



Fundamental interpretations made from financial statement data

Learning objectives

After studying this chapter you should be able to:

1. Explain why financial statement ratios are important.
2. Explain the importance of and calculate the return on assets (ROA).
3. Calculate and interpret margin and turnover using the adapted DuPont model.
4. Explain the significance of and calculate the return on equity (ROE).
5. Explain the meaning and importance of liquidity.
6. Calculate working capital, the current ratio and the quick ratio and explain their significance.
7. Demonstrate how trend analysis can be used most effectively.

OVERVIEW Earlier chapters have presented an overview of the financial statements that result from the financial accounting process. This chapter introduces some of the interpretations made by financial statement users to support their decisions and informed judgments. Understanding the uses of accounting information will make development of that information more meaningful. Current and potential shareholders are interested in making their own assessments about management's stewardship of the resources made available by the owners. For example, judgments about profitability will affect the investment decision. Creditors assess the entity's ability to repay loans and pay for products and services. These assessments about profitability and debt-paying ability involve interpreting the relationships between amounts reported in the financial statements. Most of these relationships will be developed further in later chapters. They are introduced now to illustrate how management's financial objectives for the firm are quantified, so that you can begin to understand what the numbers mean. Likewise, these concepts will prepare you to understand better the impact of alternative accounting methods on financial statements, when they are explained in later chapters.

This chapter introduces some financial statement analysis concepts. Chapter 11, 'Financial Statement Analysis', is a comprehensive, capstone explanation of how to use financial statement data to analyse financial conditions and results of operations. Peter Drucker (manager of excellence) wrote on the state of managers: 'Executives have become computer literate ... But not many executives are information literate. They know how to get the data. But most still have to learn how to use the data.'¹ This chapter is a starting point.



Financial ratios and trend analysis

The large dollar amounts reported on the financial statements of many companies, and the varying sizes of companies, make ratio analysis the only sensible method of evaluating the various financial characteristics of a company. Students are frequently awed by the number of ratio measurements commonly used in financial management and are sometimes intimidated by the mere thought of calculating a ratio. However, the arithmetic skills of addition, subtraction, multiplication and division are all that is required. A ratio is simply the relationship between two numbers; the name of virtually every financial ratio describes the numbers to be related and, usually, how the ratio is calculated. As you study this material, concentrate on understanding why the ratio is considered important and work to understand the meaning of the ratio. If you do these things, you should avoid much of the stress associated with understanding financial ratios.

In most cases, a single ratio does not describe very much about the company whose statements are being studied. Much more meaningful analysis is accomplished when the *trend* of a particular ratio over several time periods is examined. Of course, consistency in financial reporting and in defining the ratio components is crucial if the trend is to be meaningful. Consider a single test result. How meaningful is a mark alone, say 10? You need to know the total marks available and the weighting of the assessment to appreciate the full impact of the mark. Also, you look to a friend's paper (or your competition) to benchmark or compare the mark before digesting the actual result. Comparison with the average mark also gives your mark more meaning. This human response to performance evaluation is what happens when a company's performance (trading result) is evaluated using ratio analysis.

Most industry and trade associations publish industry average ratios based on aggregated data compiled by the association from reports submitted by association members. Comparison of an individual company's ratio with the comparable industry ratio is frequently made as a

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learning objective

Explain why financial statement ratios are important.

¹ Peter F. Drucker, *Managing in the Next Society*, Truman Talley Books, New York, 2002.

means of assessing a company's relative standing in its industry. However, a comparison of a company with its industry, based on a single observation, may not be very meaningful, because the company may use a financial accounting alternative that is different from that used by the rest of the industry. **Trend analysis** results in a much more meaningful comparison because, even though the data used in the ratio may have been developed under different financial accounting alternatives, internal consistency within each of the trends will permit useful trend comparisons.

Trend analysis is described later in the chapter, but this brief example illustrates the process: Suppose that a student's grade point average (GPA) for last semester was 2.8 on a 4.0 scale. That GPA may be interesting, but it says little about the student's work. However, suppose you learn that this student's GPA was 1.9 four semesters ago, 2.3 three semesters ago, and 2.6 two semesters ago. The upward trend of grades suggests that the student is working 'smarter and harder'. This conclusion would be reinforced if you knew that the average GPA for all students in this person's class was 2.6 for each of the four semesters. You still don't know everything about the individual student's academic performance, but the comparative trend data do let you make a more informed judgment than was possible with just the grades from one semester.

1. What does it mean to state that the trend of data is frequently more important than the data itself?

what does it mean?

THE INSIDER'S VIEW

Interpreting accounting information

The income statement is key, because it allows you to know where your business is today and whether it is in line with expectations and lets you look into the future to see what adjustments are needed to point you in the right direction.

Kevin Camilleri

Director, Operations
McGraw-Hill Australia

Learn to explain the variances not just report the numbers. Many people will just accept good news but become agitated when it is bad news; however, both good news and bad news can be incorrectly reporting the numbers.

Richard Trigg

Finance Manager
Golden Plains Shire Council

The information contained in the P&L forecasts is required to monitor results against budget and forecast. If I didn't have a good knowledge of the numbers, I wouldn't have any idea of what was happening in the business and we wouldn't be in control of our results. Information allows me to analyse the numbers and provide commentary on monthly, YTD and full-year financials. Knowledge allows me to respond to any questions from finance and senior management or discuss any concerns with the country managers.

Michele Fitzgibbon

Marketing Manager (Asia-Pacific)
Blackmores

Return on assets



Imagine that you are presented with two investment alternatives. Each investment will be made for a period of one year, and each investment is equally risky. At the end of the year, you will get your original investment back, plus income of \$75 from investment A and \$90 from investment B. Which investment alternative would you choose? The answer seems obvious, but if you hesitated, it would be a sensible response. Why is this a trick question? A little thought

Explain the importance of and calculate the return on assets (ROA).

and you would come up with a question to which you need an answer before you can select between investment A and investment B. The question? ‘How much money would I have to invest in either alternative?’ If the amount to be invested is the same, for example, \$1000, then clearly you would select investment B, because your income would be greater than that earned on investment A for the same amount invested. If the amount to be invested in investment B is more than that required for investment A, you would have to calculate the **rate of return** on each investment in order to choose the more profitable alternative.

Rate of return is calculated by dividing the amount of return (the income of \$75 or \$90 in the above example) by the amount of the investment. For example, using an investment of \$1000 for each alternative:

Investment A:

$$\text{Rate of return} = \frac{\text{Amount of return}}{\text{Amount invested}} = \frac{\$75}{\$1000} = 7.5\%$$

Investment B:

$$\text{Rate of return} = \frac{\text{Amount of return}}{\text{Amount invested}} = \frac{\$90}{\$1000} = 9\%$$

Your intuitive selection of investment B as the better investment is confirmed by the fact that its rate of return is higher than that of investment A.

This situation assumed that the investments would be made for one year. Remember that, unless otherwise specified, rate of return calculations assume that the time period of the investment and return is one year.

The rate of return calculation is derived from the interest calculation that you probably learned many years ago. Recall that:

$$\text{Interest} = \text{Principal} \times \text{Rate} \times \text{Time}$$

Interest is the income or expense from investing or borrowing money.

Principal is the amount invested or borrowed.

Rate is the **interest rate** per year expressed as a percentage.

Time is the length of time the funds are invested or borrowed, expressed in years or fractions of a year.

Note that, when time is assumed to be one year, the term of the equation becomes 1/1 or 1, and it disappears. Thus, the rate of return calculation is simply a rearranged interest calculation that solves for the annual interest rate.

Return to the example situation and assume that the amounts necessary to be invested are \$500 for investment A and \$600 for investment B. Now, which alternative would you select on the basis of rate of return? You should have made these calculations:

Investment A:

$$\text{Rate of return} = \frac{\text{Amount of return}}{\text{Amount invested}} = \frac{\$75}{\$500} = 15\%$$

Investment B:

$$\text{Rate of return} = \frac{\text{Amount of return}}{\text{Amount invested}} = \frac{\$90}{\$600} = 15\%$$

All other things being equal (and they seldom are except in textbook illustrations), you would be indifferent with respect to the alternatives available to you because each investment has a rate of return of 15 per cent (per year).

Rate of return and riskiness related to an investment go hand in hand. **Risk** relates to the *range of possible outcomes* from an activity: the wider the range of possible outcomes, the greater the risk. An investment in a bank savings account is less risky than an investment in the shares of a company, because the investor is virtually assured of receiving her or his principal and interest from the savings account, whereas the market value of shares may fluctuate widely, even over a short period of time. Thus, the investor anticipates a higher rate of return from the share investment than from the savings account, as compensation for taking on additional risk. Yet, the greater risk of the share investment means that the actual rate of return earned could be considerably less (even negative) or much greater than the interest earned on the savings account. Market prices for products and commodities, as well as share prices, reflect this basic risk/reward relationship. For now, understand that *the higher the rate of return of one investment relative to another, the greater the risk associated with the higher return investment*.

The rate of return is a universally accepted measure of profitability. Because it is a ratio, profitability of unequal investments can be compared, and risk/reward relationships can be evaluated. Bank advertisements for certificates of deposit feature the interest rate, or rate of return, that will be earned by the depositor. All investors evaluate the profitability of an investment by making a rate of return calculation.

Return on assets (ROA) is the label usually assigned to the rate of return calculation made using data from financial statements. This ratio is sometimes referred to as the *return on investment* (in assets). There are many ways of defining both the amount of return and the amount invested. We can use profit from continuing operations (or profit before income tax) as the amount of return and use average total assets during the year as the amount invested. It is not appropriate to use total assets as reported on a single year-end balance sheet, because that is the total at one point in time: the balance sheet date. Profit was earned during the entire financial year, so it should be related to the assets that were used during the entire year. Average assets used during the year are usually estimated by averaging the assets reported at the beginning of the year (the prior year-end balance sheet total) and the assets reported at the end of the year. Recall from Chapter 2 that the income statement for the year is the link between the beginning and the ending balance sheets. If seasonal fluctuations in total assets are significant (the materiality concept) and if quarter-end or month-end balance sheets are available, a more refined average asset calculation can be made.

It is also not appropriate to use profit for the period as the amount of the return, since the total assets could have been financed by a variety of sources, some tax-deductible and others not. Many users of financial information recalculate the financial statements and adjust the profit before income tax amount to determine **earnings before interest and tax (EBIT)**. EBIT is the total return to all providers of finance without the complications of tax and can be shown as 'Profit from continuing operations' on the income statement.

The ROA of a firm is significant to most financial statement readers, because it describes the rate of return management was able to earn on the assets that it had available to use during the year. Investors, especially, will make decisions and informed judgments about the quality of management and the relative profitability of a company based on ROA. ROA is considered by many financial analysts to be the most meaningful measure of a company's profitability. Knowing profit alone is not enough; an informed judgment about the firm's profitability requires relating profit to the assets used to generate that profit. This is like assessing performance based on outcomes as well as potential.

The condensed balance sheets and income statement of Cruisers Ltd, a hypothetical company, are presented in Exhibit 10-1. Using these data, the company's ROA calculation is illustrated on the next page.

EXHIBIT 10-1 / Condensed balance sheets and income statement

CRUISERS LTD			CRUISERS LTD	
Comparative Condensed Balance Sheets			Condensed Income Statement	
30 September 2009 and 2008			for the year ended	
			30 September 2009	
	2009	2008		\$
	\$	\$		\$
Current assets:				
Cash	22 286	16 996	Net sales	611 873
Accounts receivable	42 317	39 620	Cost of goods sold	<u>428 354</u>
Inventories	<u>53 716</u>	<u>48 201</u>	Gross profit	183 519
Total current assets	118 319	104 817	Operating expenses	<u>122 183</u>
Other assets	<u>284 335</u>	<u>259 903</u>	Profit from continuing	61 336
Total assets	<u>402 654</u>	<u>364 720</u>	operations (EBIT)	
			Interest expense	<u>6 400</u>
Current liabilities	57 424	51 400	Profit before tax	54 936
Other liabilities	<u>80 000</u>	<u>83 000</u>	Income tax	<u>20 026</u>
Total liabilities	137 424	134 400	Profit for the period	<u>34 910</u>
Owners' equity	<u>265 230</u>	<u>230 320</u>	Earnings per share	<u>1.21</u>
Total liabilities and owners' equity	<u>402 654</u>	<u>364 720</u>		

	\$
From the firm's balance sheets:	
Total assets, 30 September 2008	364 720
Total assets, 30 September 2009	402 654
From the firm's income statement for the year ended 30 September 2009:	
Profit from continuing operations (EBIT)	61 336

$$\begin{aligned}
 \text{Return on assets} &= \frac{\text{Profit from continuing operations (EBIT)}}{\text{Average total assets}} \\
 &= \frac{61\,336}{(364\,720 + 402\,654) / 2} \\
 &= 16\%
 \end{aligned}$$

Individual analysts may make adjustments to arrive at the amounts used in the ROA calculation. For example, many exclude depreciation and goodwill amortisation and use EBITDA (earnings before interest, tax, depreciation and amortisation) as the numerator in the calculation of ROA. Others use profit (after tax and interest) as the numerator. Consistency in the definition of terms is more important than the definition itself, because the trend of ROA will be more significant for decision-making than the absolute result of the ROA calculation for any one year. However, it is necessary to understand the definitions used in any ROA results that you see.

Knowing the business

Singapore provided their monthly financials and the GP looked too high. The marketing manager had suggested the high GP was due to the launching of new products which had a higher GP. I took this on board but I said it still looked too high. The cost of sales was based on the method – Opening inventory + Purchases – Closing inventory. The country accountant double-checked the cost of sales by multiplying COGS multiplied by goods sold. There was a disparity. The accountant went back and reviewed the numbers and realised that a purchases invoice which had been 'goods in transit' the previous month had not been included in the calculation and was hence decreasing the cost of sales. The financials were revised accordingly.

Michele Fitzgibbon

Marketing Manager (Asia-Pacific)
Blackmores

Knowing the position of your business is like knowing the state of your bank account: when you go to a cash machine you would generally have a fair idea of what to expect on your balance receipt; you would tend to know if you were likely to be overdrawn or if suddenly you seemed to have more in the bank than expected. The use of ratios in business is used in the same way: the use of ratios always points you in the direction of an odd-looking number, for

example if you had a major variance from one year to the next.

Kevin Camilleri

Director, Operations
McGraw-Hill Australia

We had a client whose property we had for listed sale. He asked me in December how much properties went up every year. I told him an average of 9.8 per cent, which was relevant at the time. He then phoned on 2 January the next year and asked us to put his asking price up by 9.8 per cent. It didn't sell!

Chris Shellabear

Shellabear Real Estate

The restaurant industry is rife with people going broke because they have overcapitalised their initial investment and have not planned for the early loss stages of the business. A lot of people think that they will just open their doors and start making a profit. They don't understand that it takes time to build a business. Put simply, don't rely on positive cash flow to get you through in the first 12 months. Most new restaurants and cafes don't make it past the first 12 months.

Leigh Hudson and Stephanie Leong

Owners
Sticky + Moo Restaurant

2. What does it mean to express economic performance as a rate of return?
3. What does it mean to say that return on assets (ROA) is one of the most meaningful measures of financial performance?

what does it mean?

The DuPont model, an expansion of the ROA calculation

Financial analysts at EI DuPont de Nemours & Co are credited with developing the **DuPont model**, an expansion of the basic ROA calculation, in the late 1930s. They reasoned that profitability from sales and utilisation of assets to generate sales revenue were both important factors to be considered when evaluating a company's overall profitability. One popular adaptation of their model introduces total sales revenue into the ROA calculation, as follows:

$$\text{Return on assets} = \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average total assets}} = \text{Operating margin} \times \text{Turnover}$$

The first term, EBIT/sales, is the operating margin or, simply, **margin**. The second term, sales/average total assets, is **asset turnover** or, simply, **turnover**. Of course, the sales quantities cancel out algebraically, but they are introduced to this version of the ROA model because of their significance. *Margin* emphasises that, from every dollar of sales revenue, some amount

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learning objective

Calculate and interpret margin and turnover using the adapted DuPont model.

must work its way to the bottom line (profit) if the company is to be profitable. *Turnover* relates to the efficiency with which the firm's assets are used in the revenue-generating process.²

A quick quiz will illustrate the significance of turnover. Many of us look forward to a 40-hour-per-week job, generally thought of as five 8-hour days. Imagine a company's factory operating on such a schedule—one shift per day, five days per week. The question: What percentage of the available time is that factory operating? You might have answered 33 per cent, or one-third of the time, because eight hours is one-third of a day. But what about Saturday and Sunday? In fact, there are 21 shifts available in a week (7 days, 3 shifts per day), so a factory operating five shifts per week is being used only 5/21 of the time—less than 25 per cent! The factory is idle more than 75 per cent of the time! And, as you can imagine, many of the occupancy costs (rent, insurance, water and electricity costs) are incurred whether or not the plant is in use. This explains why many firms operate their plant on a two-shift, three-shift or even seven-day basis, rather than build additional plants; it allows them to increase their level of production and thereby expand sales volume without expanding their investment in assets. The higher costs associated with multiple-shift operations (e.g. late-shift premiums for workers and additional transportation costs relative to delivering from multiple locations closer to customers) will increase the company's operating expenses, thereby lowering profit and decreasing margin. Yet the multiple-shift company's overall ROA will be higher, if turnover is increased proportionately more than margin is reduced, which is likely to be the case.

The calculation of ROA using the DuPont model is illustrated below, using data from the financial statements of Cruisers Ltd in Exhibit 10-1:

	\$
Total assets, 30 September 2008	364 720
Total assets, 30 September 2009	402 654
From the firm's income statement for the year ended 30 September 2008:	
Net sales	611 873
Profit from continuing operations (EBIT)	61 336

$$\begin{aligned} \text{Return on assets} &= \frac{\text{EBIT}}{\text{Average total assets}} \\ &= \frac{61\,336}{(364\,720 + 402\,654) / 2} \\ &= 16\% \end{aligned}$$

$$\begin{aligned} \text{Return on assets} &= \text{Operating margin} \times \text{Turnover} \\ &= \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average total assets}} \\ &= \frac{61\,336}{611\,873} \times \frac{611\,873}{(\$364\,720 + \$402\,654) / 2} \\ &= 10\% \times 1.6 \\ &= 16\% \end{aligned}$$

The significance of the DuPont model is that it has led senior management in many organisations to consider the utilisation of assets, including keeping investment in assets as low as feasible, to be just as important to overall performance as generating profit from sales.

² DuPont originally defined 'return' as profit and used the term 'ROI' (return on investment) in his model. For consistency of development of thought and the language of this book, the original model has been adapted.

A rule of thumb useful for putting ROA in perspective is that, for most global merchandising and manufacturing companies, average ROA, based on profit, normally ranges between 8 and 12 per cent. Average ROA, based on operating income (earnings before interest and tax) for the same set of firms, is typically between 10 and 15 per cent. Average margin, based on net income, ranges from about 5 per cent to 10 per cent. Using operating income, average margin tends to range from 10 per cent to 15 per cent. Asset turnover is usually about 1.0 to 1.5, but often ranges as high as 3.0, depending on the operating characteristics of the firm and its industry. The ranges given here are very wide and are intended to suggest only that a firm with ROA and component values consistently beyond these ranges is exceptional.

As a rule of thumb, do not place much reliance on rules of thumb! Do not try to memorise them. Instead, you should understand that ratio comparisons are often difficult to make. Firms within a given industry may vary considerably over time in terms of their relative scale of operations, life-cycle stage of development, market segmentation strategies, cost and capital structures, selected accounting methods, or other economic factors; cross-industry ratio comparisons are even more problematic. Thus, the rules of thumb provided in this chapter are intended merely to serve as points of reference; they are not based on empirical evidence, unless otherwise indicated.

STUDY SUGGESTION

4. What does it mean when the straightforward ROA calculation is expanded by using *margin* and *turnover*?

what does it mean?

Return on equity

Recall that the balance sheet equation is:

$$\text{Assets} = \text{Liabilities} + \text{Owners' Equity}$$

The return on asset (ROA) calculation relates operating profits from continuing operations (adjusted for interest and income tax) to assets. Assets represent the amount invested to generate earnings. As the balance sheet equation indicates, the investment in assets can result from either amounts borrowed from creditors (liabilities) or amounts invested by the owners. Owners (and others) are interested in expressing the profits of the firm as a rate of return on the amount of owners' equity; this is called **return on equity (ROE)**, and it is calculated as follows:

$$\text{Return on equity} = \frac{\text{Profit for the period}}{\text{Average owners' equity}}$$

Return on equity is calculated using average owners' equity during the period for which the profit was earned, for the same reason that average assets is used in the ROA calculation; profit is earned over a period of time, so it should be related to the owners' equity over that same period of time.

Calculation of ROE is illustrated below, using data from the financial statements of Cruisers Ltd in Exhibit 10-1 (page 300):

	\$
From the firm's balance sheets:	
Total owners' equity, 30 September 2008	230 320
Total owners' equity, 30 September 2009	265 230
From the firm's income statement for the year ended 30 September 2009:	
Profit for the period	34 910

4 learning objective

Explain the significance of and calculate the return on equity.

$$\begin{aligned}
 \text{Return on equity} &= \frac{\text{Profit for the period}}{\text{Average owners' equity}} \\
 &= \frac{\$34\,910}{(\$230\,320 + \$265\,230) / 2} \\
 &= \$34\,910 / \$247\,775 \\
 &= 14.1\%
 \end{aligned}$$

ROA and ROE cannot easily be related to each other, since one is a before-tax calculation and the other an after-tax calculation. The trends of each, however, can be usefully compared.

A rule of thumb for putting ROE in perspective is that average ROE for most global merchandising and manufacturing companies historically has ranged from 10 per cent to 15 per cent. However, ROE results improved dramatically throughout the 1990s, due to the postwar economic boom.

Keep in mind that return on equity is a special-case application of the rate of return concept. ROE is important to current shareholders and prospective investors because it relates earnings to owners' investment, that is, the owners' equity in the assets of the entity. Adjustments to both profit and average owners' equity are sometimes made in an effort to improve the comparability of ROE results between firms, and some of these will be explained later. For now, you should understand that both ROA and ROE are fundamental measures of the profitability of a firm and that the data for making these calculations come from the firm's financial statements.

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learning objective

Explain the meaning and importance of liquidity.

Working capital and measures of liquidity

Liquidity refers to a firm's ability to meet its current obligations and is measured by relating its current assets and current liabilities, as reported on the balance sheet. **Working capital** is the excess of a firm's current assets over its current liabilities. Current assets are cash and other assets that are likely to be converted to cash within a year (principally accounts receivable and inventories). Current liabilities are those obligations that are expected to be paid within a year, including loans, accounts payable and other accrued liabilities (such as wages payable, interest payable and rent payable). Most financially healthy firms have positive working capital. Even though a firm is not likely to have cash on hand at any point in time equal to its current liabilities, it will expect to collect accounts receivable or sell merchandise inventory and then collect the resulting accounts receivable in time to pay the liabilities when they are scheduled for payment. Of course, in the process of converting inventories to cash, the firm will be purchasing additional merchandise for its inventory, and the suppliers will want to be assured of collecting the amounts due according to the previously agreed-upon provisions for when payment is due.

Liquidity is measured in three principal ways:

1. Working capital = Current assets – Current liabilities
2. Current ratio = $\frac{\text{Current assets}}{\text{Current liabilities}}$
3. Quick ratio = $\frac{\text{Cash (including temporary cash investments)} + \text{Accounts receivable}}{\text{Current liabilities}}$

The dollar amount of a firm's working capital is not as significant as the ratio of its current assets to current liabilities, because the amount can be misleading unless it is related to another quantity (e.g. how large is large?). Therefore, it is the *trend* of a company's **current ratio** that is most useful in judging its current bill-paying ability. The **quick ratio**, also known as the *acid test*, is a more conservative short-term measure of liquidity, because inventories are excluded from

the calculation. This ratio provides information about an almost worst-case situation—the firm’s ability to meet its current obligations, even if none of the inventory can be sold.

The liquidity measure calculations below use 30 September 2009 data from the financial statements of Cruisers Ltd in Exhibit 10-1 (page 300):

$$\begin{aligned} \text{Working capital} &= \text{Current assets} - \text{Current liabilities} \\ &= \$118\,319 - \$57\,424 \\ &= \$60\,895 \end{aligned}$$

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} = \frac{\$118\,319}{\$57\,424} = 2.1 \text{ times}$$

$$\begin{aligned} \text{Quick ratio} &= \frac{\text{Cash (including temporary cash investments)} + \text{Accounts receivable}}{\text{Current liabilities}} \\ &= \frac{\$22\,286 + \$42\,317}{\$57\,424} \\ &= 1.1 \text{ times} \end{aligned}$$

When recording a current ratio of 2.1 times (or 2.1:1), understand that this means that the current liabilities are covered 2.1 times by the current assets. Similarly, a quick ratio of 1.1 times (or 1.1:1) means that the current liabilities are covered 1.1 times.

As a general rule, a current ratio of 2.0 times and a quick ratio of 1.0 times are considered indicative of adequate liquidity. From these data, it can be concluded that Cruisers Ltd has a high degree of liquidity; it should not have any trouble meeting its current obligations as they become due.

In terms of debt-paying ability, the higher the current ratio, the better. Yet an overly high current ratio sometimes can be a sign that the company has not made the most productive use of its assets. In recent years, many large, well-managed corporations have made efforts to streamline operations by reducing their current ratios to the 1.0–1.5 range, or even lower, with corresponding reductions in their quick ratios. Investments in cash, accounts receivable and inventories are minimised, because these current assets tend to be the least productive assets employed by the company. For example, what kind of ROA is earned on accounts receivable or inventory? Very little, if any! Money freed up by reducing the investment in working capital items can be used to purchase new production equipment or to expand marketing efforts for existing product lines.

Remember, however, that judgments based on the results of any of these calculations using data from a single balance sheet are not as meaningful as the *trend* of the results over several periods. It is also important to note the composition of working capital and to understand the impact on the ratios of equal changes in current assets and current liabilities. As the following illustration shows, if a short-term bank loan were repaid just before the balance sheet date, working capital would not change (because current assets and current liabilities would each decrease by the same amount), but the current ratio (and the quick ratio) would change.

	Before loan repayment \$	After \$20 000 loan repaid \$
Current assets	200 000	180 000
Current liabilities	100 000	80 000
Working capital	100 000	100 000
Current ratio	2.0:1 times	2.25:1 times

If a new loan were taken out just after the balance sheet date, the level of the firm’s liquidity at the balance sheet date, as expressed by the current ratio, would have been overstated. Thus,

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learning objective

Calculate working capital, the current ratio and the quick ratio, and explain their significance.

liquidity measures should be viewed with a healthy dose of scepticism, since the timing of short-term borrowings and repayments is entirely within the control of management.

Measures of liquidity are used primarily by potential creditors, who are seeking to make a judgment regarding their prospects of being paid promptly if they enter into a creditor relationship with the firm whose liquidity is being analysed (see 'Business in Practice—Establishing a credit relationship').

The cash flow statement is also useful in assessing the reasons for a firm's liquidity (or lack of liquidity). Recall that this financial statement identifies the reasons for the change in a firm's cash during the period (usually a year) by reporting the cash-flow changes during the period in the other balance sheet items.

what does it mean?

5. What does it mean to say that the financial position of the firm is liquid?

BUSINESS IN PRACTICE

Establishing a credit relationship

Most transactions between businesses, and many transactions between individuals and businesses, are credit transactions. That is, the sale of the product or provision of the service is completed some time before payment is made by the purchaser. Before delivering the product or service, the seller usually wants to have some assurance that the bill will be paid when due. This involves determining that the buyer is a good **credit risk**.

Individuals usually establish credit by submitting to the potential creditor a completed credit application, which includes information about employment, salary, bank accounts, liabilities, and other credit relationships (e.g. charge accounts) established. Most credit grantors are looking for a good record of timely payments on existing credit accounts; this is why an individual's first credit account is usually the most difficult to obtain. Potential credit grantors might also check an individual's credit record as

maintained by the credit bureau in the city in which the applicant lives or has lived.

Businesses seeking credit might follow a procedure similar to that used by individuals. Alternatively, they might provide financial statements and the names of firms with which a credit relationship has been established. A newly organised firm might have to pay for its purchases in advance or **cash on delivery (COD)** until it has been in operation for several months, and then the seller might set a relatively low credit limit for sales on credit. Once a record is established of having paid bills when due, the credit limit will be raised. After a firm has been in operation for a year or more, its credit history might be reported by the Dun and Bradstreet (D&B) credit reporting service—a type of national credit bureau to which many companies subscribe. Even after a credit relationship has been established, it is not unusual for a firm to continue providing financial statements to its principal creditors.

Illustration of trend analysis

Trend analysis of return on assets, return on equity and working capital and liquidity measures is illustrated in the following tables and exhibits. The data relate to the financial statements of Medical Health Care Ltd (MHC).

The data in Exhibit 10-2 have been compiled from the financial statements for the five years and is presented graphically in Exhibits 10-3 to 10-5. Note that the sequence of the years in the table is opposite from that of the years in the graphs. Tabular data are frequently presented so the most recent year is closest to the line descriptions. Graphs of time series data usually flow from left to right. In any event, it is necessary to understand the labels of both tables and graphs.

EXHIBIT 10-2 / Medical and Health Care Ltd, profitability and liquidity data, 2004–2008

	2008	2007	2006	2005	2004
Margin	7%	5.6%	7%	7.8%	11.2%
Turnover	0.63 times	0.45 times	0.47 times	0.56 times	0.59 times
ROA	9.1%	6.5%	7.9%	8.7%	12.8%
ROE	7%	4.5%	5.7%	6.9%	11.4%
Year-end position (in millions):					
Current assets	\$22 113	\$66 407	\$54 070	\$23 855	\$8 684
Current liabilities	16 464	18 158	15 022	19 249	18 850
Working capital	\$5 649	\$48 249	\$39 048	\$4 606	(\$10 166)
Current ratio	1.34 times or 1.34:1	3.66 times or 3.66:1	3.6 times or 3.6:1	1.24 times or 1.24:1	0.46 times or 0.46:1

7
learning objective

Demonstrate how trend analysis can be used most effectively.

The graph in Exhibit 10-3 illustrates that both ROA and ROE declined from 2004. The performance continued to decline but at a less dramatic rate until 2007, when the first improvement was recorded. The ‘big picture’ is that MHC Ltd’s ROA and ROE declined steadily during this period and the recovery in 2008 has not yet brought the company into the returns experienced in the first year. It is vitally important to look not only at the returns of the business but also at the returns of the industry in which the business operates. If that comparison is done and MHC Ltd’s performance is compared with the profitability of companies in the health care industry, the performance was fairly standard. The company is not performing poorly; rather its results are a reflection of an industry with rising costs and a heavy reliance on new technology.

EXHIBIT 10-3 / Medical Health Care Ltd, return on assets (ROA) and return on equity (ROE), 2004–2008

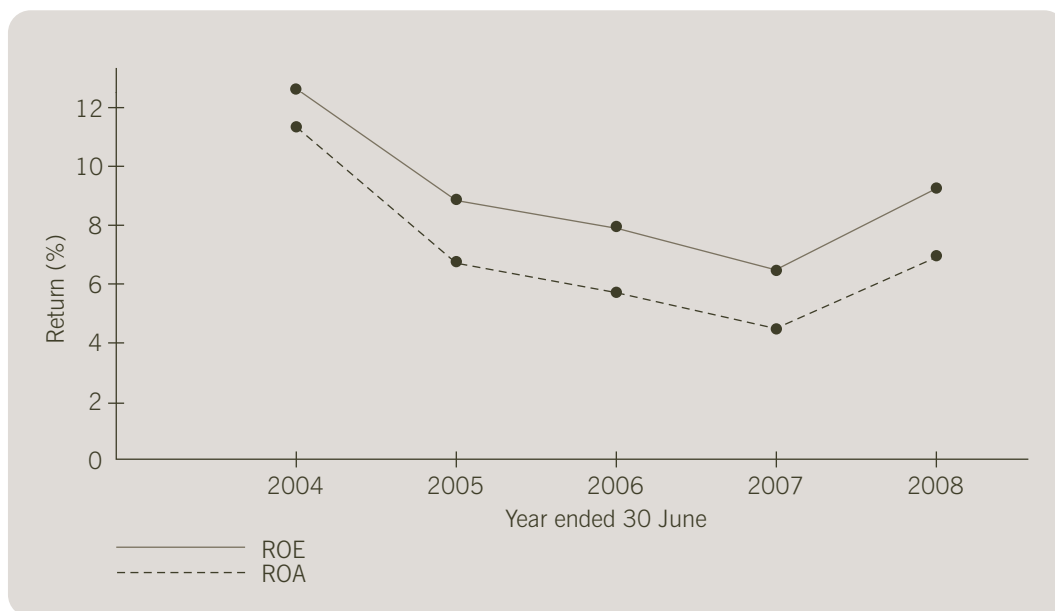


Exhibit 10-4 illustrates that MHC Ltd's turnover fell steadily in a near-linear pattern from 0.59 to 0.45 from 2004 to 2007. Margin fell slowly over this time, before rising sharply in 2008. At first glance, the margin 'picture' appears gentler. Keep in mind, however, that the scale selected can influence the visual image conveyed by a graph. For instance, what would happen to the slope of the margin graph in Exhibit 10-4 if the horizontal scale were to be compressed to half of its current size, to accommodate ten years of data? Yes, you've got it. The peaks and valleys would become even more pronounced! In fact, the total difference (or spread) between the high in 2005 of 11.2 per cent to the low in 2007 of 5.6 per cent is 5.6 per cent! While much can be made of these results, the overall profitability trends are clearly downward until 2008. Notice that the margin and turnover trends shown in Exhibit 10-4 are consistent with the ROA and ROE trends shown in Exhibit 10-3, as is to be expected.

what does it mean?

6. What does it mean when the trend of a company's ROE is consistently higher by an approximately equal amount than the trend of ROE for the industry of which the company is a part?

**THE
INSIDER'S
VIEW**

Understanding the numbers

Understanding the 'numbers' is a critical part of running a business. Accounting professionals need to provide management with accurate and timely information as the basis of making good decisions.

Dean Stanford

Chief Financial Officer
Daiwa Securities Australia

Financial reports are critical. You need to get that information to be in a position to analyse and understand it. The longer you are in business, the easier it is to understand the figures you're looking for. A few hours a week is spent on them. I rely on an external adviser and an in-house full-time finance and administration manager who provides the information. Board reports have an executive summary, to give highlights of what the issues are, the solutions and the opportunities. This is a key component of the business. Nobody has strengths in every area; it is not my strong suit, so I rely on others. My strength is in marketing/sales.

Chris Robb

Owner/Managing Director
Sporting Spectrum

Understanding where the business is can be satisfying as a way of measuring oneself and the goals set at the beginning of the year. The financial reports are a means of communication, that is, to share the information with others. When times are good, people are happy, especially when they hear about those big percentages!

Kevin Camilleri

Director, Operations
McGraw-Hill Australia

You always have to be accurate with your figures, as there is so much at stake. Companies have gone under because of inaccurate reporting. My philosophy is to highlight any areas of concern as soon as they are discovered. Nearly all situations are manageable with enough notice. It's when things are covered up and hidden in the balance sheet that real problems can occur. You just have to look at situations like Enron and Barings to appreciate the grave necessity of accurate and timely reporting.

Ken Brundell

Business Manager
McGraw-Hill Australia

EXHIBIT 10-4 / Medical Health Care Ltd, margin and turnover, 2004–2008

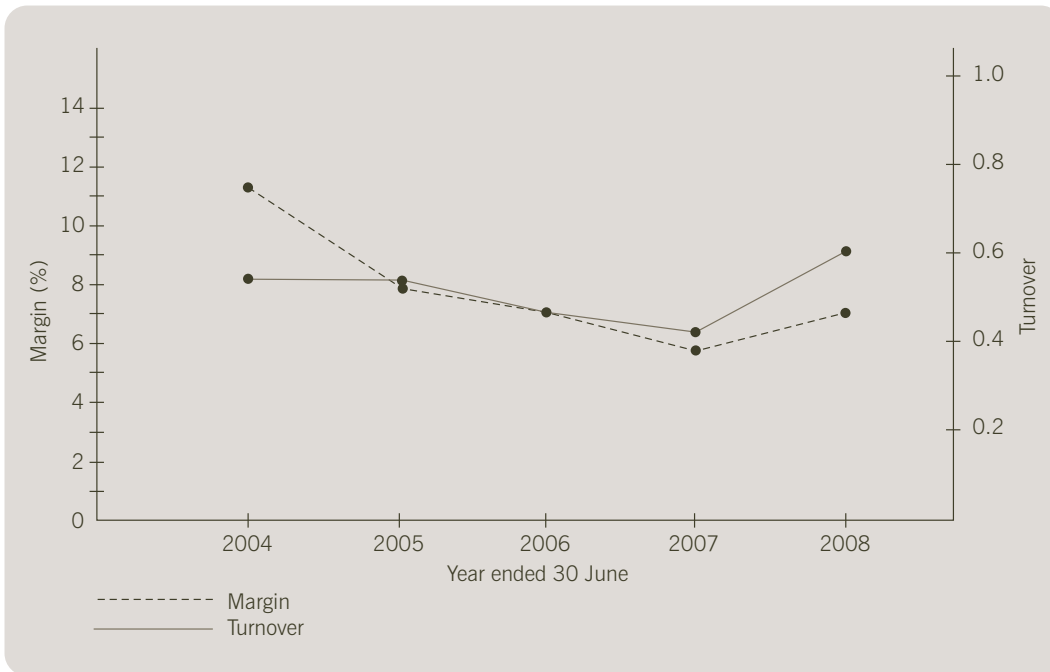
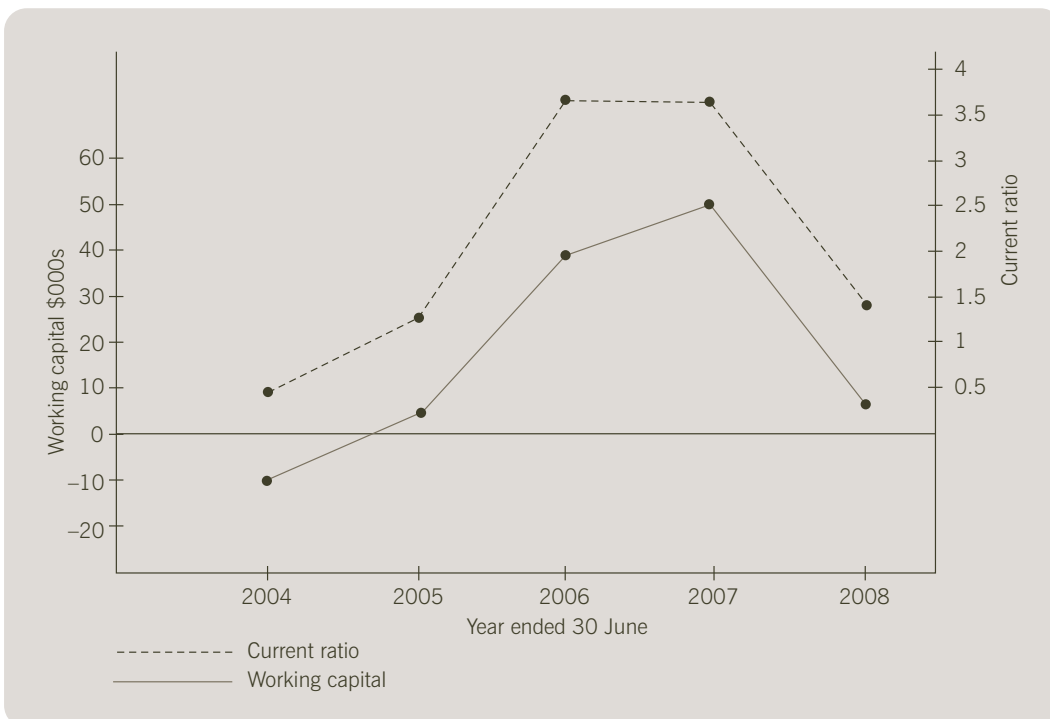


EXHIBIT 10-5 / Medical Health Care Ltd, working capital and current ratio, 2004–2008



SO WHAT DO YOU THINK?

The discussion here is a continuation of the 'So what do you think?' section in Chapters 1 and 2.

This chapter has introduced some fundamental interpretations that could be made from financial statement information. David has provided financial statements for three years to Marie and Dorothy. The following section discusses how Marie and Dorothy, as potential investors, could make use of the information in the statements.

Examine the following ratios and discuss how they are relevant to Marie and Dorothy. The first ratio has been done for you as an example of the depth and scope intended for the current discussion.

1. Rate of return on assets. ROA is profit divided by average assets. Since this is an operating performance ratio, EBIT (earnings before interest and tax) is used (since interest is of a financial nature and tax is not an item that the entity has discretion over). Depending on the actual financial figures, ROA could be 8 per cent, 12 per cent, 7.2 per cent etc. What does it mean? Not much by itself, as ratios can only be used meaningfully when compared with something. It may be compared with the expected rate of return of similar retail CD and DVD stores in general, and then an inference might be made as to how well David's store has performed relative to the performance of other similar types of business. Since statements for three years are available, the trend of returns could be analysed. An appropriate question to ask is whether the rate of return has been stable, or whether it has been increasing or decreasing over time. A follow-up question might be: What is the cause underlying the trend? Is it due to an increase or a decrease in sales, in new service contracts, in expenses or in average assets? Another important area to consider, when

analysing the rate of return, is the risk of the venture. Would Marie and Dorothy be happy with the rate of return for such a venture, taking into consideration the relevant risk?

2. Rate of return on equity. The numerator for this ratio is profit for the period and not EBIT. Why? How does ROE compare with ROA? What does ROE mean to Marie and Dorothy as potential investors?

3. Current ratio. What does this ratio tell us? Why would Marie and Dorothy be interested in this ratio? How would they find out more about what it means for them?

There are two other ratios (not covered in this chapter) that are of interest to Marie and Dorothy. They are the *inventory turnover ratio* and the *accounts receivable turnover ratio*. What could these ratios tell them and why would they be interested to know them? (Inventory turnover and accounts receivable turnover are discussed in Chapter 11.)

Turn to Appendix 3, page t/c, to compare your answers with our views.

RECAP Financial statement users express financial statement data in ratio format to facilitate making informed judgments and decisions. Users are especially interested in the trend of a company's ratios over time and the comparison of the company's ratio trends with those of its industry as a whole.

The rate of return on assets is a universally accepted measure of profitability. Rate of return is calculated by dividing the amount of return, or profit, by the amount invested. Rate of return is expressed as an annual percentage rate.

Return on assets (ROA) is one of the most important measures of profitability, because it relates the income earned during a period to the assets that were invested to generate those earnings. The DuPont model for calculating ROA expands the basic model by introducing sales to calculate margin (EBIT/sales) and asset turnover (sales/average assets); ROA equals margin \times turnover. *Margin* describes the operating profit from each dollar of sales, and *turnover* expresses the sales-generating capacity (utilisation efficiency) of the firm's assets.

Return on equity (ROE) relates profit earned for the year to the average owners' equity for the year. This rate of return measure is important to current and prospective owners because it relates earnings to the owners' investment.

Creditors are interested in an entity's liquidity, that is, its ability to pay its liabilities when due. The amount of working capital, the current ratio and the quick ratio are measures of liquidity. These calculations are made using the amounts of current assets and current liabilities reported on the balance sheet.

When ratio trend data are plotted graphically, it is easy to determine the significance of ratio changes and to evaluate a firm's performance.

KEY TERMS

asset turnover	principal
cash on delivery (COD)	quick ratio
credit risk	rate of return
current ratio	return on assets (ROA)
DuPont model	return on equity (ROE)
earnings before interest and tax (EBIT)	risk
interest	trend analysis
interest rate	turnover
liquidity	working capital
margin	



Online Learning Centre

Students can visit this comprehensive site for resources directly related to the text.

SELF-STUDY MATERIALS

Matching

Following are a number of the key terms and concepts introduced in the chapter, along with a list of corresponding definitions. Match the appropriate letter for the key term or concept to each definition provided. Note that not all key terms and concepts will be used. Solutions are provided in Appendix 3.

- a ratio
- b trend analysis
- c rate of return
- d interest

- e principal
- f risk
- g return on assets
- h DuPont model
- i margin
- j turnover
- k return on equity
- l working capital
- m liquidity
- n current ratio
- o quick ratio
- p credit risk
- q COD

- ___ 1. The percentage of net income to net sales.
- ___ 2. The amount of money invested or borrowed.
- ___ 3. The difference between current assets and current liabilities.
- ___ 4. The percentage of profit divided by average owners' equity for the financial period in which the net income was earned.
- ___ 5. An indication of a firm's ability to meet its current financial obligations.
- ___ 6. The quotient of sales divided by the average assets for the year (or some other financial period).
- ___ 7. Evaluation of data patterns over time.
- ___ 8. The income or expense from investing or borrowing money.
- ___ 9. A calculation of a return on assets made by multiplying margin by turnover.
- ___ 10. The ratio of the sum of cash (including temporary cash investments) and accounts receivable to current liabilities.

MULTIPLE-CHOICE

For each of the following questions, circle the best response. Solutions are provided in Appendix 3.

1. Return on assets (ROA) can be described or computed in each of the following ways, *except*
 - a Amount invested/Amount of return = ROA
 - b Profit/Total average assets = ROA
 - c $(\text{Profit}/\text{Sales}) \times (\text{Sales}/\text{Total average assets}) = \text{ROA}$
 - d Margin \times Turnover = ROA
 - e None of the above
2. Working capital includes all of the following accounts, *except*:
 - a accounts payable
 - b cash

- c accumulated depreciation
 - d inventory
 - e none of the above
3. Which of the following would *not* decrease working capital?
- a a decrease in cash
 - b an increase in accounts payable
 - c an increase in inventory
 - d a decrease in accounts receivable
 - e none of the above
4. Assume that Kulpa Company had a current ratio of 0.7. Which of the following transactions would increase this ratio?
- a purchasing inventory on credit
 - b selling inventory at cost for cash
 - c collecting accounts receivable in cash
 - d paying off accounts payable with cash
 - e none of the above

The following data apply to questions 5 to 8.

BAREFOOT INDUSTRIES
Balance Sheet and Income Statement data
at 31 December 2008 and for the year then ended

	\$
Assets	
Cash	400
Accounts receivable	440
Inventory	360
Land	100
Equipment	300
Accumulated depreciation	(100)
Liabilities and Owners' Equity	
Accounts payable	300
Debt payable, short-term	500
Long-term debt	200
Ordinary shares	100
Retained earnings	400
Income statement	
Sales	3000
Cost of goods sold	(2000)
Gross profit	1000
Selling expenses	(500)
Income taxes	(200)
Profit	300

5. The current ratio is:
- a 1.05
 - b 1.5
 - c 1.55
 - d 2.0
 - e none of the above
6. The quick ratio is:
- a 1.05
 - b 1.5
 - c 1.55
 - d 2.0
 - e none of the above
7. The amount of working capital that would remain if \$400 of land was purchased on 1 January 2009 with the use of \$200 cash and \$200 of long-term debt is:
- a \$200
 - b \$400
 - c \$600
 - d \$900
 - e none of the above
8. Assume that both total assets and total owners' equity were the same on 31 December 2007 as on 31 December 2008. The margin, ROA, ROE and turnover are:
- a 10%, 20%, 60%, 2.0
 - b 10%, 20%, 75%, 1.5
 - c 30%, 15%, 60%, 2.0
 - d 30%, 15%, 75%, 1.5
 - e none of the above

EXERCISES

learning objective

2

●○○ EASY

Analytical skills of:

identifying

finding

evaluating

organising

managing

information

and evidence

E10.1 Compare investment alternatives.

Two acquaintances have approached you about investing in business activities in which each is involved. Julie is seeking \$560 and Sam needs \$620. One year from now, your original investment will be returned, along with \$50 income from Julie or \$53 income from Sam. You can make only one investment.

Required

- (a) Which investment would you prefer? Why?
- (b) What other factors should be considered before making either investment?

learning objective

2

●○○ EASY

Analytical skills of:
 identifying
 finding
 evaluating
 organising
 managing
 information
 and evidence

E10.2 Compare investment alternatives.

A friend has \$2400 that has been saved from her part-time job. She will need her money, plus any interest earned on it, in six months and has asked for your help in deciding whether to put the money in a bank savings account at 5.5 per cent interest or to lend it to Judy. Judy has promised to repay \$2480 after six months.

Required

- (a) Calculate the interest earned on the savings account for six months.
- (b) Calculate the rate of return if the money is lent to Judy.
- (c) Which alternative would you recommend? Explain your answer.

learning objective

2

●●○ MEDIUM

Analytical skills of:
 identifying
 finding
 evaluating
 organising
 managing
 information
 and evidence

E10.3 Compare investment alternatives.

You have two investment opportunities. One will have a 10 per cent rate of return on an investment of \$500; the other will have an 11 per cent rate of return on principal of \$700. You would like to take advantage of the higher yielding investment, but have only \$500 available.

Required

What is the maximum rate of interest that you would pay to borrow the \$200 needed to take advantage of the higher yield?

learning objective

2

●●○ MEDIUM

Analytical skills of:
 identifying
 finding
 evaluating
 organising
 managing
 information
 and evidence

E10.4 Compare investment alternatives.

You have accumulated \$4000 and are looking for the best rate of return that can be earned over the next year. A bank savings account will pay 6 per cent. A one-year bank certificate of deposit will pay 8 per cent, but the minimum investment is \$5000.

Required

- (a) Calculate the amount of return you would earn if the \$4000 were invested for one year at 6 per cent.
- (b) Calculate the net amount of return you would earn if \$1000 were borrowed at a cost of 15 per cent, and then \$5000 were invested for one year at 8 per cent.
- (c) Calculate the net rate of return on your investment of \$4000 if you accept the strategy of (b).
- (d) In addition to the amount of investment required and the rate of return offered, what other factors would you normally take into consideration before making an investment decision such as the one described?

learning objective

3

●●○ MEDIUM

Analytical skill of:
 interpreting data
 and reports

E10.5 ROA analysis using adapted DuPont model.

- (a) Firm A has an operating margin of 12 per cent, sales of \$600 000 and ROA of 18 per cent. Calculate the firm's average total assets.
- (b) Firm B has EBIT of \$78 000, turnover of 1.3 and average total assets of \$950 000. Calculate the firm's sales, operating margin and ROA.
- (c) Firm C has operating income of \$132 000, turnover of 2.1 and ROA of 7.37 per cent. Calculate the firm's margin.

learning objective

3

●●○ MEDIUM
Analytical skill of:
interpreting data
and reports

E10.6 ROA analysis using adapted DuPont model.

- (a) Firm D has EBIT of \$83 700, sales of \$2 790 000 and average total assets of \$1 395 000. Calculate the firm's margin, turnover and ROA.
- (b) Firm E has EBIT of \$150 000, sales of \$25 000 000 and ROA of 15 per cent. Calculate the firm's turnover and average total assets.
- (c) Firm F has ROA of 12.6 per cent, average total assets of \$1 730 159 and turnover of 1.4. Calculate the firm's sales, margin and profit.

learning objective

4

●●○ MEDIUM
Analytical skills of:
identifying
finding
evaluating
organising
managing
information
and evidence

E10.7 Calculate ROE.

At the beginning of the year, the net assets of Carby Co. were \$346 800. The only transactions affecting owners' equity during the year were profit of \$42 300 and dividends of \$12 000.

Required

Calculate Carby Co.'s return on equity (ROE) for the year.

learning objectives

3 4

●●○ MEDIUM
Analytical skills of:
identifying
finding
evaluating
organising
managing
information
and evidence

E10.8 Calculate margin, profit and ROE.

For the year ended 31 December, Ebanks Ltd earned an ROA of 12 per cent. Sales for the year were \$48 million, and average turnover was 2.4. Average owners' equity was \$12 million. Ignore interest and tax.

Required

- (a) Calculate Ebanks Ltd's margin and profit.
- (b) Calculate Ebanks Ltd's return on equity.

learning objective

6

●●○ MEDIUM
Analytical skills of:
identifying
finding
evaluating
organising
managing
information
and evidence

E10.9 Effect of transactions on working capital and current ratio.

Management of Rivers Co. anticipates that its year-end balance sheet will show current assets of \$12 639 and current liabilities of \$7480, but it is considering paying \$3850 of accounts payable before year-end, even though payment is not due until later.

Required

- (a) Calculate the firm's working capital and current ratio under each situation. Would you recommend early payment of the accounts payable? Why?
- (b) Assume that Rivers Co. had negotiated a short-term bank loan of \$5000 that can be drawn down either before or after the end of the year. Calculate working capital and the current ratio at year-end under each situation, assuming that early payment of accounts payable is not made. When would you recommend that the loan be taken? Why?

learning objectives

3 4 6

●○○ EASY

Analytical skill of:
interpreting data
and reports

E10.10 Effect of transactions on working capital and current ratio.

Evans Ltd had current liabilities at 30 November of \$137 400. The firm's current ratio at that date was 1.8.

Required

- (a) Calculate the firm's current assets and working capital at 30 November.
- (b) Assume that management paid \$15 300 of accounts payable on 29 November. Calculate the current ratio and working capital at 30 November as if the 29 November payment had not been made.
- (c) Explain the changes, if any, to working capital and the current ratio that would be caused by the 29 November payment.

PROBLEMS

learning objective

6

●●○ MEDIUM

Analytical skills of:
identifying
finding
evaluating
organising
managing
information
and evidence

P10.11 Calculate profitability and liquidity measures.

Use the annual financial statements of CFK Childcare Centres Limited (CFK Limited) reproduced in Appendix 1 to do the following:

- (a) Calculate ROA for 2006.
- (b) Calculate ROE for 2006.
- (c) Calculate working capital at 30 June 2006 and 2005.
- (d) Calculate the current ratio at 30 June 2006 and 2005.
- (e) Calculate the quick ratio at 30 June 2006 and 2005.
- (f) Assume that on 30 June 2006 the treasurer of CFK Limited decided to pay \$15 000 of accounts payable. Explain what impact, if any, this payment will have on the answers you calculated for (a)–(d) (i.e. increase, decrease or no effect).
- (g) Assume that, instead of paying \$15 000 of accounts payable on 30 June 2008, CFK Limited collected \$15 000 of accounts receivable. Explain what impact, if any, this receipt will have on the answers you calculated for (a)–(d) (i.e. increase, decrease or no effect).

learning objectives

3 4 6

●○○ EASY

Analytical skill of:
interpreting data
and reports

P10.12 Calculate profitability and liquidity measures.

Below are the comparative balance sheets of Hames Ltd at 31 December 2009 and 2008. Sales for the year ended 31 December 2009 totalled \$580 000.

HAMES LTD
Balance Sheets at 31 December 2009 and 2008

	2009	2008
	\$	\$
Assets		
Cash	21 000	19 000
Accounts receivable	78 000	72 000
Inventory	<u>103 000</u>	<u>99 000</u>
Total current assets	202 000	190 000

	2009	2008
	\$	\$
Land	50 000	40 000
Plant and equipment	125 000	110 000
Less: Accumulated depreciation	<u>(65 000)</u>	<u>(60 000)</u>
Total assets	<u>312 000</u>	<u>280 000</u>
Liabilities		
Short-term borrowings	18 000	17 000
Accounts payable	56 000	48 000
Other accrued liabilities	<u>20 000</u>	<u>18 000</u>
Total current liabilities	94 000	83 000
Long-term borrowings	<u>22 000</u>	<u>30 000</u>
Total liabilities	<u>116 000</u>	<u>113 000</u>
Owners' equity		
Share capital		
40 000 and 25 000 shares issued, respectively	<u>74 000</u>	<u>59 000</u>
Retained earnings		
Beginning balance	108 000	85 000
Profit for the year	34 000	28 000
Dividends for the year	<u>(20 000)</u>	<u>(5 000)</u>
Ending balance	<u>122 000</u>	<u>108 000</u>
Total owners' equity	<u>196 000</u>	<u>167 000</u>
Total liabilities and owners' equity	<u>312 000</u>	<u>280 000</u>

Note

Profit for the current year after interest and tax is \$52 000. (Last year interest and tax amounted to \$45 000.)

Required

- (a) Calculate ROA for 2009.
- (b) Calculate ROE for 2009.
- (c) Calculate working capital at 31 December 2009.
- (d) Calculate the current ratio at 31 December 2009.
- (e) Calculate the quick ratio at 31 December 2009.
- (f) Assume that on 31 December 2009 the treasurer of Hames Ltd decided to pay \$10 000 of accounts payable. Explain what impact, if any, this payment will have on the answers you calculated for (a)–(d) (i.e. increase, decrease or no effect).
- (g) Assume that instead of paying \$10 000 of accounts payable on 31 December 2009, Hames Ltd collected \$10 000 of accounts receivable. Explain what impact, if any, this receipt will have on the answers you calculated for (a)–(d) (i.e. increase, decrease or no effect).

learning objective

6

●○○ EASY

Analytical skill of:
interpreting data
and reports**P10.13 Calculate and analyse liquidity measures.**

Following are the current asset and current liability sections of the balance sheets for Freedom Ltd at 31 January 2009 and 2008 (in millions).

	31 January 2009	31 January 2008
	\$m	\$m
Current assets		
Cash	5	2
Accounts receivable	3	6
Inventories	<u>6</u>	<u>10</u>
Total current assets	<u>14</u>	<u>18</u>
Current liabilities		
Accounts payable	7	4
Other accrued liabilities	<u>2</u>	<u>2</u>
Total current liabilities	<u>9</u>	<u>6</u>

Required

- (a) Calculate the current ratio and working capital at each balance sheet date.
- (b) Evaluate the firm's liquidity at each balance sheet date.
- (c) Assume that the firm operated at a loss during the year ended 31 January 2009. How could cash have increased during the year?

learning objective

6

●○○ EASY

Analytical skill of:
interpreting data
and reports**P10.14 Calculate and analyse liquidity measures.**

Following are the current asset and current liability sections of the balance sheets for Calketch Ltd at 31 August 2009 and 2008 (in millions).

	31 August 2009	31 August 2008
	\$m	\$m
Current assets		
Cash	6	12
Marketable securities	14	20
Accounts receivable	26	16
Inventories	<u>36</u>	<u>16</u>
Total current assets	<u>82</u>	<u>64</u>
Current liabilities		
Accounts payable	26	44
Other accrued liabilities	<u>18</u>	<u>14</u>
Total current liabilities	<u>44</u>	<u>58</u>

Required

- (a) Calculate the current ratio and working capital at each balance sheet date.
- (b) Describe the change in the firm's liquidity from 2008 to 2009.

learning objective

3

●●○ MEDIUM
Analytical skill of:
interpreting data
and reports

P10.15 Applications of ROA using the adapted DuPont model; manufacturing versus service firm.

Manyops Ltd is a manufacturing firm that has experienced strong competition in its traditional business. Management is considering joining the trend to the 'service economy' by eliminating its manufacturing operations and concentrating on providing specialised maintenance services to other manufacturers. Management of Manyops Ltd has had a target ROA of 15 per cent on an asset base that has averaged \$6 million. To achieve this ROA, average asset turnover of 2 was required. If the company shifts its operations from manufacturing to providing maintenance services, it is estimated that average assets will decrease to \$1 million.

Required

- (a) Calculate the EBIT, the operating margin and the sales required for Manyops Ltd to achieve its target ROA as a manufacturing firm.
- (b) Assume that the average operating margin of maintenance service firms is 2.5 per cent, and that the average ROA for such firms is 15 per cent. Calculate the EBIT, sales and asset turnover that Manyops Ltd will have if the change to services is made and the firm is able to earn an average operating margin and achieve a 15 per cent ROA.

learning objective

3

●●● MEDIUM/HARD
Analytical skills of:
interpreting data
and reports
solving problems
application of
multi-disciplinary
perspectives

P10.16 ROA analysis using the adapted DuPont model.

Charlie's Furniture Store has been in business for several years. The firm's owners have described the store as a 'high-price, high-service' operation that provides lots of assistance to its customers. Operating margin has averaged a relatively high 32 per cent per year for several years, but turnover has been a relatively low 0.4, based on average total assets of \$1 600 000. A discount furniture store is about to open in the area served by Charlie's, and management is considering lowering prices in order to compete effectively.

Required

- (a) Calculate current sales and ROA for Charlie's Furniture Store.
- (b) Assuming that the new strategy would reduce operating margin to 20 per cent and assuming that average total assets would stay the same, calculate the sales that would be required to have the same ROA as the firm currently earns.
- (c) Suppose that you presented the results of your analysis in (a) and (b) of this problem to Charlie and he replied: 'Are you telling me that if I reduce my prices as planned, then I have to practically double my sales volume to earn the same return?' Given the results of your analysis, how would you respond to Charlie?
- (d) Now suppose that Charlie says: 'You know, I'm not convinced that lowering prices is my only option for staying competitive. What if I were to increase my marketing effort? I'm thinking about kicking off a new advertising campaign after conducting extensive market research to identify who my target customer groups are.' In general, explain to Charlie what the likely impact of a successful strategy of this nature would be on operating margin, turnover and ROA.
- (e) Think of an alternative strategy that might help Charlie maintain the competitiveness of his business. Explain the strategy and then describe the likely impact of this strategy on operating margin, turnover and ROA.

P10.17 Analysis of liquidity and profitability measures of Bude Hotels Ltd.

The following summarised data (amounts in millions) are taken from 31 December 2006 and 2007 comparative financial statements of Bude Hotels Ltd, a company that has the major share of the bicarbonated soft drink market.

	2008	2007
	\$m	\$m
For the year ended 31 December:		
Net sales	3 779	5 904
Manufacturing and other costs of sales	2 022	2 181
EBIT	425	666
Profit for the period	209	449
At 31 December:		
Assets		
Cash and cash equivalents	205	279
Accounts receivable, net	501	446
Inventories	500	432
Other current assets	190	300
Property, plant and equipment, net	1 228	1 540
Other non-current assets	<u>3 326</u>	<u>3 356</u>
Total assets	<u>5 950</u>	<u>6 353</u>
Liabilities and owners' equity		
Current portion of long-term borrowings	459	1076
Accounts payable	349	254
Accrued liabilities	416	379
Long-term borrowings	1 335	1 442
Other non-current liabilities	176	171
Contributed equity	1 601	1 561
Retained earnings	1 646	1 541
Reserves	(47)	(94)
Minority interest	<u>15</u>	<u>23</u>
Total liabilities and shareholders' equity	<u>5 950</u>	<u>6 353</u>

At 31 December 2006, total assets were \$8789 million and total shareholders' equity was \$4482 million.

- (a) Calculate the working capital, current ratio and quick ratio at 31 December 2007 and 2008.
- (b) Calculate the ROE for the years ended 31 December 2007 and 2008.
- (c) Calculate the ROA, showing margin and turnover, for the years ended 31 December 2007 and 2008.
- (d) Evaluate the company's overall liquidity and profitability. Comment specifically on the difficulties you have encountered in evaluating ROA and ROE for 2008.

■ **Optional continuation of Problem 10.17—trend analysis**

The following historical data are provided in the five-year financial summary section of Bude Hotels Ltd 2007 Annual Report. (Remember that these are past data and are not necessarily indicative of the results of future operations.)

	2002	2003	2004	2005	2006
Profit (loss) as a percentage of sales	7.6%	4.1%	4.0%	(3.3)%	2.6%
Return on average invested capital	16.7%	8.4%	8.4%	(6.2)%	5.5%
Return on average shareholders' equity	20.2%	10.0%	9.4%	(7.6)%	5.9%
Capital expenditures as a percentage of sales	15.6%	10.6%	9.6%	11.0%	8.7%
Research and development expenditures as a percentage of sales	8.1%	8.6%	9.2%	9.8%	11.1%
Year-end employment (in thousands)	142	139	150	133	121

Note: In answering (e)–(g) below, calculations are not required.

- (e) Compare the 'Return on average invested capital' for 2005 and 2006 (as reported by Bude Hotels Ltd) with the results that you calculated for ROA in (c) above. What do you suppose accounts for the significant difference in these results?
- (f) Now compare your ROE results (from (b) above) with those reported by Bude Hotels Ltd in their five-year financial summary. What might account for the slight differences you've observed?
- (g) What other data (trend or otherwise) would you like to have access to prior to making an investment in Bude Hotels Ltd?

learning objectives

3 4 6 7

MEDIUM/HARD

Analytical skills of:
interpreting data
and reports

P10.18 Analysis of liquidity and profitability measures of One.Tel Ltd.

The following summarised data (amounts in thousands) are taken from the audited financial report at 30 June 2000. The company went into receivership shortly thereafter.

	2000	1999
	\$000	\$000
For the year ended 30 June:		
Sales	653.4	326.9
EBIT	(263.9)	23.8
Depreciation and amortisation expense	(35.3)	(12.3)
Net interest income (expense)	3.3	(1.6)
Profit (loss) before tax	(295.9)	9.9
Income tax benefit (expense)	4.8	(2.9)
Profit (loss) for the period	(291.1)	7
At 30 June:		
Assets		
Cash	335.7	172.6
Accounts receivable, net	218.4	72
Inventory	5.1	2.5
Other current assets	68.9	49.1
Property, plant and equipment, net	155.7	41.0
Intangibles, net	559.8	28
Other non-current assets	91.9	160.8
Total assets	<u>1 435.5</u>	<u>526</u>

Liabilities and owners' equity

Current portion of long-term obligations	92.2	7.2
Accounts payable	277.2	73
Provisions	5.8	4.7
Non-current borrowings	107.3	66.6
Non-current provisions	8.2	15.2
Share capital	1 225.7	355.6
Retained earnings (accumulated deficit)	(282.1)	9.1
Reserves	<u>1.2</u>	<u>(5.4)</u>
Total liabilities and shareholders' equity	<u>1 435.5</u>	<u>526</u>

- (a) Calculate One.Tel's working capital, current ratio and quick ratio at 30 June 2000 and 1999.
- (b) Calculate One.Tel's ROE for the years ended 30 June 2000 and 1999, using year-end balances.
- (c) Calculate One.Tel's ROA, showing margin and operating asset turnover, for the years ended 30 June 2000 and 1999. Use year-end figures, not average figures.
- (d) Evaluate the company's overall liquidity and profitability.
- (e) One.Tel did declare and pay dividends during financial year 2000 (\$100 000) and financial year 1999 (\$300 000). What do you suppose was the primary reason for this?

■ **Optional continuation of Problem 10.18—trend analysis**

The following historical data were derived from One.Tel's consolidated financial statements. (Remember that past data are not necessarily indicative of the results of future operations.)

	2000	1999	1998	1997
	\$000	\$000	\$000	\$000
Net sales	653.4	326.9	207.3	148.3
EBIT (operating income)	(299.2)	11.5	8.8	5.6
Profit	(291.1)	7.0	5.9	3.7
Total assets	1 435.5	526	782	50.7
Net current assets	252.9	211.3	14.7	2.4
Non-current liabilities	115.5	81.8	6.6	12.4
Owners' equity	944.8	363.0	2.8	(0.9)

- (f) Are the trends expressed in the above data generally consistent with each other?
- (g) In your opinion, which of the above trends would be the most meaningful to a potential investor in ordinary shares of One.Tel Ltd? Which trend would be the least meaningful?
- (h) What other data (trend or otherwise) would you like to have access to, prior to making an investment in One.Tel Ltd?

P10.19 Comparative financial ratio analysis—Central Retailers Ltd vs Western Stores Ltd.

The following summarised data are taken from the comparative financial statements in the 2008 annual reports (and previous annual reports) of Central Retailers Ltd and Western Stores Ltd. These two companies operate in the same industry. (It should be noted that past data are not necessarily indicative of the results of future operations.)

CENTRAL RETAILERS LTD AND ITS SUBSIDIARY COMPANIES
Consolidated Financial Statements
for years ended 30 June

	2008	2007	2006
	\$m	\$m	\$m
Net sales	27 016	25 688	23 779
Cost of sales	<u>(19 618)</u>	<u>(19 420)</u>	<u>(17 771)</u>
Gross profit	7 398	6 268	6 008
Cumulative effect of change in accounting policies	(76)		
Other income	268	1 048	1 038
Borrowing costs	(86)	(102)	(124)
Selling and occupancy expenses	(5 702)	(5 546)	(5 475)
Administrative expenses	<u>(1 185)</u>	<u>(1 177)</u>	<u>(1 239)</u>
Profit from operations before income tax expense	617	491	208
Income tax expense	<u>(188)</u>	<u>(138)</u>	<u>(68)</u>
Profit from operations after income tax expense	<u>429</u>	<u>353</u>	<u>140</u>
ASSETS			
Current assets:			
Cash and cash equivalents	905	866	578
Accounts and notes receivable, net	346	288	398
Inventories	2 836	2 808	2 904
Prepaid expenses and other current assets	<u>29</u>	<u>54</u>	<u>66</u>
Total current assets	4 116	4 016	3 946
Non-current assets:			
Property, plant and equipment, net	3 340	3 499	3 464
Intangible assets, net	494	238	308
Other non-current assets	<u>304</u>	<u>286</u>	<u>340</u>
	<u>4 138</u>	<u>4 023</u>	<u>4 112</u>
Total assets	<u>8 254</u>	<u>8 039</u>	<u>8 058</u>
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current liabilities:			
Short-term borrowings	10	16	128
Accounts payable	2 476	2 270	2 164
Provisions	<u>555</u>	<u>640</u>	<u>626</u>
Total current liabilities	3 041	2 926	2 918
Non-current liabilities:			
Long-term borrowing	1 143	1 303	1 652
Other non-current liabilities	<u>294</u>	<u>503</u>	<u>242</u>
	<u>1 437</u>	<u>1 806</u>	<u>1 894</u>
Total liabilities	<u>4 478</u>	<u>4 732</u>	<u>4 812</u>

	2008	2007	2006
	\$m	\$m	\$m
Shareholders' equity:			
Contributed equity	2 210	2 032	1 973
Retained earnings	1 097	872	866
Reserves	<u>469</u>	<u>403</u>	<u>407</u>
	<u>3 776</u>	<u>3 307</u>	<u>3 246</u>
Total liabilities and shareholders' equity	<u>8 254</u>	<u>8 039</u>	<u>8 058</u>

WESTERN STORES LTD AND SUBSIDIARIES
Consolidated Income Statements
for years ended 30 June

	2008	2007	2006
	\$m	\$m	\$m
Net operating income	<u>26 813</u>	<u>24 984</u>	<u>21 388</u>
Cost of goods sold	(20 197)	(18 807)	(16 034)
Gross profit	6 616	6 177	5 354
Other income	141	245	260
Selling, administrative and general expenses	(5 812)	(5 590)	(4 908)
Operating profit	945	832	706
Interest income	14	10	10
Interest expense	<u>(53)</u>	<u>(60)</u>	<u>(23)</u>
Profit from operating activities			
before income tax expense	906	782	693
Income tax expense	<u>(255)</u>	<u>(219)</u>	<u>(217)</u>
Profit from operating activities			
after income tax expense	<u>651</u>	<u>563</u>	<u>476</u>
Profit attributable to minority interests	<u>(1)</u>	<u>(0)</u>	<u>(1.)</u>
Profit attributable to members of Western Stores Ltd	<u>650</u>	<u>563</u>	<u>475</u>

WESTERN STORES LTD AND SUBSIDIARIES
Consolidated Balance Sheets
at 30 June

	2008	2007	2006
	\$m	\$m	\$m
ASSETS			
Current:			
Cash	287	295	256
Accounts receivable, net	242	258	195
Inventories	1 843	1 838	1 731
Property, plant and equipment	133	100	126
Prepaid expenses and other assets	<u>115</u>	<u>97</u>	<u>80</u>
Total current assets	2 620	2 588	2 388
Non-current assets:			
Investments and other financial assets	191	142	64
Property, plant and equipment, net	2 348	2 267	2 130
Goodwill and other intangible assets	555	545	313
Deferred assets	<u>165</u>	<u>105</u>	<u>76</u>
Total assets	<u>5 879</u>	<u>5 647</u>	<u>4 971</u>

	2008	2007	2006
	\$m	\$m	\$m
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current:			
Accounts payable	2 078	2 000	1 666
Loans	150	34	342
Provisions	328	509	427
Accruals payable	<u>687</u>	<u>554</u>	<u>524</u>
Total current liabilities	3 243	3 097	2 959
Non-current liabilities:			
Loans	497	499	302
Provisions	<u>316</u>	<u>228</u>	<u>184</u>
Total liabilities	<u>4 056</u>	<u>3 824</u>	<u>3 445</u>
Shareholders' equity:			
Contributed equity	606	593	476
Reserves	183	184	182
Retained earnings	<u>446</u>	<u>458</u>	<u>280</u>
	1 235	1 235	938
Western Stores income notes	583	583	583
Minority interest	<u>5</u>	<u>4</u>	<u>4</u>
Total shareholders' equity	<u>1 823</u>	<u>1 822</u>	<u>1 525</u>
Total liabilities and shareholders' equity	<u>5 879</u>	<u>5 647</u>	<u>4 971</u>

The following information on or near the year ended 2005 was reported:

	Total assets	Total shareholders' equity
	\$m	\$m
Central Retailers Ltd and subsidiaries (30 July 2005)	8136	2778
Western Stores Ltd and subsidiaries (25 June 2005)	4817	1631

Required

- Calculate the working capital, current ratio and quick ratio at the 2006, 2007 and 2008 year-ends for Central Retailers Group and Western Stores Group.
- Calculate ROE for the financial years 2006–2008 for both groups.
- Calculate ROA, showing margin and turnover, for the financial years 2006–2008 for both groups.
- Evaluate the overall profitability and liquidity of Central Retailers Ltd versus Western Stores Ltd. On this basis, in which company's ordinary shares would you prefer to invest?
- What other information would you want to consider before making an investment decision?

P10.20 Analysis of liquidity and profitability measures.

The following data (amounts in millions) are taken from the 28 January 2005 and 30 January 2004 comparative financial statements of Dell, Inc., a direct marketer and distributor of personal computers (PCs) and PC-related products.

DELL INC.
Consolidated Statements of Income
Financial year ended

	28 January 2005	30 January 2004
Net revenue	\$49 205	\$41 444
Cost of revenue	<u>40 190</u>	<u>33 892</u>
Gross margin	<u>9 015</u>	<u>7 552</u>
Operating expenses:		
Selling, general and administrative	4 298	3 544
Research, development and engineering	<u>463</u>	<u>464</u>
Total operating expenses	<u>4 761</u>	<u>4 008</u>
Operating income	4 254	3 544
Investment and other income, net	<u>191</u>	<u>180</u>
Income before income taxes	4 445	3 724
Income tax provision	<u>1 402</u>	<u>1 079</u>
Net income	<u>\$3 043</u>	<u>\$2 645</u>

DELL INC.
Consolidated Balance Sheets

	28 January 2005	30 January 2004
ASSETS		
Current assets:		
Cash and cash equivalents	\$4 747	\$4 317
Short-term investments	5 060	835
Accounts receivable, net	4 414	3 635
Inventories	459	327
Other	<u>2 217</u>	<u>1 519</u>
Total current assets	<u>16 897</u>	<u>10 633</u>
Property, plant and equipment, net	1 691	1 517
Investments	4 319	6 770
Other non-current assets	<u>308</u>	<u>391</u>
Total assets	<u>\$23 215</u>	<u>\$19 311</u>
LIABILITIES AND OWNERS' EQUITY		
Current liabilities:		
Accounts payable	\$8 895	\$7 316
Accrued and other	<u>5 241</u>	<u>3 580</u>
Total current liabilities	<u>14 136</u>	<u>10 896</u>
Long-term debt	505	505
Other non-current liabilities	<u>2 089</u>	<u>1 630</u>
Total liabilities	<u>16 730</u>	<u>13 031</u>

Owners' equity:

Preferred stock and capital in excess of \$.01 par value; shares issued and outstanding: none	–	–
Common stock and capital in excess of \$.01 par value; shares authorised: 7000; shares issued: 2769 and 2721, respectively	8 195	6 823
Treasury stock, at cost; 284 and 165 shares, respectively	(10 758)	(6 539)
Retained earnings	9 174	6 131
Other comprehensive loss	(82)	(83)
Other	(44)	(52)
Total owners' equity	<u>6 485</u>	<u>6 280</u>
Total liabilities and owners' equity	<u>\$23 215</u>	<u>\$19 311</u>

At 31 January 2003, total assets were \$15 470 and total owners' equity was \$4873.

- (a) Calculate Dell, Inc.'s working capital, current ratio and quick ratio at 28 January 2005 and 30 January 2004. Round your ratio answers to two decimal places, and your percentage answers to one decimal place.
- (b) Calculate Dell's ROE for the years ended 28 January 2005 and 30 January 2004. Round your ratio answers to two decimal places, and your percentage answers to one decimal place.
- (c) Calculate Dell's ROA, showing margin and turnover, for the years ended 28 January 2005 and 30 January 2004. Round your ratio answers to two decimal places, and your percentage answers to one decimal place.
- (d) Evaluate the company's overall liquidity and profitability.
- (e) Dell did not declare or pay any dividends during the years ended 28 January 2005 or 30 January 2004. What do you suppose is the primary reason for this?

Optional continuation of P10.20—trend analysis.

The following historical data were derived from Dell's consolidated financial statements (in millions).

	2001	2002	2003	2004	2005
Net revenues	\$31 888	\$31 168	\$35 404	\$41 444	\$49 205
Net income	2 177	1 246	2 122	2 645	3 043
Total assets	13 670	13 535	15 470	19 311	23 215
Long-term debt	509	520	506	505	505

- (f) Are the trends expressed in these data generally consistent with each other?
- (g) In your opinion, which of these trends would be most meaningful to a potential investor in ordinary shares of Dell? Which trend would be least meaningful?
- (h) What other data (trend or otherwise) would you like to have access to prior to making an investment in Dell?