How to illuminate your business

IN THE FIRST PART OF THIS FEATURE, **WILL SPINNEY** SETS OUT SOME ELEMENTS OF RATIO ANALYSIS THAT CASH MANAGERS SHOULD BE AWARE OF, BOTH IN THEIR DAY-TO-DAY JOB AND ALSO TO GAIN A WIDER UNDERSTANDING OF THEIR BUSINESS AND ITS COMPARATIVE STANDING. THE SECOND PART OF THE FEATURE WILL APPEAR IN THE NEXT ISSUE.

Financial statements provide a common format for assessing businesses but are difficult to read in their raw form. Financial ratios allow interpretation of financial statements, to get a better understanding of the financial health of a business. Ratios can be applied historically and to budget or forecast accounts and can be useful both to internal and external analysts of the business. For internal purposes, ratios can be useful in planning, setting goals and evaluating the performance of managers. External users of financial information use ratios to decide whether to extend credit (for example, whether to provide a bank loan), or invest in the company, and to monitor and forecast financial performance.

The term "financial profiling" refers to the selective use of financial data, ratios and other measures to summarise the key characteristics of a business. The essential principles of financial profiling include:

- the analysis of changes and trends over a number of reporting periods (sometimes known as dynamic analysis, contrasted with single-period static analysis);
- the analysis of the relationships between the changes in related ratios – for example, profitability may have improved marginally, but only at the expense of unduly increased levels of working capital;
- the comparison of ratios with appropriate benchmark figures, including those for other firms in similar business sectors, or indeed other sectors;
- the acquisition of a thorough understanding of the non-financial characteristics of the business;
- the linking of the financial ratio analysis with the analysis of the non-financial characteristics of the business; and
- the setting out of an appropriate summary and conclusion, including a note of any areas needing further investigation.

KEY RATIOS AND PERFORMANCE MEASURES The objective here is to review a range of key ratios commonly used to analyse the performance and financial structure of a non-financial sector business. These financial ratios use the balance sheet and income statement. In addition some will use market

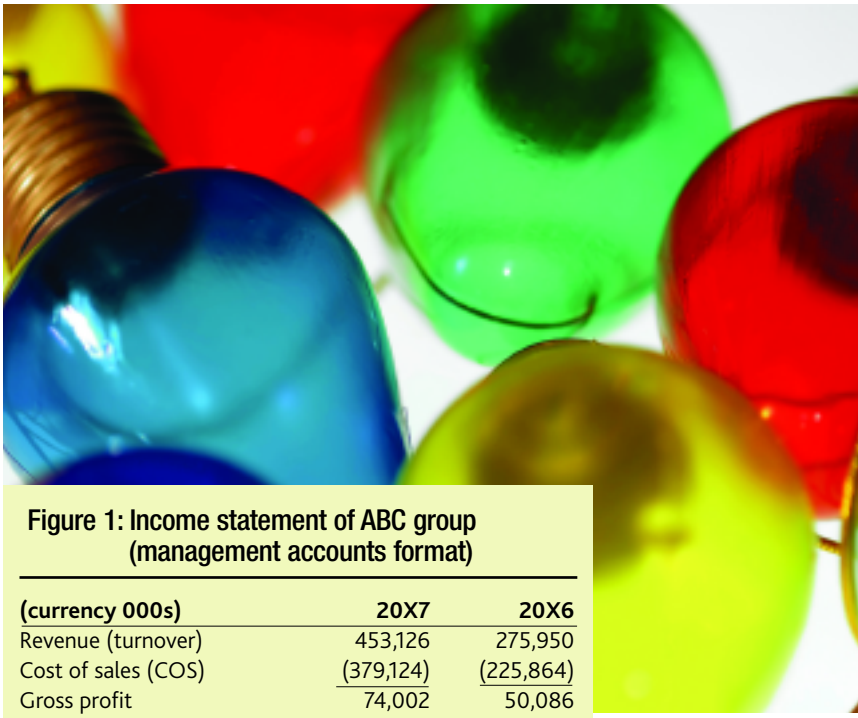

Figure 1: Income statement of ABC group (management accounts format)

(currency 000s)	20X7	20X6
Revenue (turnover)	453,126	275,950
Cost of sales (COS)	(379,124)	(225,864)
Gross profit	74,002	50,086
Depreciation	(1,133)	(1,050)
Amortisation	(940)	(940)
Distribution costs	(5,127)	(3,812)
Administrative expenses	(30,183)	(18,937)
Operating profit	36,619	25,347
Other income	150	100
Earnings before interest and tax	36,769	25,447
Finance costs	(1,255)	(1,531)
Profit before taxation	35,514	23,916
Taxation	(5,192)	(2,673)
Profit for the year	30,322	21,243

data, such as share price. Ratios using the share price are most useful to equity (shareholder) investors. The key ratios discussed here will be illustrated by reference to the set of primary financial statements for ABC group (see Figure 1 on page 05; Figure 2 on page 09 shows a more complete balance sheet), which distributes goods to the retail sector.

Return on capital employed (ROCE)
ROCE: profit ÷ capital employed

This strict definition of ROCE simply begs the question of which profit and which measure of capital. Most importantly, the profit figure used must be that attributable to the capital being measured, so if total capital (equity plus debt) is used as the capital employed then the profit should be that attributable to shareholders and debt providers – i.e. all providers of capital. Also, analysts are usually interested in calculating a "sustainable" ratio, so they ignore non-recurring items in the profit measure.

The most common definition of ROCE compares the (sustainable) operating profit of the company with the investment in the company by shareholders and lenders. It is measured by dividing the operating profit by the capital employed (share capital and reserves plus net debt).

Long-term liabilities (in addition to borrowed money) and provisions may also be included as part of capital employed. Consistency from year to year is more important than whether or not more debatable items are included.

ROCE[1] must be more than the average risk-adjusted rate of return required by capital providers if shareholder value is to be created. It is popular as an internal measure as it can be applied to divisions, subsidiaries or even individual projects and it is easy to understand.

However, both book profit and capital employed are often distorted by accounting practices/policies, and depend on the age and historical cost of fixed assets (and depreciation policy). For instance, spending on longer-term value generation (such as R&D) may be avoided because it lowers short-term ROCE.

Example 1: Return on capital employed calculation

(currency 000s)	20X7	20X6
Operating profit	36,619	25,347
Total equity	68,634	40,858
Non-current borrowings	12,331	17,251
Current borrowings	1,000	11,000
Less cash and cash equivalents	(954)	(1,091)
Capital employed	81,011	68,018
Return on capital employed %	45.2%	37.3%

In this instance the company has seen both profit and ROCE increase, a commendable achievement given the substantial increase in revenue.

If the book capital employed is close to market values, ROCE should be higher than the average cost of finance.

Operating profit margin and asset revenue
Operating profit margin: operating profits ÷ revenue
Asset revenue: revenue ÷ capital employed

Multiplying these two ratios together gives the formula for ROCE because the revenue figures cancel each other out.

This is a very important measure strategically as it emphasises that a company can achieve a good ROCE either with a high operating profit margin but modest revenue to capital employed ratio (such as a highly specialised engineering business), or with a low operating margin but by making very significant use of its assets (such as supermarkets).

Operating profit margin is a very frequently used ratio, both internally and externally because it can lead to a good analysis of both pricing dynamics and cost pressures inside a business. Many businesses will use this as a key performance indicator (KPI).

Example 2: Operating profit/sales calculation

(currency 000s)	20X7	20X6
Operating profit	36,619	25,347
Revenue	453,126	275,950
Operating profit/sales %	8.1%	9.2%

Example 3: Sales/capital employed calculation

(currency 000s)	20X7	20X6
Revenue	453,126	275,950
Capital employed	81,011	68,018
Revenue/capital employed (times)	5.6	4.1

In 20X7 the company improved its revenue to capital employed ratio significantly and this improvement offset the fall in operating profit margin. As the company is a distributor of goods, the fall in operating profit margin could indicate that a chase for revenue growth has taken place, and/or an increase in costs that cannot be passed onto the customer.

Return on equity
Profit for the year ÷ total equity

This ratio, similar in concept to ROCE, looks at how well the company has performed using the funds that shareholders have supplied to or left within the company, as measured in the balance sheet. It is measured post-interest, thus stripping out debt providers' rewards, and is post-tax so that the net return on total equity can be seen. It does not show either the returns to shareholders over the year, which is measured by the dividend yield (a concept that will be covered in part 2 of this article, in the next issue of the Cash Management supplement), nor the capital gains on the movement in share prices, nor whether long-term shareholder value has been created which will flow to the owners in future years.

Example 4: Return on equity calculation

(currency 000s)	20X7	20X6
Profit for the year	30,322	21,243
Total equity	68,634	40,858
Return on equity %	44.2%	52.0%

In this case return on equity has fallen, although it is difficult to calculate exactly which numbers to use as a base, as in this case, total equity has expanded quickly during the year.

LIQUIDITY/SOLVENCY

Debt/EBITDA

Net debt ÷ earnings before interest, tax, depreciation and amortisation

This gives an idea of how well placed the company is to meet its debt obligations and is a very common measure with lenders because it can be applied across many kinds of business. Lenders maintain strict limits on lending and may define limits according to this ratio. EBITDA is a proxy for cash-generative capability. It is essentially cashflow available to lenders but it does exclude capital expenditure and many businesses need to spend regularly on capital items.

Although varying with economic conditions lenders (banks) may lend comfortably up to three to four times EBITDA (the limit for investment-grade companies), total debt may reach six to seven times EBITDA in a leveraged business, and some financial structures (such as those used by private equity) may reach even higher multiples.

Debt/EBITDA is also often used as a financial covenant[2] in borrowing agreements and is a very popular ratio.

Example 5: DEBT/EBITDA calculation

(currency 000s)	20X7	20X6
Cash and cash equivalents	(954)	(1,091)
Current debt	1,000	11,000
Non-current borrowings	12,331	17,251
Net debt	12,377	27,160
Operating profit	36,619	25,347
Depreciation	1,133	1,050
Amortisation	940	940
EBITDA	38,692	27,337
Debt/EBITDA ratio	0.32	0.99

The debt/EBITDA ratio is very low indeed. ABC is in a very strong position to service its debt and could easily take on more debt to finance growth or to return capital to shareholders. The improvement in one year is large.

Current ratio

Total current assets ÷ total current liabilities

This gives an idea of how well placed the company is to meet its current liabilities from its current assets. However, it should be used with caution as it assumes that the company can turn its current assets to cash in time to meet its liabilities.

Current ratios are highly business-specific. For example, supermarkets tend to have low inventories and receivables, but substantial trade payables and so a current ratio well below 1. While a high current ratio indicates good liquidity, it may be a symptom of inefficient working capital management[3].

Example 6: Current ratio calculation

(currency 000s)	20X7	20X6
Total current assets	152,611	116,448
Total current liabilities	111,619	98,337
Current ratio	1.37	1.18

ABC's current ratio is high for a distributor, indicating it is selling predominantly to other businesses, which are able to negotiate longer credit terms than consumers can normally obtain. Therefore the level of trade receivables is relatively higher, so the current ratio is correspondingly greater.

Acid test ("quick" ratio)

Total current assets less inventory ÷ current liabilities

Inventories are the least liquid current asset, as their conversion into cash requires first sale and then collection of the resultant receivables. The acid test mirrors the current ratio but with inventories excluded from current assets – in other words, how well placed is the company to pay its trade payables from more liquid current assets? This ratio should be used with caution: if the "acid test" were reality, debtors would probably not pay insolvent suppliers and the true value of receivables might be less than their balance sheet amount.

Example 7: Quick ratio calculation

(currency 000s)	20X7	20X6
Current receivables and cash and cash equivalents	105,704	86,684
Total current liabilities	111,619	98,337
Quick ratio	0.95	0.88

The quick ratio indicates that the company now has little problem paying short-term liabilities as assets that can quickly be turned into cash almost match the short-term debts.

Trade receivable days/Trade payables (liability) days

Trade receivable days: trade receivables ÷ average sales per day (sales/365)

Trade payables days: trade payables ÷ average cost of sales per day

Trade receivables can either be the average of the opening

and closing balance sheet figures, or simply closing receivables (as in the calculations below). The formula here gives an average period for receivable collection. Note that it is trade receivables that we are interested in, and a company may have others in the receivables line on its balance sheet. Also, any sales taxes should be deducted from the trade receivables figure to match the same treatment of the sales figure.

Whether the receivable days figure (sometimes referred to as days sales outstanding, or DSO) is good or bad depends on the company's goals. If DSO has grown from 45 days last year to 60 this year, this might be a negative. On the other hand, a company might have a high DSO figure because of a short-term policy of obtaining business in a very competitive market by granting customers long credit periods.

DSO and its purchasing counterpart (days purchases outstanding, or DPO) are very common internal measures and subject to much analysis.

The assumptions used in the calculation are as follows:

- the balance sheet receivables are all trade receivables;
- trade receivables (and trade liabilities) include a sales tax element;
- sales do not include sales tax; and
- the average sales tax rate for ABC group is 17.5%.

Example 8: Trade receivable days calculation

(currency 000s)	20X7	20X6
Trade receivables less 17.5% sales tax	$\frac{104,750}{1.175}$ = 89,149	$\frac{85,593}{1.175}$ = 72,845
Revenue per day	$\frac{453,126}{365}$ = 1,241	$\frac{275,950}{365}$ = 756
DSO = trade receivables / revenue per day	$\frac{89,149}{1,241}$ = 72 days	$\frac{72,845}{756}$ = 96 days

The company appears to have had considerable success reducing the length of credit for revenue, but caution is needed in interpreting the figures, as we do not know when sales are made – throughout the year or only in the fourth quarter? If the figures are representative of the last two financial years, it is a commendable achievement as revenue has increased substantially in 20X7.

It is equally possible to make these calculations in reverse and indeed this may often be the most frequent use of them for the treasurer.

Example 9: Trade receivable days calculation

A company has sales of £250m but is losing market share because rivals are offering better credit terms. Existing trade receivables are £20m, including sales tax of 17.5%. It is proposed to extend credit terms to 60 days and offer a discount of 20% to those paying within 10 days of invoice. This is expected to double turnover to £500m, with up to 25% of customers getting the discount by paying early. The increase in trade receivables is calculated as follows:

- new level of turnover is £500m, before sales taxes
- expected discount = (£500m x 25%) x 20% = £25m
- new sales level = £475m
- average DSO = (0.25 x 10) + (0.75 x 60) = 47.5
- new level of DSO = (£475m x 47.5) / 365 = £61.815m
- add sales tax of 17.5% (£61.815m x 1.175) = £72.6m
- so receivables will rise by £52.6m (from £20m to £72.6m)

Note, inventory and trade payables have been excluded. Both would rise but almost certainly so would trade working capital, comprising all three elements.

Example 10: Trade payables days calculation

(currency 000s)	20X7	20X6
DSO less 17.5% sales tax	$\frac{82,019}{1.175}$ = 69,803	$\frac{73,541}{1.175}$ = 62,588
Cost of sales per day	$\frac{379,124}{365}$ = 1,039	$\frac{225,864}{365}$ = 619
DPO = trade payables / cost of sales per day	$\frac{69,803}{1,039}$ = 67 days	$\frac{62,588}{619}$ = 101 days

There has been a fall in trade payables days, indicating that the company is itself paying suppliers more promptly.

Inventory days

Inventory ÷ cost of sales per day (cost of sales/365)

This formula gives a guide to the number of days that items for sale are held in inventory. It is sometimes also expressed in terms of inventory "turns" or the number of times inventory turns over in a year:

Inventory turns = cost of sales ÷ inventory or inventory turns = 365 ÷ inventory days

Example 11: Stock or inventory calculation

(currency 0002)	20X7	20X6
Inventory	46,907	29,764
Cost of sales	379,124	225,864
Cost of sales per day	1,039	619
Inventory days	45	48
Inventory turn	8.1	7.6

The company has seen a reduction in inventory days in the last 12 months, and an increase in inventory turns. Lower levels of inventory are being held to support the trade, so this is a good sign. Inventory days vary greatly depending on the nature of the business. A wholesaler of fresh fruit will have a low inventory days figure (say, one day), whereas a jeweller may have 150 or more.

Figure 2: Balance sheet of ABC group (management accounts format; currency 000s)

Assets	20X7	20X6
CURRENT ASSETS		
Cash and cash equivalents	954	1,091
Receivables (debtors)	104,750	85,593
Inventory (stock)	46,907	29,764
Total current assets	152,611	116,448
NON-CURRENT ASSETS		
Property, plant and equipment cost	36,151	34,103
Accumulated depreciation	(12,811)	(11,678)
Cost less depreciation	23,340	22,425
INTANGIBLE ASSETS		
Cost of patented know-how	20,455	20,455
Accumulated amortisation	(3,822)	(2,882)
Net intangible assets	16,633	17,573
Total non-current assets	39,973	39,998
Total assets	**192,584**	**156,446**

Liabilities and Equity	20X7	20X6
CURRENT LIABILITIES		
Trade payables (creditors)	82,019	73,541
Non-trade payables	28,600	13,796
Borrowings	1,000	11,000
Total current liabilities	111,619	98,337
NON-CURRENT LIABILITIES		
Borrowings	12,331	17,251
Total liabilities	123,950	115,588
EQUITY		
Share capital	22,415	22,268
Share premium account	4,690	3,294
Other reserves	151	151
Retained earnings	41,378	15,145
Total equity	68,634	40,858
Total liabilities	**192,584**	**156,446**

Working capital memo

Receivables (debtors)	104,750	85,593
Inventory (stock)	46,907	29,764
Trade payables (creditors)	(82,019)	(73,541)
Working capital	69,638	41,816

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Footnotes

1 Strictly, operating profit should be suitably adjusted for tax. The capital-employed figure should be close to market values for the ROCE calculation to be meaningful.

2 A clause in a contract that requires one party to do, or refrain from doing, certain things.

3 Working capital is current assets less current liabilities but dominated by the major items of trade receivables, trade payables and inventory.

The second part of this article on ratio analysis will appear in the autumn 2010 issue of the Cash Management supplement.