted company engaged in the baking of doughnuts. The statement of financial position of the Doughnut Ltd as at 31 December 20X9 showed:

	£000	*£000*
Freehold land		100
Non-current assets at cost	240	
Accumulated depreciation	40	
		200
Current assets	80	
Current liabilities	(60)	
		20
		320
Share capital in £1 shares		300
Retained earnings		20
		320
Estimated net realisable values:		
Freehold land		310
Plant and equipment		160
Current assets		70

It achieved the following profit after tax (adjusted to reflect maintainable earnings) for the past five years ended 31 December:

	20X5	*20X6*	*20X7*	*20X8*	*20X9*
Maintainable earnings (£000)	36	40	44	38	42
Dividend payout history: Dividends	10%	10%	12%	12%	12%

Current yields for comparative quoted companies as at 31 December 20X9:

	Earnings yield %	*Dividend yield* %
Ace Bakers plc	14	8
Busi-Bake plc	10	8
Hard-to-beat plc	13	8

You are required to value a holding of 250,000 shares for a shareholder, Mr Quick, who makes a practice of buying shares for sale within three years.

Now, the 250,000 shares represent an 83% holding. This is a majority holding and the steps to value it are as follows:

1 Calculate average maintainable earnings (in £000):

$$\frac{36{,}000 + 40{,}000 + 44{,}000 + 38{,}000 + 42{,}000}{5} = £40{,}000$$

2 Estimate an appropriate earnings yield:

$$\frac{14\% + 10\% + 13\%}{3} = 12.3\%$$

3 Adjust the rate for lack of marketability by, say, 3% and for the lower current ratio by, say, 2%. Both these adjustments are subjective and would be a matter of negotiation between the parties.

Require yield	=	12.3
Lack of marketability weighting	=	3
Statement of financial position weakness	=	2
Required earnings yield		17.3

The adjustments depend on the actual circumstances. For instance, if Mr Quick were intending to hold the shares as a long-term investment, there might be no need to increase the required return for lack of marketability.

4 Calculate share value:

$(£40{,}000 \times 100/17.3)/300{,}000 = 77p$

5 Compare with the net realisable values on the basis that the company was to be liquidated:

		£
Net realisable values = 70,000 + 160,000 + 310,000	=	540,000
Less: Current liabilities		60,000
		480,000
Net asset value per share = £480,000/300,000	=	£1.60

The comparison indicates that, on the information we have been given, Mr Quick should acquire the shares and dispose of the assets and liquidate the company to make an immediate capital gain of 83p per share.

Let us extend our illustration by assuming that it is intended to replace the non-current assets at a cost of £20,000 per year out of retained earnings, if Mr Quick acquires the shares. Advise Mr Small, who has £10,000 to invest, how many shares he would be able to acquire in the Doughnut Ltd.

There are two significant changes: the cash available for distribution as dividends will be reduced by £20,000 per year, which is used to replace non-current assets; and Mr Small is acquiring only a minority holding, which means that the appropriate valuation method is the **dividend yield** rather than the **earnings yield**.

The share value will be calculated as follows:

1 Estimate income flow:

	£
Maintainable earnings	40,000
Less: CAPEX	20,000
Cash available for distribution	20,000

Note that we are here calculating not distributable profits, but the available cash flow.

2 Required dividend yield:

	%
Average dividend yield	8
Lack of negotiability, say	2
Financial risk, say	1.5
	11.5

3 Share value:

$$\frac{£20{,}000}{300{,}000} \times \frac{100}{11.5} = 58\text{p}$$

At this price it would be possible for Mr Small to acquire (£10,000/58p) 17,241 shares.

28.8.1 Valuing shares of an unquoted company – qualitative process

In the section above we illustrated how to value shares using the capitalisation of earnings and capitalisation of dividends methods. However, share valuation is an extremely subjective exercise. For example, even the prospect of a takeover for Morgan Crucible in 2006 was enough to cause shares to increase by 48.5p to a five-year high of 282p. The values we have calculated for the Doughnut Ltd shares could therefore be subject to material revision in the light of other relevant factors.

A company's future cash flows may be affected by a number of factors. These may occur as a result of action within the company (e.g. management change, revenue investment) or as a result of external events (e.g. change in the rate of inflation, change in competitive pressures).

- **Management change** often heralds a significant change in a company's share price. For example, the new chief executive of Fisons made significant changes to Fisons in 1994/5 by reducing the business to its valuable core, which then saw the share price move from 103p to 193p.
- **Revenue investment** refers to discretionary revenue expenditure, such as charges to the Income Statement for research and development, training, advertising and major maintenance and refurbishment. The ASB in its exposure draft for FRS 3 *Reporting*

Financial Performance had proposed that this information should be disclosed in the income statement. The proposal did not find support at the exposure stage and it is suggested that such information should instead be disclosed in the operating and financial review.

- **Changes in the rate of inflation** can affect the required yield. If, for example, it is expected that inflation will fall, this might mean that past percentage yields will be higher than the percentage yield that is likely to be available in the future.
- **Change in competitive pressures** can affect future sales. For example, increased foreign competition could mean that past maintainable earnings are not achievable in the future and the historic average level might need to be reduced.

These are a few of the internal and external factors that can affect the valuation of a share. The factors that are relevant to a particular company may be industry-wide (e.g. change in rate of inflation), sector-wide (e.g. change in competitive pressure) or company-specific (e.g. loss of key managers or employees). They may not be immediately apparent from an appraisal of financial statements alone: e.g. the application and success of the balanced scorecard approach might not be immediately apparent without discussions with all the stakeholders. The valuer will need to carry out detailed enquiries in order both to identify which factors are relevant and to evaluate their impact on the share price.

If the company supports the acquisition of the shares, the valuer will be able to gain access to relevant internal information. For example, details of research and development expenditure may be available analysed by type of technology involved, by product line, by project and by location, and distinguishing internal from externally acquired R&D.

If the acquisition is being considered without the company's knowledge or support, the valuer will rely more heavily on information gained from public sources: e.g. statutory and voluntary disclosures in the annual accounts and industry information such as trade journals. Information on areas such as R&D may be provided in the OFR, but probably in an aggregated form, constrained by management concerns about use by potential competitors.[23]

There is an increasing wealth of financial and narrative disclosures to assist investors in making their investment decisions. There are external data such as the various multi-variate Z-scores and H-scores and professional credit agency ratings; there is greater internal disclosure of financial data such as TSR and EVA data indicating how well companies have managed value in comparison with a peer group and of narrative information such as the OFR, statements of business risk and key performance indicators. There will also increasingly be easier access to companies' financial data through the Web.

Literature search of qualitative factors which can lead to improved or reduced valuations

There is an interesting research report[24] investigating the nature of SME intangible assets in which the researchers have reported the following:

- Factors identified in the literature as enhancing achieved price: transportable business with a transferable customer base; provides attractive lifestyle for new owner; non-cancellable service agreements and beneficial contractual arrangements; unexploited property situations; synergistic and cost-saving benefits; under-exploited brands and products; customer base providing cross-selling opportunities; competitor elimination, increased market share; complementary product or service range; market entry – quick way of overcoming entry barriers; buy into new technology; access to distribution channels; and non-competition agreements.

- Factors identified in the literature as diminishing achieved price: confused accounts; poor housekeeping, doubtful debts, underutilized equipment, outstanding litigation, etc.; over-dependence upon owner and key individuals; over-dependence on small number of customers; unrelated side activities; poor or out-of-date company image; long-term contracts about to finish; poor liquidity; poor performance; minority and 'messy' ownership structures; inability to substantiate ownership of assets and uncertainties surrounding liabilities.

Not all of these satisfy the criteria for recognition in annual financial statements.

28.9 Professional risk assessors

Credit agencies such as Standard & Poor and Moody's Investor Services assist investors, lenders and trade creditors by providing a credit rating service. Companies are given a rating that can range from AAA for companies with a strong capacity to meet their financial commitments down to D for companies that have been unable to make contractual payments or have filed for bankruptcy with more than ten ratings in between, e.g. BBB for companies that have adequate capacity but which are vulnerable to internal or external economic changes.

28.9.1 How are ratings set?

The credit agencies take a broad range of internal company and external factors into account.

Internal company factors may include:

- an appraisal of the financial reports to determine:
  - trading performance, e.g. specific financial targets such as return on equity and return on assets; earnings volatility; past and projected performance; how well a company has coped with business cycles and severe competition;
  - cash flow adequacy, e.g. EBITDA interest cover; EBIT interest cover; free operating cash flow;
  - capital structure, e.g. gearing ratio; debt structure; implications of off statement of financial position financing;
  - a consideration of the notes to the accounts to determine possible adverse implications, e.g. contingent liabilities, heavy capital investment commitments which may impact on future profitability, liquidity and funding requirements;
- meetings and discussions with management;
- monitoring expectation, e.g. against quarterly reports, company press releases, profit warnings;
- monitoring changes in company strategy, e.g. changes to funding structure with company buyback of shares, new divestment or acquisition plans and implications for any debt covenants.

However, experience with companies such as Enron makes it clear that off balance sheet transactions can make appraisal difficult even for professional agencies if companies continue to avoid transparency in their reporting.

External factors may include:

- growth prospects, e.g. trends in industry sector; technology possible changes; peer comparison;
- capital requirements, e.g. whether company is fixed capital or working capital intensive; future tangible non-current asset requirements; R&D spending requirements;

- competitors, e.g. the major domestic and foreign competitors; product differentiation; what barriers there are to entry;
- keeping a watching brief on macroeconomic factors, e.g. environmental statutory levies, tax changes, political changes such as restrictions on the supply of oil, foreign currency risks;
- monitoring changes in company strategy, e.g. implication of a company embarking on a heavy overseas acquisition programme which changes the risk profile, e.g. difficulty in management control and in achieving synergies, increased foreign exchange exposure.

28.9.2 What impact does a rating have on a company?

The rating is a risk measure and influences decisions as to whether to grant credit and also as to the terms of such credit, e.g. if a company's rating is downgraded then lenders may refuse credit or impose a higher interest rate or set additional debt covenants.

The ratings are taken seriously by even the largest multinational because they are perceived by investors as possibly adversely affecting access to capital markets. Sony, for example, addressed this concern when it commented in its 2004 Annual Report:

> On June 25, 2003 Moody's downgraded Sony's long-term debt rating from Aa3 to A1 (outlook: negative). R&I downgraded Sony's long-term debt rating from AA+ to AA on June 16, 2003. These actions reflected the concerns of the two agencies that Sony may take longer than initially expected to regain its previous level of profit and cash flow under the severe competition, particularly in the electronics business . . . Despite the downgrading . . . Sony believes that its access to the global capital markets will remain sufficient for its financing needs going forward . . .

28.9.3 Regulation of credit rating agencies

Since the credit crisis there has been severe criticism that credit rating agencies had not been independent when rating financial products. The agencies have been self-regulated but this has been totally inadequate in curtailing conflicts of interest. The conflicts have arisen because they were actively involved in the design of products (collateralised debt obligations) to which they then gave an 'objective' credit rating which did not clearly reflect the true risks associated with investing in them. This conflict of interest was compounded by the fact that (a) agency staff were free to join a company after rating its products and (b) the companies issuing the products paid their fees.

The following swingeing comments were made by the ACCA:[25]

> *Regulation of credit agencies*
> It's a joke that an industry with such influence, particularly during the current volatile economic climate, is self-regulated and only subject to a toothless voluntary code of conduct.
>
> The mere fact that credit rating agencies are paid by the companies they rate puts their independence in jeopardy . . . greater transparency is required . . . We have to strike the right balance when regulating the market between protecting and over-burdening. A range of measures is necessary to bring about transparency in the ratings process . . . Regulation would be part of the solution, but it can't be used in isolation . . . This is a perfect example for when an international set of regulations and other measures are imperative to regain trust in financial markets and avoid further credit crunched victims.

This has led to a call for both Europe and the US to regulate the agencies.

European Commission Agency Regulation[26]

In November 2008, the European Commission adopted a proposal for a Regulation on Credit Rating Agencies, which would require agencies to have procedures in place to ensure that:

- ratings are not affected by conflicts of interest;
- credit rating agencies have a high standard for the quality of the rating methodology and the ratings; and
- credit rating agencies act in a transparent manner.

The intention is that the agencies would remain responsible for the content of the ratings.

SEC agency regulation[27]

In December 2008 the US Securities and Exchange Commission (SEC) voted to adopt new regulations relating to credit agencies, referred to as 'nationally recognised statistical rating organisations' (NRSROs). Its approach is to require any issuer to make information used to obtain a rating available to all NRSROs. The new rules contain prohibitions and requirements including the following:

- recommendations on the structure of a structured finance product by an NRSRO that rates the product are prohibited;
- agency analysts receiving gifts and negotiating fees are prohibited;
- a record of any complaints against an analyst is required; and
- a record of the rationale for any difference between a rating implied by a model and a rating issued.

In the US there have been various applications to the court for permission to hold credit agencies responsible for losses incurred as a result of relying on ratings that were not set objectively. Whatever regulation is in place, however, investors should carry out their own due diligence enquiries – credit ratings are only one of the tools in arriving at a decision.

Summary

This chapter has introduced a number of additional analytical techniques to complement the pyramid approach to ratio analysis discussed in the previous chapter.

These techniques include common size vertical analysis and horizontal analysis. The use of ratios was discussed in determining shariah compliance and in setting debt covenants. Corporate failure multivariate models were introduced including the use of Z-scores, H-scores and A-scores.

The use of TSR and EVA were discussed in the context of performance related remuneration and the statutory disclosures that appear in annual reports. In addition, this chapter has described the use of ratios in the valuation of unquoted shares.

The prime purpose of each analytical method in the first half of the chapter was to identify potential financial problem areas. Once these have been identified, thorough investigations should be carried out to determine the cause of each irregularity which includes selecting additional ratios. Management should then take the necessary actions to correct any irregularities and deficiencies.

All users of financial statements (both internal and external users) should be prepared to utilise any or all of the interpretative techniques suggested in this chapter and the preceding one. These techniques help to evaluate the financial health and performance of a company. Users should approach these financial indicators with real curiosity – any unexplained or unanswered questions arising from this analysis should form the basis of a more detailed examination of the company accounts.

REVIEW QUESTIONS

1 Explain what you would look for when examining a company's common-sized statement of financial position.

2 Discuss the difficulties when attempting to identify comparator companies for benchmarking as, for example, when selecting a TSR peer group.

3 The Unilever annual review stated:

> Total Shareholder Return (TSR) is a concept used to compare the performance of different companies' stocks and shares over time. It combines share price appreciation and dividends paid to show the total return to the shareholder. The absolute size of the TSR will vary with stock markets, but the relative position is a reflection of the market perception of overall performance relative to a reference group. The Company calculates the TSR over a three-year rolling period… Unilever has set itself a TSR target in the top third of a reference group of 21 … companies.

Discuss (a) why a three-year rolling period has been chosen, and (b) the criteria you consider appropriate for selecting the reference group of companies.

4 Discuss Z-score analysis with particular reference to Altman's Z-score and Taffler's Z-score. In particular:

(i) What are the benefits of Z-score analysis?

(ii) What criticisms can be levelled at Z-score analysis?

5 Robertson identifies four main elements which cause changes in the financial health of a company: trading stability; declining profits; declining working capital; increase in borrowings.[28]

Robertson's Z-score is as follows:

where

X_1 = (Sales – Total assets)/Sales
X_2 = Profit before tax/Total assets
X_3 = (Current assets – Total debt)/Current liabilities
X_4 = (Equity – Total borrowing)/Total debt
X_5 = (Liquid assets – Bank overdraft)/Creditors

Interpretation of the Z-score concentrates on rate of change from one period to the next. If the score falls by 40% or more in any one year, immediate investigations must be made to identify and rectify the cause of the decrease in Z-score. If the score falls by 40% or more for two years running, the company is unlikely to survive.

Compare and contrast Robertson's Z-score with:

(i) Altman's Z-score;

(ii) Taffler's Z-score and PAS-score.

6 Explain how and why EVA is calculated.

7 The details given below are a summary of the statements of financial position of six public companies engaged in different industries:

	A	*B*	*C*	*D*	*E*	*F*
	%	%	%	%	%	%
Land and buildings	10	2	26	24	57	5
Other non-current assets	17	1	34		13	73
Inventories and work-in-progress	44		22	55	16	1
Trade receivables	6	77	15	4	1	13
Other receivables	11			8	2	5
Cash and investments	12	20	3	9	11	3
	100	100	100	100	100	100

	A	*B*	*C*	*D*	*E*	*F*
Capital and reserves	37	5	62	58	55	50
Creditors: over one year	12	5	4	13	6	25
Creditors: under one year						
Trade	32	85	34	14	24	6
Other	16	5		14	15	11
Bank overdraft	3			1		8
Total capital employed	100	100	100	100	100	100

The activities of each company are as follows:

1 Operator of a chain of retail supermarkets.

2 Sea ferry operator.

3 Property investor and house builder. Apart from supplying managers, including site management, for the house building side of its operations, this company completely subcontracts all building work.

4 A vertically integrated company in the food industry which owns farms, flour mills, bakeries and retail outlets.

5 Commercial bank with a network of branches.

6 Contractor in the civil engineering industry.

Note: No company employs off statement of financial position financing such as leasing.

(a) State which of the above activities relate to which set of statement of financial position details, giving a brief summary of your reasoning in each case.

(b) What do you consider to be the major limitations of ratio analysis as a means of interpreting accounting information?

8 It has been suggested that 'growth in profits which occurred in the 1960s was the result of accounting sleight of hand rather than genuine economic growth'. Consider how 'accounting sleight of hand' can be used to report increased profits and discuss what measures can be taken to mitigate against the possibility of this happening.

9 Discuss whether all companies should adopt the ratio criteria required to be shariah compliant.

10 Describe the measures taken to reduce the risk that credit rating agencies can mislead investors.

EXERCISES

An extract from the solution is provided on the Companion Website (www.pearsoned.co.uk/elliott-elliott) for exercises marked with an asterisk (*).

Question 1

The following five-year summary relates to Wandafood Products plc and is based on financial statements prepared under the historical cost convention:

Financial ratios		*20X9*	*20X8*	*20X7*	*20X6*	*20X5*
Profitability						
Margin	$\frac{\text{Trading profit}}{\text{Sales}}$ %	7.8	7.5	7.0	7.2	7.3
Return on assets	$\frac{\text{Trading profit}}{\text{Net finance charge}}$ %	16.3	17.6	16.2	18.2	18.3
Interest and dividend cover						
Interest cover	$\frac{\text{Trading profit}}{\text{Net finance charge}}$ times	2.9	4.8	5.1	6.5	3.6
Dividend cover	$\frac{\text{Earnings per ordinary share}}{\text{Dividend per ordinary share}}$ times	2.7	2.6	2.1	2.5	3.1
Debt–equity ratios						
	$\frac{\text{Net borrowings}}{\text{Shareholders'}}$ %	65.9	61.3	48.3	10.8	36.5
	$\frac{\text{Net borrowings}}{\text{Shareholders' funds plus minority interests}}$ %	59.3	55.5	44.0	10.1	33.9

		20X9	*20X8*	*20X7*	*20X6*	*20X5*
Liquidity ratios						
Quick ratio	$\frac{\text{Current assets less stock}}{\text{Current liabilities}}$ %	74.3	73.3	78.8	113.8	93.4
Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$ %	133.6	130.3	142.2	178.9	174.7
Asset ratios						
Operating asset turnover	$\frac{\text{Sales}}{\text{Net operating assets}}$ times	2.1	2.4	2.3	2.5	2.5
Working capital turnover	$\frac{\text{Sales}}{\text{Working capital}}$ times	8.6	8.0	7.0	7.4	6.2

Per share						
Earnings per Share	– pre-tax basis ..... p	23.62	21.25	17.96	17.72	15.06
	– net basis ..... p	15.65	13.60	10.98	11.32	12.18
Dividends per share ..... p		5.90	5.40	4.90	4.60	4.10
Net assets per share ..... p		102.1	89.22	85.95	85.79	78.11

Net operating assets include tangible fixed assets, stock, debtors and creditors. They exclude borrowings, taxation and dividends.

Required:
Prepare a report on the company, clearly interpreting and evaluating the information given.

Question 2

You work for Euroc, a limited liability company, which seeks growth through acquisitions. You are a member of a team that is investigating the possible purchase of Choggerell, a limited liability company that manufactures a product complementary to the products currently being sold by Euroc.

Your team leader wants you to prepare a report for the team evaluating the recent performance of Choggerell and the quality of its management, and has given you the following financial information which has been derived from the financial statements of Choggerell for the three years ended 31 March 2006, 2007 and 2008.

Financial year ended 31 March	*2006*	*2007*	*2008*
Turnover (€ million)	2,243	2,355	2,237
Cash and cash equivalents (€ million)	–50	81	–97
Return on equity	13%	22%	19%
Sales revenue to total assets	2.66	2.66	2.01
Cost of sales to sales revenue	85%	82%	79%
Operating expenses to sales revenue	11%	12%	15%
Net income to sales revenue	2.6%	4.3%	4.2%
Current/Working Capital ratio (to 1)	1.12	1.44	1.06
Acid test ratio (to 1)	0.80	1.03	0.74
Inventory turnover (months)	0.6	0.7	1.0
Credit to customers (months)	1.3	1.5	1.7
Credit from suppliers (months)	1.5	1.5	2.0
Net assets per share (cents per share)	0.86	0.2	0.97
Dividend per share (cents per share)	10.0	14.0	14.0
Earnings per share (cents per share)	11.5	20.1	18.7

Required:
Use the above information to prepare a report for your team leader which:
(a) reviews the performance of Choggerell as evidenced by the above ratios;
(b) makes recommendations as to how the overall performance of Choggerel could be improved; and
(c) indicates any limitations in your analysis.

(The Association of International Accountants)

* Question 3

Growth plc made a cash offer for all of the ordinary shares of Beta Ltd on 30 October 20X9 at £2.75 per share. Beta's accounts for the year ended 31 March 20X9 showed:

	£000
Profit for the year after tax	750
Dividends paid and proposed	250
Retained profit for the year	500

Statement of financial position as at 31 March 20X9

		£000
Buildings		1,600
Other tangible non-current assets		1,400
		3,000
Current assets	2,000	
Current liabilities	1,400	
		600
		3,600
£1 Ordinary shares		2,500
Retained earnings		1,100
		3,600

Additional information:

(i) The half yearly profits to 30 September 20X9 show an increase of 25% over those of the corresponding period in 20X8. The directors are confident that this pattern will continue, or increase even further.

(ii) The Beta directors hold 90% of the ordinary shares.

(iii) Following valuations are available:

Realisable values

	£000
Buildings	2,500
Other non-current assets	700
Current assets	2,500

Net Replacement values

Buildings	2,600
Other non-current assets	1.800
Current assets	2,200

(iv) Shares in quoted companies in the same sector have a P/E ratio of 10. Beta Ltd is an unquoted company.

(v) One of the shareholders is a bank manager who advises the directors to press for a better price.

(vi) The extra risk for unquoted companies is 25% in this sector.

Required:

(a) Calculate valuations for the Beta ordinary shares using four different bases of valuation.

(b) Draft a report highlighting the limitaions of each basis and advise the directors whether the offer is reasonable.

Question 4

Quickserve plc is a food wholesale company. Its financial statements for the years ended 31 December 20X8 and 20X9 are as follows:

Statements of income

	20X9	*20X8*
	£000	*£000*
Sales revenue	12,000	15,000
Gross profit	3,000	3,900
Distribution costs	500	600
Administrative expenses	1,500	1,000
Operating profit	1,000	2,300
Interest receivable	80	100
Interest payable	(400)	(350)
Profit before taxation	680	2,050
Income taxation	240	720
Profit after taxation	440	1,330
Dividends	800	600
(Loss)/profit retained	(360)	730

Statements of financial position

	20X9	*20X8*
	£000	*£000*
Non-current assets:		
Intangible assets	200	—
Tangible assets	4,000	7,000
Investments	600	800
	4,800	7,800
Current assets:		
Inventory	250	300
Trade receivables	1,750	2,500
Cash & bank	1,500	200
	3,500	3,000
Total assets	8,300	10,800
	£000	*£000*
Equity and reserves:		
Ordinary shares of 10p each	1,000	1,000
Share premium account	1,000	1,000
Revaluation reserve	1,110	1,750
Retained earnings	3,190	3,550
	6,300	7,300
Debentures	1,000	2,000
Current liabilities	1,000	1,500
	8,300	10,800

Required:

(a) Describe the concerns of the following users and how reading an annual report might help satisfy these concerns:
  (i) Employees
  (ii) Bankers
  (iii) Shareholders.

(b) Calculate relevant ratios for Quickserve and suggest how each of the above user groups might react to these.

Question 5

R. Johnson inherited 810,000 £1 ordinary shares in Johnson Products Ltd on the death of his uncle in 20X5. His uncle had been the founder of the company and managing director until his death. The remainder of the issued shares were held in small lots by employees and friends, with no one holding more than 4%.

R. Johnson is planning to emigrate and is considering disposing of his shareholding. He has had approaches from three parties, who are:

1 A competitor – Sonar Products Ltd. Sonar Products Ltd considers that Johnson Products Ltd would complement its own business and is interested in acquiring all of the 810,000 shares. Sonar Products Ltd currently achieves a post-tax return of 12.5% on capital employed.

2 Senior employees. Twenty employees are interested in making a management buyout with each acquiring 40,500 shares from R. Johnson. They have obtained financial backing, in principle, from the company's bankers.

3 A financial conglomerate – Divest plc. Divest plc is a company that has extensive experience of acquiring control of a company and breaking it up to show a profit on the transaction. It is its policy to seek a pre-tax return of 20% from such an exercise.

The company has prepared draft accounts for the year ended 30 April 20X9. The following information is available.

(a) Past earnings and distributions:

Year ended 30 April	*Profit/(Loss) after tax*	*Gross dividends declared*
£	%	
20X5	79,400	6
20X6	(27,600)	—
20X7	56,500	4
20X8	88,300	5
20X9	97,200	6

(b) Statement of financial position of Johnson Products Ltd as at 30 April 20X9:

	£000	£000
Non-current assets		
Land at cost		376
Premises at cost	724	
Aggregate depreciation	216	
		508
Equipment at cost	649	
Aggregate depreciation	353	
		296
Current assets		
Inventories	141	
Receivables	278	
Cash at bank	70	
	489	
Creditors due within one year	(335)	
Net current assets		154
Non-current liabilities		(158)
		1,176
Represented by:		
£1 ordinary shares		1,080
Retained earnings		96
		1,176

(c) Information on the nearest comparable listed companies in the same industry:

Company	*Profit after tax for 20X9*	*Retention*	*Gross dividend yield*
	£000	%	%
Eastron plc	280	25	15
Westron plc	168	16	10.5
Northron plc	243	20	13.4

Profit after tax in each of the companies has been growing by approximately 8% per annum for the past five years.

(d) The following is an estimate of the net realisable values of Johnson Products Ltd's assets as at 30 April 20X9:

	£000
Land	480
Premises	630
Equipment	150
Receivables	168
Inventories	98

Required:

(a) As accountant for R. Johnson, advise him of the amount that could be offered for his shareholding with a reasonable chance of being acceptable to the seller, based on the information given in the question, by each of the following:

(i) Sonar Products Ltd;
(ii) the 20 employees;
(iii) Divest plc.

(b) As accountant for Sonar Products Ltd, estimate the maximum amount that could be offered by Sonar Products Ltd for the shares held by R. Johnson.

(c) As accountant for Sonar Products Ltd, state the principal matters you would consider in determining the future maintainable earnings of Johnson Products Ltd and explain their relevance.

(ACCA)

Question 6

Harry is about to start negotiations to purchase a controlling interest in NX, an unquoted limited liability company. The following is the statement of financial position of NX as at 30 June 2006, the end of the company's most recent financial year.

NX

Statement of financial position as at 30 June 2006

ASSETS	$
Non-current assets	3,369,520
Current assets	
Inventories, at cost	476,000
Trade and other receivables	642,970
Cash and cash equivalents	132,800
	1,251,770
Total assets	4,621,290
LIABILITIES AND EQUITY	
Non-current liabilities	
8% Loan note	260,000
	260,000
Current liabilities	
Trade and other payables	467,700
Current tax payable	414,700
	882,400
Equity	
Ordinary shares, 40 cent shares	2,000,000
5% Preferred shares of $1	200,000
Retained profits	1,278,890
	3,478,890
Total liabilities	1,142,400
Total liabilities and equity	4,621,290

The non-current assets of NX comprise:

	Cost	*Depreciation*	*Net*
	$	$	$
Property	2,137,500	262,500	1,875,000
Equipment	1,611,855	515,355	1,096,500
Motor vehicles	696,535	298,515	398,020
	4,445,890	1,076,370	3,369,520

NX has grown rapidly since its formation in 2000 by Albert Bell and Candy Dale who are currently directors of the company and who each own half of the company's issued share capital. The company

was formed to exploit knowledge developed by Albert Bell. This knowledge is protected by a number of patents and trademarks owned by the company. Candy Dale's expertise was in marketing and she was largely responsible for developing the company's customer base. Figures for turnover and profit after tax taken from the statements of comprehensive income of the company for the past three years are:

	Turnover	Profit after tax
	$	$
Profit for 2004	8,218,500	1,031,000
Profit for 2005	10,273,100	1,288,720
Profit for 2006	11,414,600	991,320

NX's property has recently been valued at $3,000,000 and it is estimated that the equipment and motor vehicles could be sold for a total of $1,568,426. The net realisable values of inventory and receivables are estimated at $400,000 and $580,000 respectively. It is estimated that the costs of selling off the company's assets would be $101,000.

The 8% loan note is repayable at a premium of 30% on 31 December 2006 and is secured on the company's property. It is anticipated that it will be possible to repay the loan note by issuing a new loan note bearing interest at 11% repayable in 2012.

As directors of the company, Albert Bell and Candy Dale receive annual remuneration of $99,000 and £74,000 respectively. Both would cease their relationship with NX because they wish to set up another company together. Harry would appoint a general manager at an annual salary of $120,000 to replace Albert Bell and Candy Dale.

Investors in quoted companies similar to NX are currently earning a dividend yield of 6% and the average PE ratio for the sector is currently 11. NX has been paying a dividend of 7% on its common stock for the past two years.

Ownership of the issued common stock and preferred shares is shared equally between Albert Bell and Candy Dale.

Harry wishes to purchase a controlling interest in NX.

Required

(a) On the basis of the information given, prepare calculations of the values of a preferred share and an ordinary share in NX on each of the following bases:
  (i) net realisable values;
  (ii) future maintainable earnings.

(b) Advise Harry on other factors which he should be considering in calculating the total amount he may have to pay to acquire a controlling interest in NX.

(The Association of International Accountants)

* Question 7

The major shareholder/director of Esrever Ltd has obtained average data for the industry as a whole. He wishes to see what the forecast results and position of Esrever Ltd would be if in the ensuing year its performance were to match the industry averages.

At 1 July 20X0, actual figures for Esrever Ltd included:

	£
Land and buildings (at written-down value)	132,000
Fixtures, fittings and equipment (at written-down value)	96,750
Inventory	22,040
12% loan (repayable in 20X5)	50,000
Ordinary share capital (50p shares)	100,000

For the year ended 30 June 20X1 the following forecast information is available:

1 Depreciation of non-current assets (on reducing balance)

Land and buildings	2%
Fixtures, fittings and equipment	20%

2 Net current assets will be financed by a bank overdraft to the extent necessary.

3 At 30 June 20X0 total assets minus current liabilities will be £231,808.

4 Profit after tax for the year will be 23.32% of gross profit and 11.16% of total assets minus all external liabilities, both long-term and short-term.

5 Tax will be at an effective rate of 20% of profit before tax.

6 Cost of sales will be 68% of turnover (excluding VAT).

7 Closing inventory will represent 61.9 days' average cost of sales (excluding VAT).

8 Any difference between total expenses and the aggregate of expenses ascertained from this given information will represent credit purchases and other credit expenses, in each case excluding VAT input tax.

9 A dividend of 2.5p per share will be proposed.

10 The collection period for the VAT-exclusive amount of trade receivables will be an average of 42.6 days of the annual turnover. All the company's supplies are subject to VAT output tax at 15%.

11 The payment period for the VAT-exclusive amount of trade payables (purchases and other credit expenses) will be an average of 29.7 days. All these items are subject to (reclaimable) VAT input tax at 15%. This VAT rate has been increased to 17.5% and may be subject to future changes, but for the purpose of this question the theory and workings remain the same irrespective of the rate.

12 Payables, other than trade payables, will comprise tax due, proposed dividends and VAT payable equal to one-quarter of the net amount due for the year.

13 Calculations are based on a year of 365 days.

Required:
Construct a forecast statement of comprehensive income for Esrever Ltd for the year ended 30 June 20X1 and a forecast statement of financial position at that date in as much detail as possible. (All calculations should be made to the nearest £1.)

Question 8

The directors of Chekani plc, a large listed company, are engaged in a policy of expansion. Accordingly, they have approached the directors of Meela Ltd, an unlisted company of substantial size, in connection with a proposed purchase of Meela Ltd.

The directors of Meela Ltd have indicated that the shareholders of Meela Ltd would prefer the form of consideration for the purchase of their shares to be in cash and you are informed that this is acceptable to the prospective purchasing company, Chekani plc.

The directors of Meela Ltd have now been asked to state the price at which the shareholders of Meela Ltd would be prepared to sell their shares to Chekani plc. As a member of a firm of independent accountants, you have been engaged as a consultant to advise the directors of Meela Ltd in this regard.

In order that you may be able to do so, the following details, extracted from the most recent financial statements of Meela, have been made available to you.

Meela Ltd accounts for year ended 30 June 20X4

Statement of financial position extracts as at 30 June 20X4:

	£000
Purchased goodwill unamortised	15,000
Freehold property	30,000
Plant and machinery	60,000
Investments	15,000
Net current assets	12,000
10% debentures 20X9	(30,000)
Ordinary shares of £1 each (cumulative)	(40,000)
7% preference shares of £1 each (cumulative)	(12,000)
Share premium account	(20,000)
Retained earnings	(30,000)

Meela Ltd disclosed a contingent liability of £3.0m in the notes to the statement of financial position.

(Amounts in brackets indicate credit balances.)

Statement of comprehensive income extracts for the year ended 30 June 20X4:

	£000
Profit before interest payments and taxation and exceptional items	21,000
Exceptional items	1,500
Interest	(3,000)
Taxation	(6,000)
Dividends paid – Preference	(840)
– Ordinary	(3,000)
Retained profit for the year	9,660

(Amounts in brackets indicate a charge or appropriation to profits.)

The following information is also supplied:

(i) Profit before interest and tax for the year ended 30 June 20X3 was £24.2 million and for the year ended 30 June 20X2 it was £30.3 million.

(ii) Assume tax at 30%.

(iii) Exceptional items in 20X4 relate to the profit on disposal of an investment in a related company. The related company contributed to profit before interest as follows:

To 30 June 20X4	£0
To 30 June 20X3	£200,000
To 30 June 20X2	£300,000

(iv) The preference share capital can be sold independently, and a buyer has already been found. The agreed purchase price is 90p per share.

(v) Chekani plc has agreed to purchase the debentures of Meela Ltd at a price of £110 for each £100 debenture.

(vi) The current rental value of the freehold property is £4.5 million per annum and a buyer is available on the basis of achieving an 8% return on their investment.

(vii) The investments of Meela Ltd have a current market value of £22.5 million.

(viii) Meela Ltd is engaged in operations substantially different from those of Chekani plc. The most recent financial data relating to two listed companies that are engaged in operations similar to those of Meela Ltd are:

	NV per share	*Market price per share*	*P/E*	*Net dividend per share*	*Cover*	*Yield*
Ranpar plc	£1	£3.06	11.3	12 pence	2.6	4.9
Menner plc	50p	£1.22	8.2	4 pence	3.8	4.1

Required:

Write a report, of approximately 2,000 words, to the directors of Meela Ltd, covering the following:

(a) Advise them of the alternative methods used for valuing unquoted shares and explain some of the issues involved in the choice of method.

(b) Explain the alternative valuations that could be placed on the ordinary shares of Meela Ltd.

(c) Recommend an appropriate strategy for the board of Meela Ltd to adopt in its negotiations with Chekani plc.

Include, as appendices to your report, supporting schedules showing how the valuations were calculated.

Question 9

Discuss the following issues with regard to financial reporting for risk:

(a) How can a company identify and prioritise its key risks?

(b) What actions can a company take to manage the risks identified in (a)?

(c) How can a company measure risk?

Question 10

Flash Fashions plc has had a difficult nine months and the management team is discussing strategy for the final quarter.

In the last nine months the company has survived by cutting production, reducing staff and reducing overheads wherever possible. However, the share market, whilst recognising that sales across the industry have been poor, has worried about the financial strength of the business and as a result the share price has fallen 40%.

The company is desperate to increase sales. It has been recognised that the high fixed costs of the factory are not being fully absorbed by the lower volumes which are costed at standard cost. If sales and production can be increased then more factory costs will be absorbed and increased sales volume will raise staff morale and make analysts think the firm is entering a turnaround phase.

The company decides to drop prices by 15% for the next two months and to change the terms of sale so that property does not pass until the clothes are paid for. This is purely a reflection of the tough economic conditions and the need to protect the firm against customer insolvency. Further, it is decided that if sales have not increased enough by the end of the two months, the company representatives will be advised to ship goods to customers on the understanding that they will be invoiced but if they don't sell the goods in two months they can return them. Volume discounts will be stressed to keep the stock moving.

These actions are intended to increase sales, increase profitability, justify higher stocks, and to ensure that more overheads are transferred out of the profit statement into stocks.

For the purposes of annual reporting it was decided not to spell out sales growth in financial figure terms in the managing director's report but rather to focus on units shipped in graphs using scales (possibly log scales) designed to make the fall look less dramatic. Also comparisons will be made against industry volumes as the fashion industry has been more affected by economic conditions than the economy as a whole.

To make the ratios look better, the company will enter into an agreement on the last week of the year with a two-dollar company called Upstart Ltd owned by Colleen Livingston, friend of the managing director of Flash Fashions, Sue Cotton. Upstart Ltd will sign a contract to buy a property for £30 million from Flash Fashions and will also sign promissory notes payable over the next three quarters for £10 million each. The auditors will not be told, but Flash Fashions will enter into an agreement to buy back the property for £31 million any time after the start of the third month in the new financial year.

Required:
Critically discuss each of the proposed strategies.

Question 11

Briefly state:

(i) the case for segmental reporting;
(ii) the case against segmental reporting.

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