Chapter Two

Introduction to financial statement analysis

Answers to Concept Check questions

1. **What is the role of the auditor?**

   The role of an auditor is to check a firm's financial statements, ensure they are prepared according to A-IFRS, and provide evidence to support the reliability of the information.

2. **What are the four financial statements that all public companies must produce?**

   The four financial statements that all public companies must produce are:
   - Balance Sheet
   - Income Statement
   - Statement of Cash Flows
   - Statement of Changes in Equity

3. **What is depreciation designed to capture?**

   Depreciation is designed to capture the reduction in the value of an asset over time as it wears out or becomes obsolete.

4. **The book value of a company's assets usually does not equal the market value of those assets. What are some reasons for this difference?**

   Some reasons for the difference between the book value and market value of a firm's assets include the fact that depreciation is an arbitrary process which may not accurate reflect the reduction in the value of an asset, intangible assets, such as goodwill, trademarks and patents, which are difficult to accurate value, and various ways in which a firm, as a going concern, can have greater value than the sum of its parts, such as the skills and knowledge of those working for the firm.

5. **What does a high debt–equity ratio tell you?**

A high debt-to equity ratio tells you that the firm is highly leveraged – the proportion of debt is high compared to the equity of the firm. This indicates a high level of financial risk, as well as a high expected return for shareholders.

6. **What is a firm's enterprise value?**

A firm's enterprise value represents the value of the underlying business assets, unencumbered by debt and separate from any cash or marketable securities. It is equal to the market value of the firm's shares, plus the value of debt, minus cash and marketable securities. This can be seen as the cost to take over the business.

7. **What do a firm's earnings measure?**

A firm's earnings measure the profitability (based on accounting profit) of the firm over a given period. It represents what is left out of revenue after deducting all expenses, including non-cash expenses such as depreciation. It measures the increase in the value of the equity of the firm as a result of the firm's operating activities.

8. **What is meant by 'dilution'?**

Dilution is reduction in earnings per share that results in the issue of new shares (e.g. because of options and convertible bonds), because the existing EPS must be spread over a greater number of shares.

9. **How can a financial manager use the DuPont Identity to assess the firm's ROE?**

The DuPont identity allows the financial manager to analyse the components of ROE (i.e. profit margin, asset turnover and the equity multiplier) in order to determine which components have caused the current level of ROE and hence which of these components requires most attention in order to improve ROE.

10. **How do you use the P/E ratio to gauge the market value of a firm?**

The P/E ratio measures the value of the firm's equity in proportion to the earnings generated by the firm. Based on an estimate of the typical P/E ratio for an industry, it can be used to determine whether a firm is overvalued or undervalued relative to other firms in the industry.

11. **Why does a firm's net profit not correspond to cash earned?**

A firm's net profit does not correspond to cash earned if non-cash items have been used to determine accounting profit, such as accrued income and expenditure, and depreciation.

12. **What are the components of the statement of cash flows?**

The components of the statement of cash flows are:

- Cash from operating activities
- Cash from investing activities
- Cash from financing activities

13. **Where do off-balance sheet transactions appear in a firm's financial statements?**

    Off balance sheet transactions appear in the management discussion and analysis section of a firm's financial statements.

14. **What information do the notes to financial statements provide?**

    The notes to the financial statements document important accounting assumptions that were used in preparing the financial statements, provide information specific to a firm's subsidiaries or its separate product lines, show the details of the firm's share-based compensation plans for employees and the different types of debt the firm has outstanding, and provide details o acquisitions, spin-offs, leases, taxes and risk management activities.

15. **Describe the transactions Enron used to increase its reported earnings.**

    Enron increased its reported earnings by selling assets at inflated prices to other firms, together with a promise to buy back those assets at an even higher future price, recording the incoming cash as revenue but hiding the promises to buy the assets back.

16. **What is CLERP 9?**

    CLERP 9 is the Corporate Law Economic Reform Program (Audit Reform and Corporate Disclosure) Act 2004, which addressed deficiencies in the practice of auditing and company financial reporting.

Answers to Review Questions

1. **Why do firms disclose financial information?**

   Firms prepare financial statements to communicate financial information to their various stakeholders, including investors, regulators, employees and the general community, allowing those stakeholders to assess the performance of the firm and make decisions in relation to the firm.

2. **Who reads financial statements? List at least three different categories of people. For each category, provide an example of the type of information they might be interested in and discuss why.**

   Anyone interested in a firm can look to the financial statements for information. This includes:

- *Shareholders*: checking the profitability and performance of the firm.
- *Lenders*: looking for information about the credit-worthiness of the firm.
- *Suppliers*: will this firm be a dependable customer?
- *Competitors*: seeking sales and profitability of the competition.
- *Management*: how well are we running the firm?

3. **What four financial statements can be found in a firm's annual report? What checks are there on the accuracy of these statements?**

   The firm's annual report includes the balance sheet, income statement, statement of cash flows and statement of changes equity. These statements are verified by independent auditors and signed by the management and directors of the firm.

4. **What is the purpose of the balance sheet?**

   The purpose of the balance sheet is to show the financial position of the firm at a specific point in time.

5. **How can you use the balance sheet to assess the health of the firm?**

   The balance sheet can show how well the firm is managing the assets and financing the operations of the firm.

6. **What is the purpose of the income statement?**

   The purpose of the income statement is to report the firm's revenue, expenses and earnings. It shows the profitability of the firm over a specific period of time.

7. **How are the balance sheet and the income statement related?**

   The balance sheet shows the financial situation of a firm at a given point in time, while the income statement shows the financial performance of the firm during the period leading up to the balance sheet date. The statements are linked through the retained earnings account on the balance sheet, which shows the cumulative profits of the firm during its existence.

8. **What is the DuPont Identity and how can a financial manager use it?**

   The DuPont Identity takes the return on equity (ROE) and breaks it into three components: net profit margin, asset turnover and asset multiplier. The DuPont Identity equation is below:

$$\text{Return on equity} = \text{Net profit margin} \times \text{Asset turnover} \times \text{Equity multiplier}$$

$$\frac{\text{Net income}}{\text{Shareholder equity}} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Shareholder equity}}$$

The DuPont Identity is useful to managers, as it identifies three drivers that the manager can use to affect ROE.

9. **How does the statement of cash flows differ from the income statement?**

   The income statement measures the profits of the firm, while the statement of cash flows measures how cash moves in and out of the firm. These are not necessarily the same, as many non-cash flow transactions are included in the income statement (such as depreciation), while other cash flows are not included in the income statement (such as investment in working capital and fixed assets).

10. **Can a firm with positive net profit run out of cash? Explain.**

    Yes, a firm with positive net income can run out of cash. A rapidly growing firm, which is investing heavily in working capital and property, plant and equipment, can have positive net income on the income statement but show negative cash flows from operating and investing activities.

11. **What can you learn from management's discussion or the notes to the financial statements?**

    Management's discussion contains their analysis of the performance of the firm and identifies the risks that the business faces. The notes to the financial statements often clarify and augment the information used and reported in the financial statements.

12. **How did accounting fraud contribute to the collapse of Enron and HIH Insurance?**

    Enron utilised off-balance sheet transactions to inflate profits and hide liabilities. HIH Insurance was marginally solvent, due to a range of problems including rapid expansion and unsupervised delegation of authority, but masked its true solvency position with fraudulent reporting.

Answers to Problems

Note: All problems in this chapter are available in MyLab Finance. An asterisk (*) indicates problems with a higher level of difficulty.

Firms' disclosure of financial information

1. **Find the most recent financial statements for Qantas (ASX:QAN) using the following sources:**

   a. From the company's web page: www.qantas.com.au. (Hint: search for 'investors'.)

   b. From the ASX website: www.asx.com.au. (Hint: click on announcements to search for the release of the annual report.)

c. From the Yahoo! Finance website: au.finance.yahoo.com.

d. From at least one other source. (Hint: enter 'Qantas annual report' at www.google.com.)

In a firm's annual report, four financial statements can be found: the balance sheet, the income statement, the statement of cash flows and the statement of changes in equity. Financial statements of public companies are required to be audited by a neutral third party, who checks and ensures that the financial statements are prepared according to relevant accounting standards and that the information contained is reliable.

The balance sheet

2. Consider the following potential events that might have occurred to Global on 30 December 2017. For each one, indicate which line items in Global's balance sheet would be affected and by how much. Also indicate the change to Global's book value of equity.

a) Global used $20 million of its available cash to repay $20 million of its long-term debt.

b) A warehouse fire destroyed $5 million worth of uninsured inventory.

c) Global used $5 million in cash and $5 million in new long-term debt to purchase a $10 million building.

d) A large customer owing $3 million for products it already received declared bankruptcy, leaving no possibility that Global would ever receive payment.

e) Global's engineers discover a new manufacturing process that will cut the cost of its flagship product by over 50%.

f) A key competitor announces a radical new pricing policy that will drastically undercut Global's prices

a. Long-term liabilities would decrease by $20 million, and cash would decrease by the same amount. The book value of equity would be unchanged.

b. Inventory would decrease by $5 million, as would the book value of equity.

c. Long-term assets would increase by $10 million, cash would decrease by $5 million, and long-term liabilities would increase by $5 million. There would be no change to the book value of equity.

d. Accounts receivable would decrease by $3 million, as would the book value of equity.

e. This event would not affect the balance sheet.

f. This event would not affect the balance sheet.

3. **What was the change in Global's book value of equity from 2016 to 2017 according to Table 2.1? Does this imply that the market price of Global's shares increased in 2017? Explain**

Global's book value of equity increased by $1 million from 2016 to 2017. An increase in book value does not necessarily indicate an increase in Global's share price. The market value of a share does not depend on the historical cost of the firm's assets, but on investors' expectation of the firm's future performance. There are many events that may affect Global's future profitability, and hence its share price, that do not show up on the balance sheet.

4. **Find the 2016 annual report for Billabong International Limited (ASX:BBG) online. Using figures for the consolidated company, answer the following questions from its balance sheet:**

a. How much cash did Billabong have at the end of the 2015/16 year?

b. What were Billabong's total assets?

c. What were Billabong's total liabilities?

d. What was the book value of Billabong's equity?

a. At the end of the year, Billabong had cash of $89.17 million.

b. Billabong's total assets were $744.25 million.

c. Billabong's total liabilities were $484.96 million.

d. The book value of Billabong's equity was $259.29 million.

Balance sheet analysis

5. **In June 2016, BHP Billiton Limited (ASX:BHP) had a book value of equity of $80.7 billion, 5.32 billion shares outstanding and a market price of $18.65 per share. BHP also had cash of $13.8 billion and total debt of $79.1 billion.**

a. What was BHP's market capitalisation? What was its market-to-book ratio?

b. What was BHP's book debt–equity ratio? What was its market debt–equity ratio?

c. What was BHP's enterprise value?

Plan: The problem presents us with some raw financial information for BHP. While useful, this raw financial information is not well suited to support financial analysis of BHP and to answer such questions as: How has the stock market valued BHP? How much debt does BHP use relative to the equity financing that BHP uses? How valuable, in today's dollars, is BHP?

To answer these and other questions we must compute key ratios and current market values as opposed to historical cost values.

Execute:

a. $\text{Market capitalisation} = 5.32\text{ billion} \times \$18.65 = \$99.2\text{ billion}$

$$\text{Market-to-book ratio} = \frac{99.2}{80.7} = 1.23$$

b. $\text{Book debt-equity ratio} = \dfrac{79.1}{80.7} = 0.98$

$$\text{Market debt-equity ratio} = \frac{79.1}{99.2} = 0.80$$

c. $\text{Enterprise value} = 99.2 + 79.1 - 13.8 = 164.5$

Evaluate: BHP has a market-to-book ratio of 1.23. Over time, equity investors invested $80.7 billion in BHP; today that equity investment is worth $99.2 billion (or 1.23 times more). This indicates that BHP's management has run the firm well, and equity investors expect strong results in the future.

BHP has a book debt-equity ratio of 0.98. Over time, equity investors invested $80.7 billion in BHP and debt investors invested $79.1 billion (or 0.98 times the book value of equity). This would indicate that BHP is not heavily financed with debt. But remember these are book values. In part (a) above, we calculated that BHP's equity is valued at $99.2 billion in today's dollars. The market D/E ratio provides a somewhat different picture, where the value of debt is an even smaller proportion of the market value of equity.

BHP has an enterprise value of $164.5 billion. In today's dollars investors value the entire company as having this value.

6. **In June 2016, Newcrest Mining Limited (ASX:NCM), Australia's largest gold producer, had cash of $71 million, current assets of $1079 million and current liabilities of $900 million. It also had inventories of $732 million.**

a. What was Newcrest Mining's current ratio?

b. What was Newcrest Mining's quick ratio?

a. $\text{Newcrest's current ratio} = \dfrac{1079}{900} = 1.20$

b. $\text{Newcrest's quick ratio} = \dfrac{1079 - 732}{900} = 0.39$

7. **In June 2016, St Barbara Limited (ASX:SBM), Australia's third-largest gold producer, had a quick ratio of 2.77 and a current ratio of 3.85. What can you say about the asset liquidity of Newcrest Mining relative to St Barbara?**

Newcrest's lower current and quick ratios demonstrate that it has much lower asset liquidity than does St Barbara. This means that in a pinch, Newcrest has less liquidity to draw on than does St Barbara.

8. **In June 2016, the following information was true about Origin Energy Limited (ASX:ORG) and AGL Energy Limited (ASX:AGL), both Australian energy retailers. Values (except price per share) are in millions.**

	Book equity ($)	Price per share ($)	Number of shares
ORG	14530	5.75	1264
AGL	7926	19.29	675

a. What is the market-to-book ratio of each company?

b. What conclusions do you draw from comparing the two ratios?

Plan: The table presents raw data about Origin Energy Limited (ORG) and AGL Limited (AGL). While useful, this information does not easily tell us how the stock market values each of these firms alone and by comparison. To accomplish this, we will compute the market-to-book ratio of each firm and then compare them.

Execute:

a. $$\text{ORG's market-to-book ratio} = \frac{5.75 \times 1{,}264}{14{,}530} = 0.50$$

$$\text{AGL's market-to-book ratio} = \frac{19.29 \times 675}{7{,}926} = 1.64$$

b. The market looks more favourably on the outlook of AGL than on Origin Energy.

Evaluate: The market looks more favourably on the outlook of AGL than on Origin Energy. For every dollar of equity invested in ORG the market values that dollar today at $0.50 versus $1.64 for a dollar invested in AGL. Equity investors are willing to pay relatively more today for shares of AGL than for ORG because they expect AGL to produce superior performance in the future.

The income statement and income statement analysis

9. **Find the 2016 annual report for Billabong International Limited (ASX:BBG) online. Using figures for the consolidated company, answer the following questions from the income statement:**

a. What was Billabong's revenue for 2016? By what percentage did revenue grow from 2015?

b. What were Billabong's operating and net profit margins in 2016? How do they compare with its margins in 2015?

c. What was Billabong's diluted EPS (excluding extraordinary items) in 2016? What number of shares was this EPS based on?

a. Billabong's total revenue for 2016 was $1,103.54 million.

$$\text{Increase in revenue} = \frac{1{,}103.54}{1{,}056.13} - 1 = 4.49\%$$

b. Billabong's Balance Sheet doesn't show Operating Profit, so we need to add finance costs to the Profit Before Tax to determine Operating Profit.

$$\text{Operating margin (2016)} = \frac{-15.90 + 42.35}{1{,}103.54} = \frac{26.45}{1{,}103.54} = 2.40\%$$

$$\text{Operating margin (2015)} = \frac{-20.20 + 34.28}{1{,}056.13} = \frac{14.08}{1{,}056.13} = 1.33\%$$

$$\text{Net profit margin (2016)} = \frac{-23.74}{1{,}103.54} = -2.15\% \qquad (2015) = \frac{-7.96}{1{,}056.13} = -0.75\%$$

The operating profit margin increased slightly from 2015 to 2016, but the net profit margin decreased (became more negative), primarily because the company had a tax expense in 2016 compared to a tax benefit in 2015.

c. The diluted earnings per share (excluding extraordinary items) in 2015 was –12 cents. The number of shares used in calculation of diluted EPS was 197.66 million.

10. ***Suppose that in 2017, Global launched an aggressive marketing campaign that boosted sales by 15%. However, its operating margin fell from 5.57% to 4.50%. Suppose that it had no other income, interest expenses were unchanged, and taxes were the same percentage of pre-tax profit as in 2016.**

*__Plan__: We are given some data about Global's financial results in 2016 and its projected results for 2017 (before the changes posed in the question). Global launched a marketing campaign that increased projected sales but also decreased operating margins. We must calculate the effects of these changes on revenues, net profit and share price.

Execute:

a. Revenue (2017) = Original projected revenue × (1 + % increase in sales)
= 186.7 × 1.15 = $214.71 million.

EBIT (2017) = Operating margin × Revenue

$= 4.50\% \times 214.71 = \$9.66$ million.

b. Net profit (2017) $= \text{EBIT} - \text{Interest expenses} - \text{Taxes}$

$= (9.66 - 7.7) \times (1 - 0.24) = \$1.49$ million.

c. $$\text{Share price (2017)} = (\text{P/E ratio}) \times (\text{EPS in 2017}) = 18 \times \left(\frac{1.49}{3.6}\right) = \$7.45$$

$$\text{Share price (2016)} = (\text{P/E ratio}) \times (\text{EPS in 2016}) = 18 \times \left(\frac{1.9}{3.6}\right) = \$9.50$$

Evaluate: The new aggressive marketing campaign succeeded in raising revenue by 15%. Unfortunately operating margins fell from 5.57% to 4.50%, which reduced EBIT and net profit. As a result the share price fell from \$9.50 to \$7.45. The new marketing campaign destroyed shareholder value and is therefore a failure.

11. Suppose a firm's tax rate is 30%.

a. What effect would a \$10 million operating expense have on this year's earnings? What effect would it have on next year's earnings?

b. What effect would a \$10 million capital expense have on this year's earnings if the capital is depreciated at a rate of \$2 million per year for five years? What effect would it have on next year's earnings?

a. A \$10 million operating expense would be immediately expensed, increasing operating expenses by \$10 million. This would lead to a reduction in taxes of 30% × \$10 million = \$3 million. Thus, earnings would decline by 10 – 3 = \$7 million. There would be no effect on next year's earnings.

b. Capital expenses do not affect earnings directly. However, the depreciation of \$2 million would appear each year as an operating expense. With a reduction in taxes of \$2 million × 30% = \$0.6 million, earnings would be lower by \$2 million – \$0.6 million = \$1.4 million for each of the next five years.

12. You are analysing the leverage of two firms and you note the following (all values are in millions of dollars):

	Debt	Book equity	Market equity	Operating profit	Interest expense
Firm A	500	300	400	100	50
Firm B	80	35	40	8	7

a. What is the market debt–equity ratio of each firm?

b. What is the book debt–equity ratio of each firm?

c. What is the interest coverage ratio of each firm?

d. Which firm will have more difficulty meeting its debt obligations?

Plan: The table presents raw data about Debt, Equity, Operating Profit and Interest Expense. While useful, this information does not easily tell us how much financial leverage each of these firms alone and by comparison. It also does not tell us how well each firm is able to support its debt. To accomplish this, we will compute various leverage ratios of each firm and then compare them.

Execute:

a. Firm A: Market debt-equity ratio $= \frac{500}{400} = 1.25$ Firm B: $\frac{80}{40} = 2.00$

b. Firm A: Book debt-equity ratio $= \frac{500}{300} = 1.67$ Firm B: $\frac{80}{35} = 2.29$

c. Firm A: Interest coverage ratio $= \frac{100}{50} = 2.00$ Firm B: $\frac{8}{7} = 1.14$

Evaluate: Firm B has a lower coverage ratio and will have slightly more difficulty meeting its debt obligations than Firm A.

13. **For 2016, Fantastic Furniture (ASX:FAN) and Nick Scali Furniture (ASX:NCK) had the following information (all values are in millions of dollars):**

	Sales (income statement)	Costs of goods sold (income statement)	Accounts receivable (balance sheet)	Inventory (balance sheet)
FAN	543.7	306.9	5.8	93.3
NCK	203.0	79.7	0.2	25.8

a. What is each company's accounts receivable days?

b. What is each company's inventory turnover?

c. Which company is managing its accounts receivable and inventory more efficiently?

Plan: The table presents raw data about Sales, Accounts Receivable, and Inventory data for Fantastic Furniture and Nick Scali Furniture. While useful, this information does not easily tell us how well each firm is managing its Accounts Receivable and Inventory in general and in comparison with each other. To accomplish this, we will compute the relevant ratios of each firm and then compare them.

Execute:

a. Fantastic Furniture: $\text{Accounts Receivable Days} = \dfrac{5.8}{543.7/365} = 3.89$

Nick Scali Furniture: $\text{Accounts Receivable Days} = \dfrac{0.2}{203.0/365} = 0.36$

b. Fantastic Furniture: $\text{Inventory Turnover} = \dfrac{306.9}{93.3} = 3.29$

Nick Scali Furniture: $\text{Inventory Turnover} = \dfrac{79.7}{25.8} = 3.09$

Evaluate: Nick Scali Furniture is managing its accounts receivable more efficiently, in that it collects its Accounts Receivable in 0.36 days (implying the majority of its sales are in cash) as opposed to 3.89 days for Fantastic Furniture. However, Fantastic Furniture is managing its inventory slightly more efficiently, turning over its inventory 3.89 times per year compared to 3.09 times.

14. ***Quisco Systems has 6.5 billion shares outstanding and a share price of $18.00. Quisco is considering developing a new networking product in-house at a cost of $500 million. Alternatively, Quisco can acquire a firm that already has the technology for $900 million worth (at the current price) of Quisco shares. Suppose that absent the expense of the new technology, Quisco will have EPS of $0.80.**

a. Suppose Quisco develops the product in-house. What impact would the development cost have on Quisco's EPS? Assume all costs are incurred this year and are treated as an R&D expense, Quisco's tax rate is 30% and the number of shares outstanding is unchanged.

b. Suppose Quisco does not develop the product in-house but instead acquires the technology. What effect would the acquisition have on Quisco's EPS this year? (Note that acquisition expenses do not appear directly on the income statement. Assume the acquired firm has no revenue or expenses of its own, so that the only effect on EPS is due to the change in the number of shares outstanding.)

c. Which method of acquiring the technology has a smaller impact on earnings? Is this method cheaper? Explain.

***Plan**: Quisco Systems wishes to acquire a new networking technology and is confronted with a common business problem: whether to develop the technology itself in house or to acquire another company that already has the technology. Quisco must perform a comprehensive analysis of each option, not just comparing internal development costs versus acquisition costs, but considering tax implications as well.

Execute:

a. If Quisco develops the product in house, its earnings would fall by \$500 × (1 – 0.3) = \$350 million. With no change to the number of shares outstanding, its EPS would decrease by \$350/6500 =\$0.054, to \$0.746. (Assume the new product would not change this year's revenue.)

b. If Quisco acquires the technology for \$900 million worth of its shares, it will issue \$900/18 = 50 million new shares. Since earnings without this transaction are \$0.80 × 6.5 billion = \$5.2 billion, its EPS with the purchase is \$5.2/6.55 = \$0.79.

Evaluate: Acquiring the technology would have a smaller impact on earnings. However, this method is not cheaper. Developing it in house is less costly and provides an immediate tax benefit. The earnings impact is not a good measure of the expense. In addition, note that because the acquisition permanently increases the number of shares outstanding, it will reduce Quisco's earnings per share in future years as well.

15. In December 2016, American Airlines (AAL) had a market capitalisation of \$23.6 billion, debt of \$47.5 billion, cash of \$0.3 billion and revenue of \$40.2 billion. Delta Airlines (DAL) had a market capitalisation of \$36.6 billion, debt of \$39.0 billion, cash of \$2.8 billion and revenue of \$39.6 billion. (All values in US dollars.)

a. Compare the market capitalisation-to-revenue ratio (also called the price-to-sales ratio) for American Airlines and Delta Airlines.

b. Compare the enterprise value-to-revenue ratio for American Airlines and Delta Airlines

c. Which of these comparisons is more meaningful? Explain

Plan: Assume that a portfolio manager wishes to add some airline shares to the pension plan she is managing. She would like to get a good evaluation of the relative valuations of each airline as a starting point for her investment decision. Her job is to determine the best way to estimate relative values.

Execute:

a. Market capitalisation-to-revenue ratio $= \frac{26.5}{41.0} = 0.646$ for American Airlines

$= \frac{6.9}{19.8} = 0.348$ for Southwest Airlines

b. EV-to-revenue ratio $= \frac{(26.5 + 42.8 - 0.4)}{41.0} = 1.680$ for American Airlines

$= \frac{(6.9 + 14.0 - 1.6)}{19.8} = 0.975$ for Southwest Airlines

Evaluate: The market capitalisation-to-revenue ratio cannot be meaningfully compared when the firms have different amounts of leverage, as market capitalisation measures only the value of the firm's equity. Southwest Airlines has proportionately more debt that American Airlines, lowering the value of equity as a proportion of revenue (compared to American Airlines). The enterprise value-to-revenue ratio is therefore more useful when firm's leverage is quite different, as it is here. The market capitalisation-to-revenue ratios are very different, but the debt is included in the analysis, the enterprise value-to-revenue ratios are much closer than the market capitalization-to-revenue ratios.

16. ***Find the 2016 annual report for The Reject Shop Limited (ASX:TRS) online.**

a. Calculate The Reject Shop's net profit margin, total asset turnover and equity multiplier.

b. Verify the DuPont Identity for The Reject Shop's ROE.

c. If The Reject Shop's managers wanted to increase its ROE by one percentage point, how much higher would their asset turnover need to be?

* **Plan**: The Reject Shop's management uses the well-known DuPont identity to measure ROE and the components of ROE. Management wants to know how much of an increase in asset turnover would be needed to raise ROE by a percentage point.

Execute:

a. The Reject Shop's net profit margin $= \dfrac{17{,}100}{800{,}063} = 2.14\%$

Asset turnover $= \dfrac{800{,}063}{230{,}595} = 3.47$ Equity multiplier $= \dfrac{230{,}595}{135{,}342} = 1.70$

b. $\text{ROE} = \dfrac{17{,}100}{135{,}342} = 12.63\%$ $\text{ROE (DuPont)} = 2.14\% \times 3.47 \times 1.70 = 12.63\%$

(Using exact rather than the rounded values shown above.)

c. For ROE to increase to 13.63%, the necessary asset turnover is given by:

$$\text{Revised asset turnover} = \frac{\text{Revised ROE}}{(\text{Net profit margin})(\text{Equity multiplier})}$$
$$= \frac{13.63}{(2.14)(1.70)} = 3.74$$

Evaluate: The Reject Shop's current ROE is 12.6% with an asset turnover of 3.47 times. To raise ROE to 13.6%, The Reject Shop would have to increase its asset turnover to 3.76 times.

17. **Repeat the analysis from parts (a) and (b) of the previous problem for JB Hi-Fi (ASX:JBH). Based on the DuPont Identity, what explains the difference between the two firms' ROEs?**

Plan: Perform the same type of DuPont analysis on JB Hi-Fi that was used at The Reject Shop.

Execute:

a. JB Hi-Fi's net profit margin $= \dfrac{152{,}181}{3{,}954{,}467} = 3.85\%$

$$\text{Asset turnover} = \frac{3{,}954{,}467}{992{,}381} = 3.98 \qquad \text{Equity multiplier} = \frac{992{,}381}{404{,}702} = 2.45$$

b. $\text{ROE} = \dfrac{152{,}181}{404{,}702} = 37.6\%$

$\text{ROE (DuPont)} = 3.85\% \times 3.98 \times 2.45 = 37.5\%$ (Difference due to rounding)

Evaluate: JB Hi-Fi has a higher ROE than The Reject Shop. This is because it has a higher asset turnover, a higher net profit margin and a considerably higher equity multiplier.

The statement of cash flows

18. Find the 2016 annual report for Billabong International Limited (ASX:BBG) online. Using figures for the consolidated company, answer the following questions from its cash flow statement:

a. How much cash did Billabong generate from operating activities in 2016?

b. What was Billabong's depreciation expense in 2016? (Hint: look on the income statement or in the notes.)

c. How much cash was invested in new fixed assets and capital expenditures?

d. What was Billabong's net result from financing activities? Did Billabong raise cash or spend cash through financing activities?

a. Net cash provided by operating activities was –$22.10 million in 2016.

b. Depreciation expenses were $23.77 million.

c. Cash invested in capital expenditures was $38.00 million.

d. The net result from financing activities was –$11.38 million. This means that Billabong paid out cash through financing activities, through debt repayments.

19. See the cash flow statement here (indirect method) for Allied Foods Ltd (all values in thousands of dollars) (see MyLab Finance for the data in Excel format):

Statement of cash flows:	29 Oct 2017	30 Jul 2017	30 Apr 2017	30 Jan 2017
Net profit	276710	228964	194062	218532
Operating activities, cash flows provided by or used in				
Depreciation	69997	75733	74570	73173
Adjustments to net profit	14359	(13142)	48826	(47993)
Changes in accounts receivables	(38869)	(53218)	100732	(84711)
Changes in liabilities	82816	(111577)	201725	39949
Changes in inventories	(195186)	(114121)	85028	57681
Changes in other operating activities	17675	(26574)	12692	(2097)
Total cash flow from operating activities	227502	(13935)	717635	254534
Operating activities, cash flows provided by or used in				
Capital expenditures	(82584)	(41634)	(100109)	(69170)
Investments	(5465)	5465	(93153)	(48330)
Other cash flows from investing activities	(108903)	732	(58069)	20652
Total cash flows from investing activities	(196952)	(35437)	(251331)	(96848)
Operating activities, cash flows provided by or used in				
Dividends paid	(131483)	(131333)	(119452)	(121404)
Sale or purchase of shares	78774	1210	(76807)	(79288)
Net borrowings	515709	114766	(283696)	64885
Other cash flows from financing activities	(282)	2000	(46234)	39763
Total cash flows from financing activities	462718	(13357)	(526189)	(96044)
Effect of exchange rate changes	(119960)	(610)	32807	6890
Change in cash and cash equivalents	373308	(63339)	(27078)	68532

a. What were Allied Foods' cumulative earnings over these four quarters? What were its cumulative cash flows from operating activities?

b. What fraction of the cash from operating activities was used for investment over the four quarters?

c. What fraction of the cash from operating activities was used for financing activities over the four quarters?

a. Allied Foods' cumulative earnings over these 4 quarters was $918.268 million. Its cumulative cash flows from operating activities was $1,185.736 million ($1.19 billion)

b. Fraction of cash from operating activities used for investment over the 4 quarters:

	29-Oct 2017	30-Jul 2017	30-Apr 2017	30-Jan 2017	4 Quarters

Operating Activities	227,502	–13,935	717,635	254,534	1,185,736
Investing Activities	–196,952	–35,437	–251,331	–96,848	–580,568
CFI/CFO	86.57%	–254.30%	35.02%	38.05%	48.96%

c. Fraction of cash from operating activities used for financing over the 4 quarters:

	29-Oct 2017	30-Jul 2017	30-Apr 2017	30-Jan 2017	4 Quarters
Operating Activities	227,502	–13,935	717,635	254,534	1,185,736
Financing Activities	462,718	–13,357	–526,189	–96,044	–172,872
CFF/CFO	–203.39%	–95.85%	73.32%	37.73%	14.58%

20. **Suppose your firm receives a $5 million order on the last day of the year. You fill the order with $2 million worth of inventory. The customer picks up the entire order the same day and pays $1 million up-front in cash; you also issue a bill for the customer to pay the remaining balance of $4 million within 40 days. Suppose your firm's tax rate is 0% (i.e. ignore taxes). Determine the consequences of this transaction for each of the following:**

a. revenue;

b. earnings;

c. receivables;

d. inventory;

e. cash.

Plan: Even a relatively simple transaction such as receiving an order to sell merchandise on credit and shipping the order promptly creates a series of changes within the firm. Map out the changes that would occur to a firm that engages in a relatively simple business transaction.

Execute:

a. Revenue: increases by $5 million

b. Earnings: increase by $3 million

c. Receivables: increase by $4 million

d. Inventory: decreases by $2 million

e. Cash: increases by $3 million (earnings) – $4 million (receivables)
+ $2 million (inventory) = $1 million (cash)

Evaluate: We can see that even a relatively simple credit sale has impacts on Revenue, Earnings, Accounts Receivable, Inventory and eventually Cash.

21. Nokela Industries purchases a $40 million cyclo-converter. The cyclo-converter will be depreciated by $10 million per year over four years, starting this year. Suppose Nokela's tax rate is 30%.

a. What impact will the cost of the purchase have on earnings for each of the next four years?

b. What impact will the cost of the purchase have on the firm's cash flow for the next four years?

Plan: Nokela Industries plans to purchase a capital asset. In this case it is a $40 million cyclo-converter. Any time a firm acquires a capital asset it is permitted to depreciate the asset for tax purposes. This has Depreciation Expense, Tax Expense and Cash Flow effects that must be understood and analysed.

Execute:

a. Earnings for the next four years would have to deduct the depreciation expense. After taxes, this would lead to a decline of $10 million × (1 – 0.3) = $7 million each year for the next four years.

b. Cash flow for the next four years: less $37 million (–7 + 10 – 40) this year, and add $3 million (–7 + 10) for the three following years.

Evaluate: For the next four years the investment in the cyclo-converter will increase Nokela's depreciation expense by $10 million and will reduce after-tax earnings by $7 million per year. Depreciation expense is a non-cash expense (it is an accrual which recognises that the value of the asset, which has already been paid for, is declining in value) which the firm does not have to pay out. Since every dollar of depreciation expense lowers Nokela's taxable income by a dollar, its tax savings therefore are 30 cents on the dollar. The $10 million in depreciation expense in the next 4 years will lower Nokela's tax bill by $3 million ($10 million × 0.3) per year.

Accounting manipulation

22. Find the 2016 annual report for Billabong International Limited (ASX:BBG) online.

a. Which auditing firm certified these financial statements?

b. Which officers of Billabong certified the financial statements?

a. PricewaterhouseCoopers audited these financial statements.

b. Billabong's Chief Executive Officer and Chief Financial Officer certified the financial statements.

Answers to Data Case

This is your second interview with a prestigious brokerage firm for a job as an equity analyst. You have survived the morning interview with the department manager. Everything has gone so well that they want to test your ability as an analyst. You are seated in a room with a computer and a list with the names of two companies—Caterpillar (CAT) and Microsoft (MSFT). You have 90 minutes to complete the following tasks.

1. **Download the annual income statements, balance sheets and cash flow statements for the last four financial years from MarketWatch (www.marketwatch.com). Enter each company's share symbol and then go to 'Financials'. Copy and paste the financial statements into Excel.**

These solutions are based on Caterpillar's financial statements for the four years ended 31 December 2016, and Microsoft's financial statements for the four years ended 30 June 2016.

2. **Find historical share prices for each firm from Yahoo! Finance (http://finance.yahoo.com). Enter your share symbol, click on 'Historical Prices' in the left column, and enter the proper date range to cover the last day of the month corresponding to the date of each financial statement. Use the closing share prices (not the adjusted close). To calculate the firms' market capitalisation at each date, we multiply the firms' historic share prices by the number of shares outstanding. (See 'Basic Shares Outstanding' on the income statement you downloaded in step 1.)**

No of shares shown is in millions, and market capitalisation is in $ millions.

CATERPILLAR	2013	2014	2015	2016
Share Price	90.81	91.53	67.96	92.74
No of shares	645.2	617.2	594.3	584.3
Market capitalisation	58,591	56,492	40,389	54,188

MICROSOFT	2013	2014	2015	2016
Share Price	34.545	41.70	44.15	51.17
No of shares	8,380	8,300	8,180	7,930

Market capitalisation	289,487	346,110	361,147	405,778

3. For each of the four years of statements, calculate the following ratios for each firm: Valuation ratios P/E ratio (for EPS, use diluted EPS total) Market-to-book ratio Enterprise value-to-EBITDA (For debt, include long-term and short-term debt; for cash, include marketable securities) Profitability ratios Operating margin (use operating income after depreciation) Net profit margin ROE.

All dollar values shown below are in $ millions.

CATERPILLAR	2013	2014	2015	2016
Valuation ratios				
Share price	90.81	91.53	67.96	92.74
/ EPS	5.75	5.88	4.18	-0.11
= P/E ratio	15.79	15.57	16.26	-843.09
Market capitalisation	58,591	56,492	40,389	54,188
/ Book value of equity	20,880	16,830	14,890	13,210
Market-to-book ratio	2.81	3.36	2.71	4.10
Market capitalisation	58,591	56,492	40,389	54,188
+ Total debt	64,020	67,860	63,460	61,490
- Cash	6,130	7,400	6,510	7,200
= Enterprise value	116,481	116,952	97,339	108,478
/ EBITDA	8,980	8,970	7,740	5,150
= EV-to-EBITDA	12.97	13.04	12.58	21.06
Profitability ratios				
EBITDA	8,980	8,970	7,740	5,150
/ Revenue	55,660	55,180	47,010	38,540
= Operating margin	16.13%	16.26%	16.46%	13.36%
Net profit	3,790	3,700	2,510	-67
/ Revenue	55,660	55,180	47,010	38,540
= Net profit margin	6.81%	6.71%	5.34%	-0.17%

Net profit	3,790	3,700	2,510	-67
/ Total equity	20,880	16,830	14,890	13,210
= ROE	18.15%	21.98%	16.86%	-0.51%
Financial strength ratios				
Current assets	38,340	38,870	33,510	31,970
/ Current liabilities	27,300	27,880	26,240	26,130
= Current ratio	1.40	1.39	1.28	1.22
Book value of debt	64,020	67,860	63,460	61,490
/ Book value of equity	20,880	16,830	14,890	13,210
Book debt-equity ratio	307%	403%	426%	465%
Book value of debt	64,020	67,860	63,460	61,490
/ Market capitalisation	58,591	56,492	40,389	54,188
Market debt-equity ratio	109%	120%	157%	113%
Pre-tax income	5,130	5,080	3,440	139
+ Interest expense	465	479	501	499
= EBIT	5,595	5,559	3,941	638
/ Interest expense	465	479	501	499
Interest coverage ratio	12.03	11.61	7.87	1.28

MICROSOFT	2013	2014	2015	2016
Valuation ratios				
Share price	34.55	41.70	44.15	51.17
/ EPS	2.58	2.63	1.48	2.10
= P/E ratio	13.39	15.86	29.83	24.37
Market capitalisation	289,487	346,110	361,147	405,778
/ Book value of equity	78,940	89,780	80,080	72,000
Market-to-book ratio	3.67	3.86	4.51	5.64
Market capitalisation	289,487	346,110	361,147	405,778
+ Total debt	63,490	82,600	96,140	121,700

- Cash	77,020	85,710	96,530	113,240
= Enterprise value	275,957	343,000	360,757	414,238
/ EBITDA	30,320	32,990	33,520	27,290
= EV-to-EBITDA	9.10	10.40	10.76	15.18
Profitability ratios				
EBITDA	30,320	32,990	33,520	27,290
/ Revenue	77,650	86,730	92,970	84,700
= Operating margin	39.05%	38.04%	36.05%	32.22%
Net profit	21,860	22,070	12,190	16,800
/ Revenue	77,650	86,730	92,970	84,700
= Net profit margin	28.15%	25.45%	13.11%	19.83%
Net profit	21,860	22,070	12,190	16,800
/ Total equity	78,940	89,780	80,080	72,000
= ROE	27.69%	24.58%	15.22%	23.33%
Financial strength ratios				
Current assets	101,470	114,250	124,710	139,660
/ Current liabilities	37,420	45,630	49,860	59,360
= Current ratio	2.71	2.50	2.50	2.35
Book value of debt	63,490	82,600	96,140	121,700
/ Book value of equity	78,940	89,780	80,080	72,000
Book debt-equity ratio	80%	92%	120%	169%
Book value of debt	63,490	82,600	96,140	121,700
/ Market capitalisation	289,487	346,110	361,147	405,778
Market debt-equity ratio	22%	24%	27%	30%
Pre-tax income	27,050	27,820	18,510	19,750
+ Interest expense	429	597	781	1,240
= EBIT	27,479	28,417	19,291	20,990
/ Interest expense	429	597	781	1,240
Interest coverage ratio	64.05	47.60	24.70	16.93

4. **Obtain industry averages for each firm from Microsoft at http://money.msn.com/investing. Enter the share symbol on top of the home page and then click on 'Analysis'. Various ratios, along with industry ratios, can be found by clicking on 'Key Statistics', 'Profitability', 'Price Ratios', and further down, 'Financial Health' and 'Management Effectiveness'.**
   a. **Compare each firm's ratios with the available industry ratios for the most recent year. (Ignore the 'Company' column, as your calculations will be different.)**
   b. **Analyse the performance of each firm versus the industry and comment on any trends in each individual firm's performance. Identify any strengths or weaknesses you find in each firm.**

a. The table below shows the industry averages available on the money.msn website.

Industry ratios	CAT	MSFT
Valuation ratios		
P/E ratio	78.13	31.15
Price/Book value	4.06	5.94
Profitability ratios		
Net profit margin	1.38%	20.83%
ROE (5-year average)	4.26%	23.36%
Financial strength ratios		
Current ratio	2.29	2.94
Book debt-equity ratio	1.54	1.07
Interest coverage ratio	3.09	7.84

b. Caterpillar's P/E ratio was relatively stable from 2013 to 2015, but declined sharply with the loss sustained in 2016. This ratio has always been well below the industry average.

Caterpillar's book value of equity has been steadily falling, but its market capitalisation has been steady (albeit with a fall in 2015 due to a sharp fall in the share price), resulting in an upward trend in the market-to-book ratio. Nevertheless, it remains below the industry average. Caterpillar's net profit has declined steadily in recent years, at a greater rate than revenue, resulting in a decreasing net profit margin that has now fallen below the industry average. Its return on equity increased from 2013 to 2014, but has fallen since with decreasing profitability and only a small decrease in the value of equity. It is now below the industry average.

Pearson

Caterpillar therefore shows weak profitability, primarily because of a poor result in 2016, but this has not been reflected in the share price, which indicates that the market's view is that the fall in profitability is likely to be short-term.

Caterpillar's current ratio has fallen steadily and is well below the industry average. Its book debt-equity ratio has risen steadily and is well above the industry average, and its interest coverage ratio has fallen sharply and is well below the industry average. This indicates some concerns for liquidity and a very high level of indebtedness.

Microsoft's share price has been steadily increasing, and for the most part this has resulted in an increasing P/E ratio, although a sharp increase in earnings in 2016 resulted in a slight fall in the P/E ratio. Its P/E ratio was just below the current industry average in 2015 before falling. Microsoft's market-to-book ratio has risen steadily and is now just below the industry average.

Microsoft's net profit has fluctuated since 2013, but with increasing revenue there is a general downward trend in the net profit margin, which is now slightly below the industry average. This would indicate some concerns with Microsoft's profitability, but this has not been reflected in the share price, indicating that the market has an optimistic view regarding the firm's future growth prospects.

Microsoft current ratio is slightly below the industry average. Its book debt-equity ratio is significantly higher than the industry average. The software industry has a very low level of indebtedness, so Microsoft's book debt-equity ratio is low compared to other firms, such as Caterpillar, but is high by industry standards. However, it appears to be able to comfortably service this debt, due its strong profitability, with an interest coverage ratio well above the industry average.

5. **Examine the market-to-book ratios you calculated for each firm. Which, if either, of the two firms can be considered 'growth firms' and which, if either, can be considered 'value firms'?**

   Both of these firms have relatively high market-to-book ratios, and would therefore be classified as growth stocks.

6. **Compare the valuation ratios across the two firms. How do you interpret the difference between them?**

The market-to-book ratios and enterprise value-to-EBITDA ratios for the two firms are comparable, but Microsoft's P/E ratio is substantially higher than that of Caterpillar. Investors are prepared to pay substantially more per dollar of current earnings, indicating a more optimistic view regarding future growth in earnings for Microsoft.

7. **Consider the enterprise value of each firm for each of the four years. How have the values of each firm changed over the time period?**

Caterpillar's enterprise value was steady in 2013 and 2014 but has fallen over the past two years, resulting from a fall in the value of both debt and equity. The enterprise value of Microsoft has increased steadily over the past four years as the firm has been issuing both debt and equity to acquire assets and grow the value of the firm.