

# Chapter 2

## Introduction to Financial Statement Analysis

*Note:* All problems in this chapter are available in MyFinanceLab.

1. In a firm's 10-K filing, four financial statements can be found: the balance sheet, the income statement, the statement of cash flows, and the statement of stockholders' equity. Financial statements in form 10-K are required to be audited by a neutral third party, who checks and ensures that the financial statements are prepared according to GAAP and that the information contained is reliable.
2. In the United States, the Financial Accounting Standards Board (FASB) establishes Generally Accepted Accounting Principles (GAAP) to provide a common set of rules and a standard format for public companies to use when they prepare their reports.
3. Each method will help find the same SEC filings. Marketwatch also provides some analysis such as charts and key statistics.
4.
  - 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 directly affect the balance sheet.
  - f. This event would not directly affect the balance sheet.
5. Global Conglomerate's book value of equity increased by \$1 million (\$22.2 million in 2019 – \$21.2 million in 2018) from 2018 to 2019. An increase in book value does not necessarily indicate an increase in Global's share price. The market value of a stock does not depend on the book value of equity, which is an accounting measure of historical performance, but on investors' expectation of the firm's future performance. Many events may affect Global's future profitability, and hence its share price, that do not show up on the balance sheet.
6.
  - a. \$12,123 million
  - b. \$2,904 million
  - c. \$32,686 million

- d. \$31,758 million, \$15,365
- e. \$928 million
7. a. At the end of the fiscal year, Costco had cash and cash equivalents of \$6,055 million.
- b. Costco's total assets were \$40,830 million.
- c. Costco's total liabilities were \$27,727 million, and it had \$6,487 million in debt.
- d. The book value of Costco's equity was \$13,103 million.
8. a. Revenues in 2018 were \$141,576 million

$$\text{Increase in Revenues} = \frac{141,576}{129,025} - 1 = 9.73\%$$

b. Operating Margin (2018) =  $\frac{4,480}{141,576} = 3.16\%$

$$\text{Operating Margin (2017)} = \frac{4,111}{129,025} = 3.19\%$$

$$\text{Net Profit Margin (2018)} = \frac{3,134}{141,576} = 2.21\%$$

$$\text{Net Profit Margin (2017)} = \frac{2,679}{129,025} = 2.08\%$$

Operating margin slightly decreased; net profit margin increased compared with the year before.

- c. The diluted earnings per share in 2018 were \$7.09. The number of shares used in this calculation of diluted EPS was 441.8 million.

**Excel 9.**

	2016	2017	2018	2019
a. Growth rate in revenues	-10.02%	16.71%	20.28%	18.29%
b. Growth rate in net income	-83.33%	110.00%	101.59%	70.87%

Net Income growth rate differs from revenue growth rate because cost of goods sold and other expenses can move at different rates than revenues. For example, revenues declined in 2016 by 10%, however, cost of goods sold only declined by 7%.

- c. Why are they different?

10. A repurchase does not impact earnings directly, so any change to EPS will come from a reduction in shares outstanding. 2019 shares outstanding =  $55 - 4 \times 2 = 47$  million, EPS =  $\frac{21.7}{47} = \$0.46$ .

11. The equipment purchase does not affect net income directly; however, the increased depreciation expense and tax savings changes net income.

	2016	2017	2018	2019
EBITDA	64.50	76.20	95.40	111.40
Minus new depreciation expense	-27.00	-38.30	-42.40	-42.60
New EBIT	37.50	37.90	53.00	68.80
Minus interest income	-32.90	-32.20	-37.40	-39.40
New pretax income	4.60	5.70	15.60	29.40
Minus taxes	-1.61	-2.00	-5.46	-10.29
New Net Income	3.0	3.7	10.1	19.1

12. If Mydeco's costs and expenses had been the same fraction of revenues in 2016–19 as they were in 2015, then their net profit margins would have been equal.

$$\text{2015 net profit margin} = \frac{18}{404.3} = 4.45\%$$

	2015	2016	2017	2018	2019
Revenues	404.30	363.80	424.60	510.70	604.10
Net profit margin from 2015	4.452%				
New Net Income	18.00	16.20	18.90	22.74	26.90
Shares outstanding (millions)	55.00	55.00	55.00	55.00	55.00
Earnings per share	\$0.33	\$0.29	\$0.34	\$0.41	\$0.49

13. 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  $25\% \times \$10 \text{ million} = \$2.5 \text{ million}$ . Thus, earnings would decline by  $10 - 2.5 = \$7.5 \text{ million}$ . 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  $2 \times 25\% = \$0.5 \text{ million}$ , earnings would be lower by  $2 - 0.5 = \$1.5 \text{ million}$  for each of the next five years.
14. **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  $\$500 \times (1 - 25\%) = \$375 \text{ million}$ . With no change to the number of shares outstanding, its EPS would decrease by  $\$0.05 = \$375/7500$  to  $\$0.75$ . (Assume the new product would not change this year's revenues.)
- b. If Quisco acquires the technology for \$900 million worth of its stock, it will issue  $\$900/18 = 50 \text{ million}$  new shares. Because earnings without this transaction are  $\$0.80 \times 7.5 \text{ billion} = \$6 \text{ billion}$ , its EPS with the purchase is  $6/7.55 = \$0.795$ .
- c. **Evaluate:** Acquiring the technology would have a smaller impact on earnings. But 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. a. Net cash provided by operating activities was \$5,774 million in 2018.
- b. Depreciation expense was \$1,437 million in 2018.

- c. Net cash used in new property and equipment was \$2,969 million in 2018.
- d. Costco raised \$0 from sale of shares of its stock, while it spent \$328 million on the repurchase of common stock. Costco raised  $-\$328$  million from the sale of its shares of stock (net of any purchases).

16. a. The company's cumulative earnings over these four quarters were \$918.268 million. Its cumulative cash flows from operating activities were \$1.186 billion.
- b. Fraction of cash from operating activities used for investment over the four quarters:

	4	3	2	1	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 four quarters:

	4	3	2	1	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%

17. **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. *Revenues:* increase by \$5 million
- b. *Earnings:* increase by \$3 million
- c. *Receivables:* increase by \$4 million
- d. *Inventory:* decrease by \$2 million
- e. *Cash:* increase 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 Revenues, Earnings, Accounts Receivable, Inventory, and eventually Cash.

18. **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 analyzed.

**Execute:**

- a. Earnings for the next four years would have to deduct the depreciation expense. After taxes, this would lead to a decline of  $10 \times (1 - 25\%) = \$7.5$  million each year for the next four years.
- b. Cash flow for the next four years: less \$37.5 million  $(-7.5 + 10 - 40)$  this year, and add \$2.5 million  $(-7.5 + 10)$  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 \$7.5 million per year.

Depreciation expense is a non-cash expense (it is an accrual that recognizes that the value of the asset, which has already been paid for, is declining in value) that the firm does not have to pay out. Because every dollar of depreciation expense lowers Nokela's taxable income by a dollar, its tax savings therefore are 25 cents on the dollar. The \$10 million in depreciation expense in the next four years will lower Nokela's tax bill by \$2.5 million (\$10 million  $\times$  0.25) per year.

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

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

**Execute:**

a. Market capitalization = 8.7 billion  $\times$  \$8 = \$69.6 billion

$$\text{Market-to-book ratio} = \frac{69.6}{52} = 1.34$$

b. Book debt-equity ratio =  $\frac{110}{52} = 2.12$

$$\text{Market debt-equity ratio} = \frac{110}{69.6} = 1.58$$

c. Enterprise value = 69.6 + 110 - 70 = 109.6(billion)

**Evaluate:** GE has a market-to-book ratio of 1.34. Over time, equity investors invested \$52B in GE; today that equity investment is worth \$69.6B (or 1.34 times more). This indicates that equity investors expect moderate results in the future.

GE has a book debt-equity ratio of 2.12. Over time, equity investors invested \$52B in GE, and debt investors invested \$110B (or 2.12 times more). This would indicate that GE is very heavily financed with debt. These are book values; due to GE's low market capitalization (in part (a) above, we calculated that GE's equity is valued at \$69.6B in today's dollars), the market d-e ratio provides a very similar picture.

GE has an enterprise value of \$109.6B. In today's dollars, investors value the entire company at this value.

**20. a.** Apple's current ratio =  $\frac{140.83}{108.28} = 1.30$

b. Apple's quick ratio =  $\frac{140.83 - 4.99}{108.28} = 1.25$

- c. Apple's higher current and quick ratios demonstrate that it has higher asset liquidity than does Hewlett-Packard. This means that in a pinch, Apple has more liquidity to draw on than does Hewlett-Packard.

- 21. Plan:** The table presents raw data about ANF and GPS. Although 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:**

$$a. \text{ ANF's market-to-book ratio} = \frac{26.50 \times 65.85}{1219} = 0.89$$

$$\text{GPS's market-to-book ratio} = \frac{26.00 \times 381.43}{3553} = 2.79$$

b. The market looks more favorably on the outlook of GPS than on Abercrombie and Fitch.

**Evaluate:** The market values, in a relative sense, the outlook of GPS more favorably than Abercrombie and Fitch. For every dollar of equity invested in GPS, the market values that dollar today at \$2.79 versus \$0.89 for a dollar invested in ANF. Equity investors are willing to pay relatively more today for shares of GPS than for ANF because they expect GPS to produce superior performance in the future.

$$22. a. \text{ Walmart's gross margin} = \frac{129.10}{514.41} = 25.10\%; \text{ Costco's gross margin} = \frac{18.42}{141.58} = 13.01\% .$$

$$b. \text{ Walmart's net margin} = \frac{6.67}{514.41} = 1.30\%; \text{ Costco's net margin} = \frac{3.13}{141.58} = 2.21\% .$$

c. Walmart had better gross profitability, but worse a worse net margin in 2018.

23. **Plan:** We can use Eqs. 2.9, 2.10, and 2.11 to compute Local's margins. The problem gives us the necessary inputs.

**Execute:**

$$a. \text{ Gross Margin} = \frac{\text{Gross Profit}}{\text{Sales}} = \frac{10 - 6}{10} = 0.4, \text{ or } 40\%$$

$$b. \text{ Operating Margin} = \frac{\text{Operating Income}}{\text{Sales}} = \frac{10 - 6 - 0.5 - 1 - 1}{10} = 0.15, \text{ or } 15\%$$

$$c. \text{ Net Profit Margin} = \frac{\text{Net Income}}{\text{Sales}} = \frac{(10 - 6 - 0.5 - 1 - 1)(1 - 0.25)}{10} = 0.1125, \text{ or } 11.25\%$$

**Evaluate:** Local is profitable. You can see how the margins decrease as you move down the income statement because each successive margin takes into account more costs.

24. **Plan:** Selling expenses do not affect the gross margin, but the increase in such expenses will decrease the other margins.

**Execute:**

Gross margin would not change.

$$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Sales}} = \frac{10 - 6 - 0.8 - 1 - 1}{10} = 0.12, \text{ or } 12\%$$

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Sales}} = \frac{(10 - 6 - 0.8 - 1 - 1)(1 - 0.25)}{10} = 0.09, \text{ or } 9.0\%$$

**Evaluate:** Gross margin only accounts for cost of good sold. The effect of the additional selling expenses can be seen in the reduced operating and net profit margins.

25. **Plan:** Only the net profit margin accounts for interest expense, so both the gross and operating margins will be unaffected.

**Execute:**

Gross margin would not change.

Operating margin would not change.

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Sales}} = \frac{(10 - 6 - 0.5 - 1 - 1 - 0.8)(1 - 0.25)}{10} = 0.0525, \text{ or } 5.25\%$$

**Evaluate:** If you were focused only on the gross and operating margins, you would not see the impact of the increased interest expense, which shows-up in the net profit margin.

26. Using operating income as a multiple of interest to compute interest coverage, we have the following: operating income =  $0.10 \times \$30 \text{ million} = \$3 \text{ million}$ , so its interest coverage is  $\$3 \text{ million}/\$1 \text{ million} = 3 \text{ times}$ .
27. **Plan:** First, we must compute Ladders' net income using the fact that net profit margin is net income/sales. Then we can compute the ROE as net income/book equity and the ROA as net income/book assets.

**Execute:**

First, compute Ladders' net income:  $0.05 \times \$50 \text{ million} = \$2.5 \text{ million}$ .

ROE = Net Income/Book Equity =  $\$2.5 \text{ million}/\$40 \text{ million} = 6.25\%$

ROA = Net Income/Book Assets =  $\$2.5 \text{ million}/(\$30 \text{ million} + \$40 \text{ million}) = 3.57\%$

**Evaluate:** ROE measures the net income (to shareholders) as a percentage of the book value of their investment. ROA measures the net income (to shareholders) as a percentage of the book value of all the assets used to generate the income. A firm with positive book equity and some debt will always have a lower ROA than ROE. ROA and ROE will be the same for a firm with no liabilities.

28. **Plan:** Using the information provided and Eqs. 2.15 to 2.18, we can compute all the efficiency ratios for JPJ.

**Execute:**

$$\text{Accounts Receivable Days} = \frac{\text{Accounts Receivable}}{\text{Average Daily Sales}} = \frac{50,000}{(1,000,000 / 365)} = 18.25$$

$$\text{Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Fixed Assets}} = \frac{1,000,000}{3,000,000} = 0.333$$

$$\text{(Total) Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}} = \frac{1,000,000}{5,000,000} = 0.2$$

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}} = \frac{600,000}{150,000} = 4$$

**Evaluate:** These ratios allow you to evaluate how efficiently JPJ is utilizing its assets and how quickly it is collecting its accounts receivables.

- 29. Plan:** Using the 10% growth rate, we can compute the new sales number, and then the 5% growth rate will give us the new assets number. We can then recompute the asset turnover ratios.

**Execute:**

$$\text{Sales} = 1,000,000(1.10) = 1,100,000$$

$$\text{Assets} = 5,000,000(1.05) = 5,250,000$$

$$\text{Fixed assets} = 3,000,000(1.05) = 3,150,000$$

$$\text{Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Fixed Assets}} = \frac{1,100,000}{3,150,000} = 0.35$$

$$\text{(Total) Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}} = \frac{1,100,000}{5,250,000} = 0.21$$

**Evaluate:** Because sales are growing faster than assets, we see that efficiency of asset utilization is increasing—the turnover ratios are higher.

- 30. Plan:** We are given some data about Global's financial results in 2019. Global launched a marketing campaign that increased sales but also decreased operating margins. We must calculate the effects of these changes on revenues, net income, and stock price.

**Execute:**

a. Revenues in 2019 =  $1.15 \times 186.7 = \$214.705$  million

EBIT in 2019 =  $4.50\% \times 214.705 = \$9.66$  million (there is no other income)

b. Net income in 2019 = EBIT – interest expenses – taxes

$$= (9.66 - 7.7) \times (1 - 24\%)$$

$$= \$1.49 \text{ million}$$

c. Share price = (old P/E ratio in 2019)  $\times$  (new EPS in 2019) =  $18 \times \left(\frac{1.45}{3.6}\right) = \$7.25$

**Evaluate:** The new aggressive marketing campaign succeeded in raising revenues by 15%. Unfortunately, operating margins fell from 5.57% to 4.50%, which reduced EBIT and net income. As a result, the stock price fell from \$10 to \$7.25. The new marketing campaign destroyed stockholder value and is therefore a failure.

- 31. Plan:** The table presents raw data about Debt, Equity, Operating Income, and Interest Expense. Although useful, this information does not easily tell us how much financial leverage each of these firms alone and by comparison is using. 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:** Market debt-equity ratio =  $\frac{80}{40} = 2.00$

b. **Firm A:** Book debt-equity ratio =  $\frac{500}{300} = 1.67$

**Firm B:** Book debt-equity ratio =  $\frac{80}{35} = 2.29$

c. **Firm A:** Interest coverage ratio =  $\frac{100}{50} = 2.00$

**Firm B:** Interest coverage ratio =  $\frac{8}{7} = 1.14$

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

- 32. Plan:** The table presents raw data about Sales, Accounts Receivable, and Inventory data for Walmart and Target. Although useful, this information does not tell us easily 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. Walmart: Accounts Receivable Days =  $\frac{6,280}{\left(\frac{514,405}{365}\right)} = 4.46$

Target: Accounts Receivable Days =  $\frac{1,100}{\left(\frac{75,356}{365}\right)} = 5.33$

b. Walmart: Inventory Turnover =  $\frac{385,301}{44,269} = 6.44$

Target: Inventory Turnover =  $\frac{53,299}{9,497} = 5.61$

- c. Walmart is managing its accounts receivables more efficiently (shorter AR days) and is also managing its inventory more efficiently (more AR turnover).

**Evaluate:** Walmart is managing its accounts receivable and inventory more efficiently, as shown by the above ratios. Walmart collects its accounts receivable in 4.46 days as opposed to 5.33 days for Target. Likewise Walmart turns over its inventory 6.44 times a year, as opposed to 5.61 times for Target.

- 33. a.** Market capitalization-to-revenue ratio

$$= \frac{22.9}{41.3} = 0.55 \text{ for United Airlines}$$

$$= \frac{27.5}{22.0} = 1.25 \text{ for Southwest Airlines}$$

- b. Enterprise value-to-revenue ratio

$$= \frac{(22.9 + 13.4 - 4)}{41.3} = 0.78 \text{ for United Airlines}$$

$$= \frac{(27.5 + 3.4 - 3.7)}{22.0} = 1.24 \text{ for Southwest Airlines}$$

- c. The market capitalization-to-revenue ratio cannot be meaningfully compared when the firms have different amounts of leverage because market capitalization measures only the value of the firm's equity. The enterprise value-to-revenue ratio is therefore more useful when the firm's leverage is quite different, as it is here.

34. Plan: Use the DuPont Identity to perform the analysis:

Net Profit Margin  $\times$  Total Asset Turnover  $\times$  Total Assets/Equity

**Execute:**

- a.  $3.5\% \times 1.8 \times 44/18 = 15.4\%$   
 b.  $4\% \times 1.8 \times 44/18 = 17.6\%$   
 c.  $4\% \times (1.8 \times 1.2) \times 44/18 = 21.1\%$

**Evaluate:** The analysis demonstrates different ways that a company can increase its overall ROE—by increasing its net profit margin or its asset turnover.

35. a. Costco's Net Profit Margin =  $\frac{3,134}{141,576} = 2.21\%$

$$\text{Costco's Asset Turnover} = \frac{141,576}{40,830} = 3.47$$

$$\text{Costco's Equity Multiplier} = \frac{40,830}{13,103} = 3.12$$

b. Costco's ROE (DuPont) =  $2.21\% \times 3.47 \times 3.12 = 23.92\%$

c. Costco's revised ROE  $2.21\% \times 3.61 \times 3.12 = 24.92\%$ .

Costco's would need to increase asset turnover to more than 3.61 times.

36. Net Profit Margin =  $\frac{6,670}{514,405} = 1.30\%$

$$\text{Asset Turnover} = \frac{514,405}{219,295} = 2.35$$

$$\text{Equity Multiplier} = \frac{219,295}{79,634} = 2.75$$

Walmart's ROE (DuPont) =  $1.30\% \times 2.35 \times 2.75 = 8.40\%$

The two firms' ROEs differ because Costco has a higher profitability, asset turnover, and equity multiplier.

- 37. Plan:** You are presented with a large amount of financial information over several years about a company. You are asked to analyze this information around issues of profitability and book and market values of equity for your boss.

**Execute:**

- a. The book value of the equity decreased by \$2.101 billion compared to that at the end of the previous quarter and was negative.
- b. Because the book value of equity is negative in this case, the company's market-to-book ratio and its book debt-equity ratio are not meaningful. Its market debt-equity ratio may be used in comparison.
- c. Information from the statement of cash flows helped explain that the decrease of book value of equity resulted from an increase in debt that was used to repurchase \$2.110 billion worth of the firm's shares.
- d. Negative book value of equity does not necessarily mean the firm is unprofitable. Loss in gross profit is only one possible cause. If a firm borrows to repurchase shares or invest in intangible assets (such as R&D), it can have a negative book value of equity.

**Evaluate:** The company issued debt to buy back \$2.11 billion in equity. Obviously, that resulted in a large increase in outstanding debt and a large decline in outstanding equity. This resulted in the book value of the company's equity being negative. On the surface, a negative book value of equity would suggest an unprofitable if not failed firm. The reality in this case is much more complicated.

- 38.**
- a. KPMG certified Costco's financial statements.
  - b. The CEO, W. Craig Jelinek, and the CFO, Richard A. Galanti, certified Costco's financial statements.