Chapter 2

Introduction to Financial Statement Analysis

2-1. What four financial statements can be found in a firm's 10-K filing? What checks are there on the accuracy of these statements?

In a firm's 10-K filing, four financial statements can be found: the balance sheet, income statement, statement of cash flows, and 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.

2-2. 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.

Users of financial statements include present and potential investors, financial analysts, and other interested outside parties (such as lenders, suppliers and other trade creditors, and customers). Financial managers within the firm also use the financial statements when making financial decisions.

Investors. Investors are concerned with the risk inherent in, and return provided by, their investments. Bondholders use the firm's financial statements to assess the ability of the company to make its debt payments. Stockholders use the statements to assess the firm's profitability and ability to make future dividend payments.

Financial analysts. Financial analysts gather financial information, analyze it, and make recommendations. They read financial statements to determine a firm's value and project future earnings, so that they can provide guidance to businesses and individuals to help them with their investment decisions.

Managers. Managers use financial statements to look at trends in their own business, and to compare their own results with that of competitors.

2-3. Find the most recent financial statements for Starbucks' corporation (SBUX) using the following sources:

a. From the company's Web site www.starbucks.com (*Hint:* Search for "investor relations.")

b. From the SEC Web site www.sec.gov. (*Hint:* Search for company filings in the EDGAR database.)

c. From the Yahoo! Finance Web site http://finance.yahoo.com.

d. From at least one other source. (*Hint:* Enter "SBUX 10K" at www.google.com.)

Each method will help find the same SEC filings. Yahoo! Finance also provides some analysis such as charts and key statistics.

2-4. Consider the following potential events that might have taken place at Global Conglomerate on December 30, 2015. 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. (In all cases, ignore any tax consequences for simplicity.)

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.

2-5. What was the change in Global Conglomerate's book value of equity from 2014 to 2015 according to Table 2.1? Does this imply that the market price of Global's shares increased in 2015? Explain.

Global Conglomerate's book value of equity increased by $1 million from 2014 to 2015. 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 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.

2-6. Use EDGAR to find Qualcomm's 10-K filing for 2015. From the balance sheet, answer the following questions:

a. How much did Qualcomm have in cash and short-term investments?

b. What were Qualcomm's total accounts receivable?

c. What were Qualcomm's total assets?

d. What were Qualcomm's total liabilities? How much of this was long-term debt?

e. What was the book value of Qualcomm's equity?

a. $7,560 million (cash) and $9,761 million (short-term investments/marketable securities) for a total of $17,321 million

b. $1,964 million

c. $50,796 million

d. $19,382 million, $9,969 million.

e. $31,414 million.

2-7. Find online the annual 10-K report for Costco Wholesale Corporation (COST) for fiscal year 2015 (filed in October 2015). Answer the following questions from their balance sheet:

a. How much cash did Costco have at the end of the fiscal year?

b. What were Costco's total assets?

c. What were Costco's total liabilities? How much debt did Costco have?

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

a. At the end of the fiscal year, Costco had cash and cash equivalents of $4,801 million.

b. Costco's total assets were $33,440 million.

c. Costco's total liabilities were $22,597 million, and it had $6,157 million in debt.

d. The book value of Costco's equity was $10,843 million.

2-8. In early 2012, General Electric (GE) had a book value of equity of $116 billion, 10.6 billion shares outstanding, and a market price of $17 per share. GE also had cash of $84 billion, and total debt of $410 billion. Three years later, in early 2015, GE had a book value of equity of $128 billion, 10.0 billion shares outstanding with a market price of $25 per share, cash of $85 billion, and total debt of $302 billion. Over this period, what was the change in GE's:

a. market capitalization?

b. market-to-book ratio?

c. enterprise value?

a. 2012 Market Capitalization: 10.6 billion shares × $17/share = $180.2. 2015 Market Capitalization: 10.0 billion shares × $25/share = $250. The change over the period is $250 – $180.2 = $69.8 billion.

b. 2012 Market-to-Book = 180.2/116 = 1.55. 2015 Market-to-Book = 250/128 = 1.95. The change over the period is: 1.95 – 1.55 = 0.40.

e. 2012 Enterprise Value = $180.2 – 84 + 410 = $506.2 billion. 2015 Enterprise Value = $250 – 85 + 302 = $467 billion. The change over the period is: $467 – $506.2 = –$39.2 billion.

2-9. In early-2015, Abercrombie & Fitch (ANF) had a book equity of $1390 million, a price per share of $25.52, and 69.35 million shares outstanding. At the same time, The Gap (GPS) had a book equity of $2983 million, a share price of $41.19, and 421 million shares outstanding.

a. What is the market-to-book ratio of each of these clothing retailers?

b. What conclusions can you draw by comparing the two ratios?

a. ANF's market-to-book ratio = (25.52 x 69.35)/1,390 = 1.27.

GPS's market-to-book ratio = (41.19 x 421)/2,983 = 5.81.

b. For the market, the outlook of Abercrombie and Fitch is less favorable than that of The Gap. For every dollar of equity invested in ANF, the market values that dollar today at $1.27 versus $5.81 for a dollar invested in the GPS. Equity investors are willing to pay relatively less today for shares of ANF than for GPS because they expect GPS to produce superior performance in the future.

2-10. **See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.**

a. What is Mydeco's market capitalization at the end of each year?

b. What is Mydeco's market-to-book ratio at the end of each year?

c. What is Mydeco's enterprise value at the end of each year?

2012–2016 Financial Statement Data and Stock Price Data for Mydeco Corp.

Mydeco Corp. 2012-2016 (All data as of fiscal year end; $ in millions)

Income Statement	**2012**	**2013**	**2014**	**2015**	**2016**
Revenue	404.3	363.8	424.6	510.7	604.1
Cost of Goods Sold	(188.3)	(173.8)	(206.2)	(246.8)	(293.4)
Gross Profit	216.0	190.0	218.4	263.9	310.7
Sales and Marketing	(66.7)	(66.4)	(82.8)	(102.1)	(120.8)
Administration	(60.6)	(59.1)	(59.4)	(66.4)	(78.5)
Depreciation & Amortization	(27.3)	(27.0)	(34.3)	(38.4)	(38.6)
EBIT	61.4	37.5	41.9	57.0	72.8
Interest Income (Expense)	(33.7)	(32.9)	(32.2)	(37.4)	(39.4)
Pretax Income	27.7	4.6	9.7	19.6	33.4
Income Tax	(9.7)	(1.6)	(3.4)	(6.9)	(11.7)
Net Income	18.0	3.0	6.3	12.7	21.7
Shares outstanding (millions)	55.0	55.0	55.0	55.0	55.0
Earnings per Share	$0.33	$0.05	$0.11	$0.23	$0.39

Balance Sheet	**2012**	**2013**	**2014**	**2015**	**2016**
Assets					
Cash	48.8	68.9	86.3	77.5	85.0
Accounts Receivable	88.6	69.8	69.8	76.9	86.1
Inventory	33.7	30.9	28.4	31.7	35.3
Total Current Assets	171.1	169.6	184.5	186.1	206.4
Net Property, Plant & Equip.	245.3	243.3	309.0	345.6	347.0
Goodwill & Intangibles	361.7	361.7	361.7	361.7	361.7
Total Assets	778.1	774.6	855.2	893.4	915.1
Liabilities & Stockholders' Equity					
Accounts Payable	18.7	17.9	22.0	26.8	31.7
Accrued Compensation	6.7	6.4	7.0	8.1	9.7
Total Current Liabilities	25.4	24.3	29.0	34.9	41.4
Long-term Debt	500.0	500.0	575.0	600.0	600.0
Total Liabilities	525.4	524.3	604.0	634.9	641.4
Stockholders' Equity	252.7	250.3	251.2	258.5	273.7
Total Liabilities & Stockholders' Equity	778.1	774.6	855.2	893.4	915.1

Statement of Cash Flows	**2012**	**2013**	**2014**	**2015**	**2016**
Net Income	18.0	3.0	6.3	12.7	21.7
Depreciation & Amortization	27.3	27.0	34.3	38.4	38.6
Chg. in Accounts Receivable	3.9	18.8	0.0	(7.1)	(9.2)
Chg. in Inventory	(2.9)	2.8	2.5	(3.3)	(3.6)
Chg. in Payables & Accrued Comp.	2.2	(1.1)	4.7	5.9	6.5
Cash from Operations	48.5	50.5	47.8	46.6	54.0
Capital Expenditures	(25.0)	(25.0)	(100.0)	(75.0)	(40.0)
Cash from Investing Activities	(25.0)	(25.0)	(100.0)	(75.0)	(40.0)
Dividends Paid	(5.4)	(5.4)	(5.4)	(5.4)	(6.5)
Sale (or purchase) of Stock					
Debt Issuance (Pay Down)			75.0	25.0	
Cash from Financing Activities	(5.4)	(5.4)	69.6	19.6	(6.5)
Change in Cash	18.1	20.1	17.4	(8.8)	7.5
Mydeco Stock Price	*$7.92*	*$3.30*	*$5.25*	*$8.71*	*$10.89*

a.

Year	2012	2013	2014	2015	2016
Shares Outstanding (millions)	55.0	55.0	55.0	55.0	55.0
Mydeco Stock Price	$7.92	$3.30	$5.25	$8.71	$10.89
Market Capitalization (millions)	$435.60	$181.50	$288.75	$479.05	$598.95

b.

Year	2012	2013	2014	2015	2016
Market Capitalization (millions)	$435.60	$181.50	$288.75	$479.05	$598.95
Stockholders' Equity	252.7	250.3	251.2	258.5	273.7
Market-to-book	1.72	0.73	1.15	1.85	2.19

c.

Year	2012	2013	2014	2015	2016
Market Capitalization (millions)	$435.60	$181.50	$288.75	$479.05	$598.95
Cash	48.8	68.9	86.3	77.5	85.0
Long-term Debt	500.0	500.0	575.0	600.0	600.0
Enterprise Value	886.80	612.60	777.45	1,001.55	1,113.95

2-11. Suppose that in 2016, Global launches an aggressive marketing campaign that boosts sales by 15%. However, their operating margin falls from 5.57% to 4.50%. Suppose that they have no other income, interest expenses are unchanged, and taxes are the same percentage of pretax income as in 2015.

a. What is Global's EBIT in 2016?

b. What is Global's net income in 2016?

c. If Global's P/E ratio and number of shares outstanding remains unchanged, what is Global's share price in 2016?

a. Revenues in 2016 = 1.15 × 186.7 = $214.705 million.

EBIT = 4.50% × 214.705 = $9.66 million (there is no other income).

b. Net Income = EBIT – Interest Expenses – Taxes = (9.66 – 7.7) × (1 – 26%) = $1.45 million.

c. Share price = (P/E Ratio in 20015) x (EPS in 2016) = 25.2 x (1.45/3.6) = $10.15.

Note: Differences from spreadsheet solutions due to rounding.

2-12. Find online the annual 10-K report for Costco Wholesale Corporation (COST) for fiscal year 2015 (filed in October 2015). Answer the following questions from their income statement:

a. What were Costco's revenues for fiscal year 2015? By what percentage did revenues grow from the prior year?

b. What was Costco's operating income for the fiscal year?

c. What was Costco's average tax rate for the year?

d. What were Costco's diluted earnings per share in fiscal year 2015? What number of shares is this EPS based on?

a. Revenues = $116,199 million. Revenue growth = (116,199/112,640) – 1 = 3.16%.

b. Operating Income = $3,624 million.

c. Average tax rate = 1,195/3,604 = 33.16%.

d. The diluted earnings per share in 2015 was $5.37. The number of shares used in this calculation of diluted EPS was 442.72 million.

2-13. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. By what percentage did Mydeco's revenues grow each year from 2013 to 2016?

b. By what percentage did net income grow each year?

c. Why might the growth rates of revenues and net income differ?

a.

Year	2012	2013	2014	2015	2016
Revenue	404.3	363.8	424.6	510.7	604.1
Revenue growth		-10.02%	16.71%	20.28%	18.29%

b.

Year	2012	2013	2014	2015	2016
Net Income	18.0	3.0	6.3	12.7	21.7
Net Income growth		-83.33%	110.00%	101.59%	70.87%

c. 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 2013 by 10%, however, cost of goods sold only declined by 7%.

2-14. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp. Suppose Mydeco repurchases 2 million shares each year from 2013 to 2016. What would its earnings per share be in 2016? (Assume Mydeco pays for the shares using its available cash and that Mydeco earns no interest on its cash balances.)

A repurchase does not impact earnings directly, so any change to EPS will come from a reduction in shares outstanding. 2016 shares outstanding = 55 – 4 × 2 = 47 million, EPS $= \frac{21.7}{47} = \$0.46$.

2-15. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp. Suppose Mydeco had purchased additional equipment for \$12 million at the end of 2013, and this equipment was depreciated by \$4 million per year in 2014, 2015, and 2016. Given Mydeco's tax rate of 35%, what impact would this additional purchase have had on Mydeco's net income in years 2013–2016?

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

Year	2013	2014	2015	2016
Net Income	3.0	6.3	12.7	21.7
Additional Depreciation		-4.0	-4.0	-4.0
Tax Savings		1.4	1.4	1.4
New Net Income	3.0	3.7	10.1	19.1

2-16. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp. Suppose Mydeco's costs and expenses had been the same fraction of revenues in 2013–2016 as they were in 2012. What would Mydeco's EPS have been each year in this case?

If Mydeco's costs and expenses had been the same fraction of revenues in 2013–2016 as they were in 2012, then their net profit margins would have been equal.

2012 net profit margin $= \frac{18}{404.3} = 4.45\%$.

Year	2012	2013	2014	2015	2016
Revenue	404.3	363.8	424.6	510.7	604.1
Net Profit Margin	4.45%	4.45%	4.45%	4.45%	4.45%
New Net Income	18.0	16.2	18.9	22.7	26.9
Shares Outstanding	55.0	55.0	55.0	55.0	55.0
New EPS	\$0.33	\$0.29	\$0.34	\$0.41	\$0.49

2-17. Suppose a firm's tax rate is 35%.

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 35% × $10 million = $3.5 million. Thus, earnings would decline by 10 – 3.5 = $6.5 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 × 35% = $0.7 million, earnings would be lower by 2 – 0.7 = $1.3 million for each of the next 5 years.

2-18. Quisco Systems has 6.5 billion shares outstanding and a share price of $18. 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 stock. 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 35%, 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 firm was acquired at the start of the year and has no revenues 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.

a. If Quisco develops the product in-house, its earnings would fall by $500 × (1 – 35%) = $325 million. With no change to the number of shares outstanding, its EPS would decrease by $\$0.05 = \frac{\$325}{6500}$ 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 million new shares. Since earnings without this transaction are $0.80 × 6.5 billion = $5.2 billion, its EPS with the purchase is $\frac{5.2}{6.55} = \$0.794$.

c. 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.

2-19. Find online the annual 10-K report for Costco Wholesale Corporation (COST) for fiscal year 2015 (filed in October 2015). Answer the following questions from their cash flow statement:

a. How much cash did Costco generate from operating activities in fiscal year 2015?

b. What was Costco depreciation and amortization expense?

c. How much cash was invested in new property and equipment (net of any sales)?

d. How much did Costco raise from the sale of shares of its stock (net of any purchases)?

a. Net cash provided by operating activities was $4,285 million in fiscal year 2015.

b. Depreciation and amortization expenses were $1,127 million.

c. Net cash used in capital expenditures for property and equipment was $2,393 million.

d. Costco raised nothing from the sale of shares of its stock, while it spent $481 million on the purchase of common stock. Costco raised –$481 million from the sale of its shares of stock (net of any purchases).

2-20. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. From 2012 to 2016, what was the total cash flow from operations that Mydeco generated?

b. What fraction of the total in (a) was spent on capital expenditures?

c. What fraction of the total in (a) was spent paying dividends to shareholders?

d. What was Mydeco's total retained earnings for this period?

a. Total cash flow from operations = 48.5 + 50.5 + 47.8 + 46.6 + 54 = $247.4 million.

b. Total fraction spent on capital expenditures = (25 + 25 + 100 + 75 + 40)/247.4 = 107.1%.

c. Total fraction spent on dividends = (5.4 × 4 + 6.5)/247.4 = 11.4%.

d. Retained earnings = Net Income – Dividends = (18 + 3 + 6.3 + 12.7 + 21.7) – (5.4 × 4 + 6.5) = $33.6 million.

2-21. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. In what year was Mydeco's net income the lowest?

b. In what year did Mydeco need to reduce its cash reserves?

c. Why did Mydeco need to reduce its cash reserves in a year when net income was reasonably high?

a. In 2013 (net income was $3 million).

b. 2015 (cash was reduced from 86.3 to 77.5).

c. Mydeco needed to reduce cash (it also issued debt) to pay for large capital expenditures in 2014 and 2015. In addition, even though net income was reasonably high, cash from operations was at the lowest amount in the five-year period due to a reduction in accounts receivable and inventories.

2-22. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp. Use the data from the balance sheet and cash flow statement in 2012 to determine the following:

a. How much cash did Mydeco have at the end of 2011?

b. What were Mydeco's accounts receivable and inventory at the end of 2011?

c. What were Mydeco's total liabilities at the end of 2011?

d. Assuming goodwill and intangibles were equal in 2011 and 2012, what was Mydeco's net property, plant, and equipment at the end of 2011?

a. 2011 Cash = 2012 Cash – 2012 Change in Cash = 48.8 – 18.1 = $30.7 million.

b. 2011 Accounts Receivable = 88.6 + 3.9 = $92.5 million.

2011 Inventory = 33.7 - 2.9 = 30.8 million

c. 2011 Total Liabilities = 525.4 – 2.2 = $523.2 million.

d. 2011 property, plant, and equipment = 2012 property, plant, and equipment – 2012 capital expenditures + 2012 depreciation = 245.3 – 25 + 27.3 = $247.6 million

2-23. Can a firm with positive net income run out of cash? Explain.

A firm can have positive net income but still run out of cash. For example, to expand its current production, a profitable company may spend more on investment activities than it generates from operating activities and financing activities. Net cash flow for that period would be negative, although its net income is positive. It could also run out of cash if it spends a lot on financing activities, perhaps by paying off other maturing long-term debt, repurchasing shares, or paying dividends.

2-24. 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 upfront in cash; you also issue a bill for the customer to pay the remaining balance of $4 million in 30 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. Revenues

b. Earnings

c. Receivables

d. Inventory

e. Cash

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).

2-25. 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 40%.

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?

a. Earnings for the next four years would have to deduct the depreciation expense. After taxes, this would lead to a decline of $10 \times (1 - 40\%) = \$6$ million each year for the next four years.

b. Cash flow for the next four years: less $36 million (–6 + 10 – 40) this year, and add $4 million (–6 +10) for the three following years.

2-26. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. What were Mydeco's retained earnings each year?

b. Using the data from 2012, what was Mydeco's total stockholders' equity in 2011?

a. Retained earnings = Net Income – Dividends Paid

Year	2012	2013	2014	2015	2016
Net Income	18.0	3.0	6.3	12.7	21.7
Dividends Paid	5.4	5.4	5.4	5.4	6.5
Retained Earnings	12.6	-2.4	0.9	7.3	15.2

b. 2011 stockholders' equity = 2012 stockholders' equity – 2012 retained earnings = 252.7 – 12.6 = $240.1 million.

2-27. Find online the annual 10-K report for Costco Wholesale Corporation (COST) for fiscal year 2015 (filed in October 2015). Answer the following questions from the notes to their financial statements:

a. How many stores did Costco open outside of the U.S. in 2015?

b. What property does Costco lease? What are the minimum lease payments due in 2016?

c. What was Costco's worldwide member renewal rate for 2015? What proportion of Costco cardholders had Gold Star memberships in 2015?

d. What fraction of Costco's 2015 sales came from gas stations, pharmacy, food court, and optical? What fraction came from apparel and small appliances?

a. Costco opened 11 stores outside of the U.S. in 2015.

b. Costco leases land and/or buildings at warehouses and certain other office and distribution facilities. The minimum lease payments due in 2016 are $211 million.

c. Costco had a worldwide member renewal rate of 88% for 2015. 34,000/81,300 = 42% of Costco cardholders had Gold Star memberships in 2015.

d. 16% of Costco's 2015 sales came from gas stations, pharmacy, food court, and optical. 11% of Costco's 2015 sales came from apparel and small appliances.

2-28. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. What were Mydeco's gross margins each year?

b. Comparing Mydeco's gross margin, EBIT margin, and net profit margin in 2012 and 2016, which margins improved?

a.

Year	**2012**	**2013**	**2014**	**2015**	**2016**
Revenue	404.3	363.8	424.6	510.7	604.1
Gross Profit	216.0	190.0	218.4	263.9	310.7
Gross Margin	53.43%	52.23%	51.44%	51.67%	51.43%

b. None of the margins improved from 2012 to 2016

Year	**2012**	**2016**
Revenue	404.3	604.1
Gross Profit	216.0	310.7
EBIT	61.4	72.8
Net Income	18.0	21.7
Gross Margin	53.43%	51.43%
EBIT Margin	15.19%	12.05%
Net Profit Margin	4.45%	3.59%

2-29. For fiscal year end 2015, Walmart Stores, Inc. (WMT) had revenue of $485.65 billion, gross profit of $120.57 billion, and net income of $16.36 billion. Costco Wholesale Corporation (COST) had revenue of $116.20 billion, gross profit of $15.13 billion, and net income of $2.38 billion.

a. Compare the gross margins for Walmart and Costco.

b. Compare the net profit margins for Walmart and Costco.

c. Which firm was more profitable in 2015?

a. Walmart's gross margin = 120.57/485.65 = 24.83%; Costco's gross margin = 15.13/116.20 = 13.02%.

b. Walmart's net margin = 16.36/485.65 = 3.37%; Costco's net margin = 2.38/116.20 = 2.05%.

c. Walmart was more profitable in 2015.

2-30. At the end of 2015, Apple had cash and short-term investments of $41.60 billion, accounts receivable of $35.89 billion, current assets of $89.38 billion, and current liabilities of $80.61 billion.

a. What was Apple's current ratio?

b. What was Apple's quick ratio?

c. What is Apple's cash ratio?

d. At the end of 2015, HPQ had a cash ratio of 0.35, a quick ratio of 0.73 and a current ratio of 1.15. What can you say about the asset liquidity of Apple relative to HPQ?

a. Apple's current ratio = 89.38/80.61 = 1.11.

b. Apple's quick ratio = (41.60 + 35.89)/80.61 = 0.96.

c. Apple's cash ratio = 41.60/80.61 = 0.52.

d. Apple generally has more liquid assets than HPQ relative to current liabilities, with the exception of a slightly lower current ratio due to a lower proportion of inventory.

2-31. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. How did Mydeco's accounts receivable days change over this period?

b. How did Mydeco's inventory days change over this period?

c. Based on your analysis, has Mydeco improved its management of its working capital during this time period?

a. $\text{2012 accounts receivable days} = \dfrac{88.6}{404.3/365} = 80.0$.

$\text{2016 accounts receivable days} = \dfrac{86.1}{604.1/365} = 52.0$.

b. $\text{2012 inventory days} = \dfrac{33.7}{188.3/365} = 65.3$.

$\text{2016 inventory days} = \dfrac{35.3}{293.4/365} = 43.9$.

c. Between 2012 and 2016, Mydeco improved its working capital management by reducing both accounts receivable days and inventory days.

2-32 See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. Compare accounts payable days in 2012 and 2016.

b. Did this change in accounts payable days improve or worsen Mydeco's cash position in 2016?

a. $\text{2012 accounts payable days} = \dfrac{18.7}{188.3/365} = 36.2$.

$\text{2016 accounts payable days} = \dfrac{31.7}{293.4/365} = 39.4$.

b. Accounts payable days increased from 2012 to 2016, which improved the cash position of Mydeco

2-33. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. By how much did Mydeco increase its debt from 2012 to 2016?

b. What was Mydeco's EBITDA/Interest coverage ratio in 2012 and 2016? Did its coverage ratio ever fall below 2?

c. Overall, did Mydeco's ability to meet its interest payments improve or decline over this period?

a. Mydeco increased its debt from \$500 million in 2012 to \$600 million in 2016 (by \$100 million).

b. 2012 EBITDA/Interest coverage ratio $= \dfrac{61.4+27.3}{33.7} = 2.6$.

2016 EBITDA/Interest coverage ratio $= \dfrac{72.8+38.6}{39.4} = 2.8$.

Mydeco's coverage ratio fell below 2 in 2013, where it was 1.96.

c. Overall Mydeco's ability to meet its interest payments improved over this period, although it experienced a slight dip in 2013.

2-34. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. How did Mydeco's book debt-equity ratio change from 2012 to 2016?

b. How did Mydeco's market debt-equity ratio change from 2012 to 2016?

c. Compute Mydeco's debt-to-enterprise value ratio to assess how the fraction of its business that is debt financed has changed over the period.

a. 2012 book debt-equity ratio $= \dfrac{500}{252.7} = 1.98$.

2016 book debt-equity ratio $= \dfrac{600}{273.7} = 2.19$.

b. 2012 market debt-equity ratio $= \dfrac{500}{435.6} = 1.15$.

2016 market debt-equity ratio $= \dfrac{600}{599.0} = 1.00$.

c. 2012 debt-enterprise value ratio $= \dfrac{500}{886.8} = 0.56$.

2016 debt-enterprise value ratio $= \dfrac{600}{1113} = 0.54$.

2-35. Use the data in Problem 8 to determine the change, from 2012 to 2015, in GE's

a. book debt-equity ratio?

b. market debt-equity ratio?

a. 2012 book debt-equity ratio = 410/116 = 3.53.

2015 book debt-equity ratio = 302/128 = 2.36

b. 2012 market debt-equity ratio = 410/(17 x 10.6) = 2.28.

2015 market debt-equity ratio = 302/(25 x 10) = 1.21.

2-36. You are analyzing the leverage of two firms and you note the following (all values in millions of dollars):

	Debt	Book Equity	Market Equity	Operating Income	Interest Expense
Firm A	500	300	400	100	50
Firm B	80	35	40	8	7

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

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

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

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

a. **Firm A:** Market debt-equity ratio $= \dfrac{500}{400} = 1.25$.

Firm B: Market debt-equity ratio $= \dfrac{80}{40} = 2.00$.

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

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

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

Firm B: Interest coverage ratio $= \dfrac{8}{7} = 1.14$.

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

2-37. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. Compute Mydeco's PE ratio each year from 2012 to 2016. In which year was it the highest?

b. What was Mydeco's Enterprise Value to EBITDA ratio each year? In which year was it the highest?

c. What might explain the differing time pattern of the two valuation ratios?

a.

Year	2012	2013	2014	2015	2016
Price	**$7.92**	**$3.30**	**$5.25**	**$8.71**	**$10.89**
Earnings per share	**$0.33**	**$0.05**	**$0.11**	**$0.23**	**$0.39**
PE ratio	**24.00**	**66.00**	**47.73**	**37.87**	**27.92**

The PE ratio was highest in 2010.

b.

Year	2012	2013	2014	2015	2016
Enterprise value	886.80	612.60	777.45	1,001.55	1,113.95
EBITDA	88.70	64.50	76.20	95.40	111.40
Enterprise value/EBITDA	10.00	9.50	10.20	10.50	10.00

The enterprise value/EBITDA ratio was the highest in 2015.

c. The different time patterns are caused by increasing debt in 2015 and 2016 that increased the enterprise value of the Mydeco and reduced the earnings per share due to increased interest expense. In addition, very small earnings per share in 2013 increased the PE ratio even though the price decreased as well.

2-38. In early-2015, United Airlines (UAL) had a market capitalization of $24.8 billion, debt of $12.8 billion, and cash of $5.5 billion. United also had annual revenues of $38.9 billion. Southwest Airlines (LUV) had a market capitalization of $28.8 billion, debt of $2.7 billion, cash of $2.9 billion, and annual revenues of $18.6 billion.

a. Compare the market capitalization-to-revenue ratio (also called the price-to-sales ratio) for United Airlines and Southwest Airlines.

b. Compare the enterprise value-to-revenue ratio for United Airlines and Southwest Airlines.

c. Which of these comparisons is more meaningful? Explain.

a. Market capitalization-to-revenue ratio:

= 24.8/38.9 = 0.64 for United Airlines.

= 28.8/18.6 = 1.55 for Southwest Airlines.

b. Enterprise value-to-revenue ratio:

= (24.8 – 5.5 + 12.8)/38.9 = 0.83 for United Airlines.

= (28.8 – 2.9 + 2.7)/18.6 = 1.54 for Southwest Airlines.

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

2-39. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp.

a. Compute Mydeco's ROE each year from 2012 to 2016.

b. Compute Mydeco's ROA each year from 2012 to 2016.

c. Which return is more volatile? Why?

a.

Year	2012	2013	2014	2015	2016
Net Income	18.0	3.0	6.3	12.7	21.7
Stockholders' Equity	252.7	250.3	251.2	258.5	273.7
ROE	7.12%	1.20%	2.51%	4.91%	7.93%

b.

Year	2012	2013	2014	2015	2016
Net Income+Interest Expense	51.7	35.9	38.5	50.1	61.1
Book Value of Assets	778.1	774.6	855.2	893.4	915.1
ROA	6.64%	4.63%	4.50%	5.61%	6.68%

c. ROE is more volatile. Mydeco's debt level causes a large portion of EBIT to go to interest expense. This magnifies the volatility of earnings left over for shareholders through net income. ROA adjusts net income by the interest expense, and thus is less sensitive to leverage.

Here we have calculated ROA using Net Income + Interest Expense, to reflect the total earnings of both equity and debt investors in the firm. ROA is sometimes calculated using only Net Income, or Net Income + After-tax Interest Expense. See fn. 14 in Chapter 2.

2-40. See Table 2.5 showing financial statement data and stock price data for Mydeco Corp. Was Mydeco able to improve its ROIC in 2016 relative to what it was in 2012?

$$2012\text{ ROIC} = \frac{61.4 \times (1-0.35)}{252.7+500-48.8} = 5.67\%.$$

$$2016\text{ ROIC} = \frac{72.8 \times (1-0.35)}{273.7+600-85} = 6.00\%.$$

Mydeco was able to improve its ROIC in 2016 relative to 2012.

2-41. For fiscal year 2015, Costco Wholesale Corporation had a net profit margin of 2.05%, asset turnover of 3.48, and a book equity multiplier of 3.15.

a. Use this data to compute Costco's ROE using the DuPont Identity.

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

c. If Costco's net profit margin fell by one percentage point, by how much would their asset turnover need to increase to maintain their ROE?

a. Costco's ROE (DuPont) = 2.05% × 3.48 × 3.15 = 22.47%.

b. Costco's new asset turnover = 23.47%/(2.05% × 3.15) = 3.63 or an increase of 3.63 – 3.48 = 0.15.

c. Costco's new asset turnover = 22.47%/(1.05% × 3.15) = 6.79 or an increase of 6.79 – 3.48 = 3.31.

2-42. For fiscal year 2015, Walmart Stores Inc. (WMT) had total revenues of $484.65 billion, net income of $16.36 billion, total assets of $203.49 billion, and total shareholder's equity of $81.39 billion.

a. Calculate Wal-Mart's ROE directly, and using the DuPont Identity.

b. Comparing with the data for Costco in problem 41, use the DuPont Identity to understand the difference between the two firms' ROEs.

a. Walmart's ROE = 16.36/81.39 = 20.10%.

Walmart's net profit margin = 16.36/484.65 = 3.38%.

Walmart's asset turnover = 484.65/203.49 = 2.38.

Walmart's equity multiplier = 203.49/81.39 = 2.50.

Walmart's ROE (DuPont) = 3.38% × 2.38 × 2.50 = 20.11% (difference due to rounding).

b. Walmart has a superior profit margin, but a lower asset turnover and a lower equity multiplier (which could represent less leverage). Despite the higher profit margin, it has a smaller ROE that is driven by it's lower asset turnover and leverage.

2-43. Consider a retailing firm with a net profit margin of 3.5%, a total asset turnover of 1.8, total assets of $44 million, and a book value of equity of $18 million.

a. What is the firm's current ROE?

b. If the firm increased its net profit margin to 4%, what would be its ROE?

c. If, in addition, the firm increased its revenues by 20% (while maintaining this higher profit margin and without changing its assets or liabilities), what would be its ROE?

a. $3.5 \times 1.8 \times 44/18 = 15.4\%$.

b. $4 \times 1.8 \times 44/18 = 17.6\%$.

c. $4 \times (1.8*1.2) \times 44/18 = 21.1\%$.

2-44. Find online the annual 10-K report for Costco Wholesale Corporation (COST) for fiscal year 2015 (filed in October 2015).

a. Which auditing firm certified these financial statements?

b. Which officers of Costco's certified the financial statements?

a. KPMG LLP certified Costco's financial statements.

b. W. Craig Jelinek, President and CEO and Richard A. Galanti, Executive Vice President and CFO certified Costco's financial statements.

2-45. WorldCom reclassified $3.85 billion of operating expenses as capital expenditures. Explain the effect this reclassification would have on WorldCom's cash flows. (*Hint:* Consider taxes.) WorldCom's actions were illegal and clearly designed to deceive investors. But if a firm could legitimately choose how to classify an expense for tax purposes, which choice is truly better for the firm's investors?

By reclassifying $3.85 billion operating expenses as capital expenditures, WorldCom increased its net income but lowered its cash flow for that period. If a firm could legitimately choose how to classify an expense, expensing as much as possible in a profitable period rather than capitalizing them will save more on taxes, which results in higher cash flows, and thus is better for the firm's investors.

Chapter 2
Introduction to Financial Statement Analysis

I. Chapter Outline

The following chapter outline is correlated to the PowerPoint Lecture Slides. The PowerPoint slides are referenced in **bold**. Alternative Examples to selected textbook examples are also available in the PowerPoint Lecture Slides and are also referenced in **bold**.

2.1 Firms' Disclosure of Financial Information **(Slide 8)**

- Preparation of Financial Statements **(Slide 9)**
- Interview with Ruth Porat
- Types of Financial Statements **(Slide 10)**

2.2 The Balance Sheet **(Slides 11-12)**

- Table 2.1: Global Conglomerate Corporation Balance Sheet for 2012 and 2011 (**Slide 15)**
- Assets **(Slides 13–14)**
  - Current Assets
  - Long-Term Assets
- Liabilities **(Slides 16–18)**
  - Current Liabilities
  - Long-Term Liabilities
- Stockholders' Equity **(Slide 20)**
  - Market Value Versus Book Value **(Slide 21–22)**
  - Enterprise Value **(Slide 23)**
- Example 2.1 Market Versus Book Value **(Slides 24–25)**
- *PowerPoint* Alternative Example 2.1 **(Slides 26–27)**

2.3 The Income Statement **(Slide 28)**

- Earnings Calculations **(Slides 28–34)**
  - Gross Profit **(Slide 28)**
  - Operating Expenses **(Slide 29)**
- Table 2.2: Global Conglomerate Corporation Income Statement for 2015 and 2014 (**Slide 33)**
  - Earnings before Interest and Taxes **(Slide 30)**
  - Pretax and Net Income **(Slide 32)**
  - Earnings per Share (**Slide 34)**

2.4 The Statement of Cash Flows **(Slide 35–36)**

- Operating Activity **(Slide 37)**
- Table 2.3 Global Conglomerate Corporation Statement of Cash Flows for 2015 and 2014 **(Slide 39)**

- Investment Activity **(Slide 38)**
- Financing Activity **(Slide 38)**
- Example 2.2 The Impact of Depreciation on Cash Flow **(Slides 40–41)**
- *PowerPoint* Alternative Example 2.2 **(Slides 42–43)**

2.5 Other Financial Statement Information **(Slide 44)**

- Statement of Stockholders' Equity **(Slide 44)**
- Management Discussion and Analysis **(Slide 45)**
- Notes to the Financial Statements **(Slide 45)**
- Example 2.3 Sales by Product Category **(Slides 46–47)**
- *PowerPoint* Alternative Example 2.3 **(Slides 48–50)**

2.6 Financial Statement Analysis **(Slide 51)**

- Profitability Ratios **(Slide 52–53)**
- Figure 2.1 EBIT Margins for Five U.S. Airlines **(Slide 54)**
- Liquidity Ratios **(Slide 55)**
- Example 2.4 Computing Liquidity Ratios **(Slides 56–57)**
- *PowerPoint* Alternative Example 2.4 **(Slides 58–60)**
- Working Capital Ratios **(Slide 61–62)**
- Interest Coverage Ratios **(Slide 63)**
- Example 2.5 Computing Interest Coverage Ratios **(Slides 64–65)**
- *PowerPoint* Alternative Example 2.5 **(Slides 66–67)**
- Leverage Ratios **(Slides 68–69)**
- Valuation Ratios **(Slide 70)**
- Common Mistake: Mismatched Ratios
- Example 2.6 Computing Profitability and Valuation Ratios **(Slides 71–72)**
- *PowerPoint* Alternative Example 2.6 **(Slides 73–74)**
- Operating Returns **(Slide 75)**
- Example 2.7 Computing Operating Returns **(Slides 76–77)**
- *PowerPoint* Alternative Example 2.7 **(Slides 78–79)**
- The DuPont Identity **(Slide 80)**
- Example 2.8 Determinants of ROE **(Slides 81–82)**
- *PowerPoint* Alternative Example 2.8 **(Slides 83–84)**
- Table 2.4 A Summary of Key Financial Ratios **(Slide 85)**

2.7 Financial Reporting in Practice **(Slide 86)**

- Enron **(Slide 86)**
- WorldCom **(Slide 86)**
- Sarbanes-Oxley Act **(Slide 86)**
- Dodd-Frank Act **(Slide 86)**
- Global Financial Crisis: Bernie Madoff's Ponzi Scheme

II. Learning Objectives

2-1 List the four major financial statements required by the SEC for publicly traded firms, define each of the four statements, and explain why each of these financial statements is valuable.

2-2 Discuss the difference between book value and market value of stockholders' equity; explain why the two numbers are almost never the same.

2-3 Compute the following measures, and describe their usefulness in assessing firm performance: debt-equity ratio, enterprise value, earnings per share, operating margin, net profit margin, accounts receivable days, accounts payable days, inventory days, interest coverage ratio, return on equity, return on assets, price-earnings ratio, and market-to-book ratio.

2-4 Discuss the uses of the DuPont Identity in disaggregating ROE, and assess the impact of increases and decreases in the components of the identity on ROE.

2-5 Describe the importance of ensuring that valuation ratios are consistent with one another in terms of the inclusion of debt in the numerator and the denominator.

2-6 Distinguish between cash flow, as reported on the statement of cash flows, and accrual-based income, as reported on the income statement; discuss the importance of cash flows to investors, relative to accrual-based income.

2-7 Explain what is included in the management discussion and analysis section of the financial statements that cannot be found elsewhere in the financial statements.

2-8 Explain the importance of the notes to the financial statements.

2-9 List and describe the financial scandals described in the text, along with the new legislation designed to reduce those types of fraud.

III. Chapter Overview

This chapter reviews the four main financial statements and discusses some useful financial ratios. The chapter closes with a look at some recent financial scandals.

2.1 Firms' Disclosure of Financial Information

The four statements that are required by the U.S. Securities and Exchange Commission (SEC) are the balance sheet, the income statement, the statement of cash flows, and the statement of stockholders' equity.

The section includes a summary of steps taken toward standardizing financial statements across countries using International Financial Reporting Standards.

2.2 The Balance Sheet

The balance sheet lists the firm's assets and liabilities. This section describes current assets, long-term assets, current liabilities and long-term liabilities, with examples of the major components of each. The authors emphasize the difference between market value and book value of equity and give some specific reasons why the two are seldom the same. Example 2.1 illustrates a case in which they are different.

Book value of equity is sometimes used as an estimate of the liquidation value of the firm. Important tools for analyzing the firm's value, leverage, and short-term cash needs from information found on the balance sheet include the following:

a. The market-to-book ratio, which is often used to classify firms as value stocks or growth stocks

b. Enterprise value, which assesses the value of underlying business assets, not including cash

2.3 The Income Statement

The income statement lists the firm's revenues and expenses over a period. This section of the text discusses the calculation of earnings from the components of the income statement. Earnings per share (and diluted earnings per share) are often calculated to assess the size of net income relative to that of similar firms.

2.4 The Statement of Cash Flows

The statement of cash flows converts accrual-based income into cash flow. Cash flows are separated into operating activities, investment activities, and financing activities. Example 2.2 shows the impact of depreciation on cash flows.

2.5 Other Financial Statement Information

The statement of stockholders' equity provides detailed information about additions to, or reductions in, the stockholders' equity accounts. The management discussion and analysis provides management's interpretation of the planned activities of the firm. Notes to the financial statements are an integral part of the statements, as they show detail about stock-based compensation plans, leases, principal payments on debt, and many other items. Example 2.3 uses a note to the financial statement reporting sales by product category to find the sales unit with the highest growth.

2.6 Financial Statement Analysis

Profitability ratios, such as operating margin and net profit margin, are often used to measure the fraction of revenues that is available to common shareholders. Liquidity ratios are often used by creditors to assess financial solvency. Example 2.4 illustrates computation of some liquidity ratios. Some examples of ratios that use both income statement and balance sheet items are working capital ratios, such as accounts receivable days (or average collection period), or inventory and accounts payable turnovers. Leverage is often assessed using ratios such as interest coverage, which is also a mixed ratio. Example 2.5 illustrates calculation of interest coverage ratios. Leverage ratios are also used to assess leverage. Profitability and valuation ratios are shown in Example 2.6. Operating returns are measured by return on equity or return on assets (illustrated by Example 2.7), although these measures are both flawed in their use of book value measures. The DuPont Identity allows the analyst to break down the determinants of a firm's ROE. Example 2.8 illustrates this decomposition for Walmart and Target.

Table 2.4 summarizes the financial ratios discussed throughout the chapter.

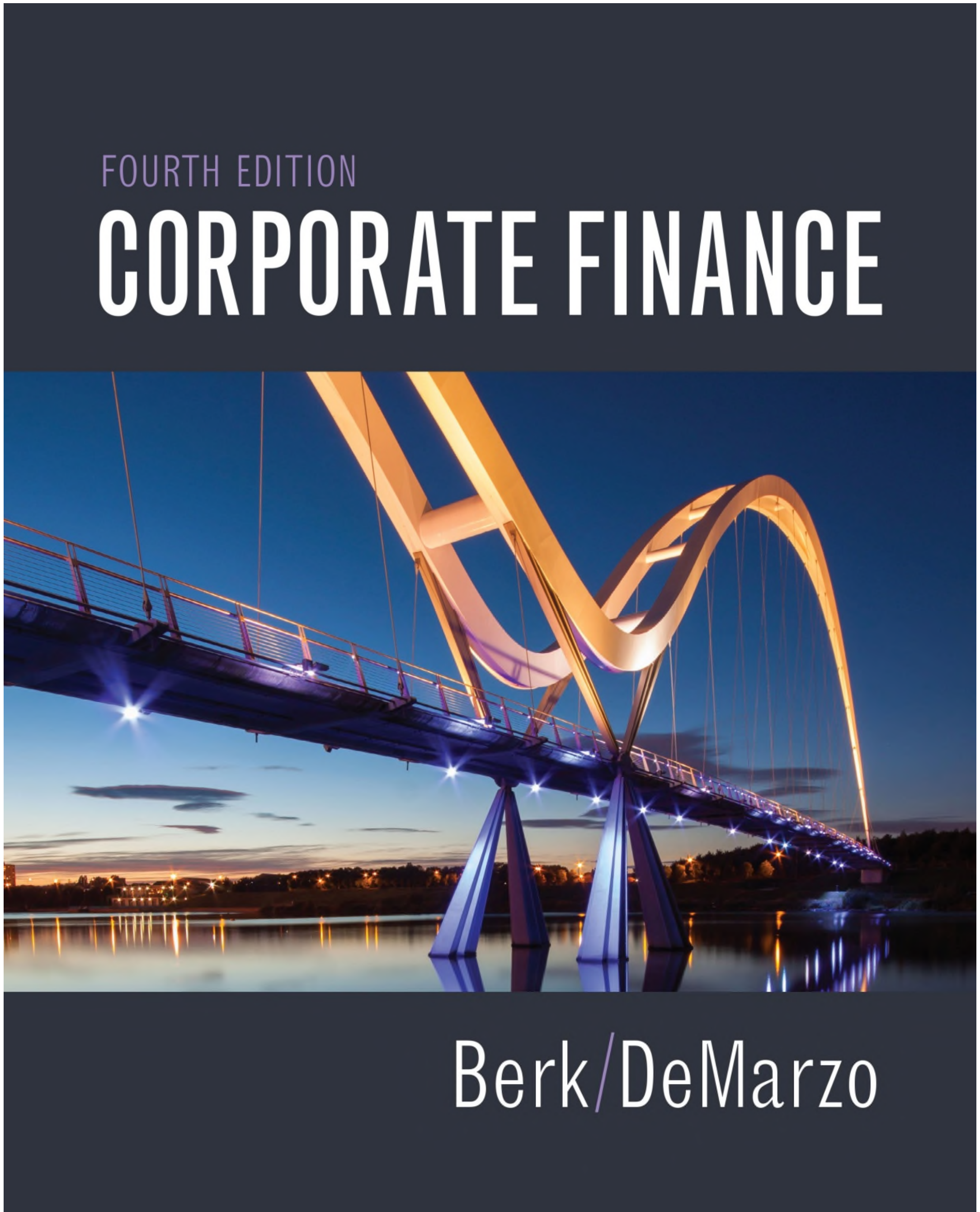
2.7 Financial Reporting in Practice

There have been several recent abuses of financial rules, including Enron and WorldCom. Enron sold assets at inflated prices to other firms, together with a promise to buy back assets at an even higher future price. WorldCom reclassified $3.85 billion in expenses as long-term investment. In response, in 2002 the Sarbanes-Oxley Act was passed to improve accuracy of information provided to boards and shareholders. It attempts to achieve this goal by (1) overhauling incentives and the independence in the auditing process, (2) stiffening penalties for providing false information, and (3) forcing companies to validate their internal financial control processes. The Act holds CFOs and CEOs accountable for the firm's financial statements. The Dodd-Frank Wall Street Reform and Consumer Protection Act exempts small firms from some provisions of Sarbanes-Oxley and also broadens whistle-blower provisions of that Act. A call-out box describes Madoff's Ponzi scheme.

IV. Spreadsheet Solutions in Excel

The following problems for Chapter 2 have spreadsheet versions available: 10, 11, 13, 15, 16, 17, and 20.

These spreadsheets can be downloaded from the Instructor's Resource Center at: www.pearsonhighered.com/berk_demarzo. If you do not have a login and password for this Web site, contact your Pearson sales representative.



Chapter 2

Introduction to Financial Statement Analysis

Chapter Outline

Learning Objectives

1. List the four major financial statements required by the SEC for publicly traded firms, define each of the four statements, and explain why each of these financial statements is valuable.
2. Discuss the difference between book value of stockholders' equity and market value of stockholders' equity; explain why the two numbers are almost never the same.

Learning Objectives

3. Compute the following measures, and describe their usefulness in assessing firm performance: the debt-equity ratio, the enterprise value, earnings per share, operating margin, net profit margin, accounts receivable days, accounts payable days, inventory days, interest coverage ratio, return on equity, return on assets, price-earnings ratio, and market-to-book ratio.

Learning Objectives

4. Discuss the uses of the DuPont identity in disaggregating ROE, and assess the impact of increases and decreases in the components of the identity on ROE.
5. Describe the importance of ensuring that valuation ratios are consistent with one another in terms of the inclusion of debt in the numerator and the denominator.

Learning Objectives

6. Distinguish between cash flow, as reported on the statement of cash flows, and accrual-based income, as reported on the income statement; discuss the importance of cash flows to investors, relative to accrual-based income.
7. Explain what is included in the management discussion and analysis section of the financial statements that cannot be found elsewhere in the financial statements.

Learning Objectives

8. Explain the importance of the notes to the financial statements.
9. List and describe the financial scandals described in the text, along with the new legislation designed to reduce that type of fraud.

2.1 Firms' Disclosure of Financial Information

- Financial Statements
  - Firm-issued accounting reports with past performance information
  - Filed with the SEC
    - 10Q
      - Quarterly
    - 10K
      - Annual
  - Must also send an annual report with financial statements to shareholders

2.1 Firms' Disclosure of Financial Information (cont'd)

- Preparation of Financial Statements
  - Generally Accepted Accounting Principles (GAAP)
  - Auditor
    - Neutral third party that checks a firm's financial statements

2.1 Firms’ Disclosure of Financial Information (cont'd)

- Types of Financial Statements
  - Balance Sheet
  - Income Statement
  - Statement of Cash Flows
  - Statement of Stockholders’ Equity

2.2 Balance Sheet

- A snapshot in time of the firm's financial position
- The Balance Sheet Identity:

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

2.2 Balance Sheet (cont'd)

- Assets
  - What the company owns
- Liabilities
  - What the company owes
- Stockholder’s Equity
  - The difference between the value of the firm’s assets and liabilities

2.2 Balance Sheet (cont'd)

- Assets
  - Current Assets: Cash or expected to be turned into cash in the next year
    - Cash
    - Marketable Securities
    - Accounts Receivable
    - Inventories
    - Other Current Assets
      - Example: Pre-paid expenses

2.2 Balance Sheet (cont'd)

- Assets
  - Long-Term Assets
    - Net Property, Plant, & Equipment
      - Depreciation (and Accumulated Depreciation)
      - Book Value = Acquisition cost – Accumulated depreciation
    - Goodwill and intangible assets
      - Amortization
    - Other long-term assets
      - Example: Investments in Long-term Securities

Table 2.1 Global Conglomerate Corporation Balance Sheet

GLOBAL CONGLOMERATE CORPORATION

Consolidated Balance Sheet
Year Ended December 31 (in $ million)

Assets	2015	2014	Liabilities and Stockholders' Equity	2015	2014
Current Assets			**Current Liabilities**		
Cash	21.2	19.5	Accounts payable	29.2	24.5
Accounts receivable	18.5	13.2	Notes payable/short-term debt	3.5	3.2
Inventories	15.3	14.3	Current maturities of long-term debt	13.3	12.3
Other current assets	2.0	1.0	Other current liabilities	2.0	4.0
Total current assets	57.0	48.0	Total current liabilities	48.0	44.0
Long-Term Assets			**Long-Term Liabilities**		
Land	22.2	20.7	Long-term debt	99.9	76.3
Buildings	36.5	30.5	Capital lease obligations	—	—
Equipment	39.7	33.2	Total debt	99.9	76.3
Less accumulated depreciation	(18.7)	(17.5)	Deferred taxes	7.6	7.4
Net property, plant, and equipment	79.7	66.9	Other long-term liabilities	—	—
Goodwill and intangible assets	20.0	20.0	Total long-term liabilities	107.5	83.7
Other long-term assets	21.0	14.0	**Total Liabilities**	**155.5**	**127.7**
Total long-term assets	120.7	100.9	**Stockholders' Equity**	**22.2**	**21.2**
Total Assets	**177.7**	**148.9**	**Total Liabilities and Stockholders' Equity**	**177.7**	**148.9**

2.2 Balance Sheet (cont'd)

- Liabilities
  - Current Liabilities: Due to be paid within the next year
    - Accounts Payable
    - Short-Term Debt/Notes Payable
    - Current Maturities of Long-Term Debt
    - Other Current Liabilities
      - Taxes Payable
      - Wages Payable

2.2 Balance Sheet (cont'd)

- Net Working Capital
  - Current Assets – Current Liabilities

2.2 Balance Sheet (cont'd)

- Liabilities
  - Long-Term Liabilities
    - Long-Term Debt
    - Capital Leases
    - Deferred Taxes

Table 2.1 (cont'd)
Global Conglomerate Corporation Balance Sheet

GLOBAL CONGLOMERATE CORPORATION

Consolidated Balance Sheet
Year Ended December 31 (in $ million)

Liabilities and Stockholders' Equity	2015	2014
Current Liabilities		
Accounts payable	29.2	24.5
Notes payable/short-term debt	3.5	3.2
Current maturities of long-term debt	13.3	12.3
Other current liabilities	2.0	4.0
Total current liabilities	48.0	44.0
Long-Term Liabilities		
Long-term debt	99.9	76.3
Capital lease obligations	—	—
Total debt	99.9	76.3
Deferred taxes	7.6	7.4
Other long-term liabilities	—	—
Total long-term liabilities	107.5	83.7
Total Liabilities	**155.5**	**127.7**
Stockholders' Equity	**22.2**	**21.2**
Total Liabilities and Stockholders' Equity	**177.7**	**148.9**

2.2 Balance Sheet (cont'd)

- Stockholder's Equity
  - Book Value of Equity
    - Book Value of Assets – Book Value of Liabilities
      - Could possibly be negative
      - Many of the firm's valuable assets may not be captured on the balance sheet

2.2 Balance Sheet (cont'd)

- Market Value Versus Book Value
  - Market Value of Equity (Market Capitalization)
    - Market Price per Share x Number of Shares Outstanding
      - Cannot be negative
      - Often differs substantially from book value

2.2 Balance Sheet (cont'd)

- Market Value Versus Book Value
  - Market-to-Book Ratio
    - aka Price-to-Book Ratio

$$\text{Market-to-Book Ratio} = \frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$$

- Value Stocks
  - Low M/B ratios
- Growth stocks
  - High M/B ratios

2.2 Balance Sheet (cont'd)

- Enterprise Value
  - aka Total Enterprise Value (TEV)

$$\text{Enterprise Value} = \text{Market Value of Equity} + \text{Debt} - \text{Cash}$$

Textbook Example 2.1

Market Versus Book Value

Problem

If Global has 3.6 million shares outstanding, and these shares are trading for a price of $14 per share, what is Global's market capitalization? How does the market capitalization compare to Global's book value of equity in 2015?

Textbook Example 2.1 (cont'd)

Solution

Global's market capitalization is (3.6 million shares) × ($14/share) = $50.4 million. This market capitalization is significantly higher than Global's book value of equity of $22.2 million. Thus, investors are willing to pay 50.4/22.2 = 2.27 times the amount Global's shares are "worth" according to their book value.

Alternative Example 2.1

- **Problem**
  - Rylan Enterprises has 5 million shares outstanding.
  - The market price per share is $108.
  - The firm’s book value of equity is $50 million.
  - **What is Rylan’s market capitalization?**
  - **What is Rylan’s Market-to-Book ratio?**

Alternative Example 2.1

- **Solution**
  - – Rylan’s market capitalization is $490 million
    - 5 million shares × $98 share = $490 million.
    - The Market-to-Book ratio is $490/$50 = 9.80.

2.3 Income Statement

- Total Sales/Revenues
  - *minus*
- Cost of Sales
  - *equals*
- Gross Profit

2.3 Income Statement (cont'd)

- Gross Profit
  - *minus*
- Operating Expenses
    - Selling, General, and Administrative Expenses
    - R&D
    - Depreciation & Amortization
  - *equals*
- Operating Income

2.3 Income Statement (cont'd)

- Operating Income
  - *plus/minus*
- Other Income/Other Expenses
  - *equals*
- Earnings Before Interest and Taxes (EBIT)

2.3 Income Statement (cont'd)

- Earnings Before Interest and Taxes (EBIT)
  - *plus/minus*
- Interest Income/Interest Expense
  - *equals*
- Pre-Tax Income

2.3 Income Statement (cont'd)

- Pre-Tax Income
  - *minus*
- Taxes
  - *equals*
- Net Income

Table 2.2 Global Conglomerate Corporation Income Statement Sheet

GLOBAL CONGLOMERATE CORPORATION

Income Statement
Year Ended December 31 (in $ million)

	2015	2014
Total sales	186.7	176.1
Cost of sales	(153.4)	(147.3)
Gross Profit	33.3	28.8
Selling, general, and administrative expenses	(13.5)	(13.0)
Research and development	(8.2)	(7.6)
Depreciation and amortization	(1.2)	(1.1)
Operating Income	10.4	7.1
Other income	—	—
Earnings Before Interest and Taxes (EBIT)	10.4	7.1
Interest income (expense)	(7.7)	(4.6)
Pretax Income	2.7	2.5
Taxes	(0.7)	(0.6)
Net Income	2.0	1.9
Earnings per share:	$0.556	$0.528
Diluted earnings per share:	$0.526	$0.500

2.3 Income Statement (cont'd)

- Earnings per Share

$$\text{EPS} = \frac{\text{Net Income}}{\text{Shares Outstanding}}$$

- Stock Options
- Convertible Bonds
- Dilution
  - Diluted EPS

2.4 Statement of Cash Flows

- Net Income typically does NOT equal the amount of cash the firm has earned.
  - Non-Cash Expenses
    - Depreciation and Amortization
  - Uses of Cash not on the Income Statement
    - Investment in Property, Plant, and Equipment

2.4 Statement of Cash Flows (cont'd)

- Three Sections
  - Operating Activity
  - Investment Activity
  - Financing Activity

2.4 Statement of Cash Flows (cont'd)

- Operating Activity
  - Adjusts net income by all non-cash items related to operating activities and changes in net working capital
    - Depreciation – add the amount of depreciation
    - Accounts Receivable – deduct the increases
    - Accounts Payable – add the increases
    - Inventories – deduct the increases

2.4 Statement of Cash Flows (cont'd)

- Investment Activity
  - Capital Expenditures
  - Buying or Selling Marketable Securities
- Financing Activity
  - Payment of Dividends
    - Retained Earnings = Net Income – Dividends
  - Changes in Borrowings

Table 2.3 Global Conglomerate Corporation Statement of Cash Flows

GLOBAL CONGLOMERATE CORPORATION
Statement of Cash Flows
Year Ended December 31 (in $ million)

	2015	2014
Operating activities		
Net income	2.0	1.9
Depreciation and amortization	1.2	1.1
Other non-cash items	(2.8)	(1.0)
Cash effect of changes in		
Accounts receivable	(5.3)	(0.3)
Accounts payable	4.7	(0.5)
Inventory	(1.0)	(1.0)
Cash from operating activities	**(1.2)**	**0.2**
Investment activities		
Capital expenditures	(14.0)	(4.0)
Acquisitions and other investing activity	(7.0)	(2.0)
Cash from investing activities	**(21.0)**	**(6.0)**
Financing activities		
Dividends paid	(1.0)	(1.0)
Sale (or purchase) of stock	—	—
Increase in borrowing	24.9	5.5
Cash from financing activities	**23.9**	**4.5**
Change in cash and cash equivalents	**1.7**	**(1.3)**

Textbook Example 2.2

The Impact of Depreciation on Cash Flow

Problem

Suppose Global had an additional $1 million depreciation expense in 2015. If Global's tax rate on pretax income is 26%, what would be the impact of this expense on Global's earnings? How would it impact Global's cash balance at the end of the year?

Textbook Example 2.2 (cont'd)

Solution

Depreciation is an operating expense, so Global's operating income, EBIT, and pretax income would fall by \$1 million. This decrease in pretax income would reduce Global's tax bill by $26\% \times \$1$ million $= \$0.26$ million. Therefore, net income would fall by $1 - 0.26 =$ \$0.74 million.

On the statement of cash flows, net income would fall by \$0.74 million, but we would add back the additional depreciation of \$1 million because it is not a cash expense. Thus, cash from operating activities would rise by $-0.74 + 1 = \$0.26$ million. Thus, Global's cash balance at the end of the year would increase by \$0.26 million, the amount of the tax savings that resulted from the additional depreciation expense.

Alternative Example 2.2

- **Problem**
  - In 2016, Rylan Enterprises net income increased by $1.5 million while its depreciation expense decreased by $750,000, accounts receivable increased by $5,000,000 and accounts payable increased by $3,000,000. Rylan's total corporate tax rate is 40%.
  - **How did the decline in Rylan's depreciation expense impact its end-of-year cash balance?**

Alternative Example 2.2

- **Solution**
  - The decrease in deprecation expense increases Rylan’s pre-tax income by $750,000. This increases Rylan’s tax obligation by:
    - 40% x $750,000 = $300,000
  - Rylan must pay $300,000 more in taxes due to the decline in depreciation expense. Thus, its end-of-year cash balance is $300,000 lower as a direct result of the lower depreciation expense.

2.5 Other Financial Statement Information

- Statement of Stockholders’ Equity

Change in Stockholders' Equity = Retained Earnings
+ Net sales of stock
= Net Income
- Dividends
+ Sales of stock
- Repurchase of Stock

2.5 Other Financial Statement Information

- Management Discussion and Analysis
  - Off-Balance Sheet Transactions
- Notes to the Financial Statements

Textbook Example 2.3

Sales by Product Category

Problem

In the Segment Results section of its financial statements, Hormel Foods Corp (HRL) reported the following sales revenues by reportable segment/product category ($ million):

	2014	2013
Grocery Products	$1,558	$1,518
Refrigerated Foods	4,644	4,252
Jennie-O Turkey Store	1,672	1,602
Specialty Foods	907	932
International & Other	534	448

Which category showed the highest percentage growth? If Hormel has the same percentage growth by category from 2014 to 2015, what will its total revenues be in 2015?

Textbook Example 2.3 (cont'd)

Solution

The percentage growth in the sales of grocery products was $1558/1518 - 1 = 2.6\%$. Similarly, growth in Refrigerated Foods was 9.2%, Jennie-O Turkey Store was 4.4%, Specialty Foods was −2.7%, and International and Other categories were 19.2%. Thus, International and Other categories showed the highest growth.

If these growth rates continue for another year, sales of Grocery Products will be $1558 \times 1.026 = \$1598$ million, and the other categories will be \$5071 million, \$1746 million, \$883 million, and \$637 million, respectively, for total revenues of \$9.9 billion, a 6.7% increase over 2014.

Alternative Example 2.3

- **Problem**
  - Apple reported the following net sales (in millions) by operating segment:

	2015	2014
Americas	$ 93,864	$ 80,095
Europe	$ 50,337	$ 44,285
Greater China	$ 58,715	$ 31,853
Japan	$ 15,706	$ 15,314
Rest of Asia Pacific	$ 15,093	$ 11,248
Total	$ 233,715	$ 182,795

  - **Which operating segment had the greatest dollar change in net sales? The largest percent change?**

Alternative Example 2.3

- **Solution**
  - Americas
    - \$93,864 - \$80,095 = \$13,769
    - \$13,769/\$80,095 = 17.19%
  - Europe
    - \$50,337 - \$44,285 = \$6,052
    - \$6,052/\$44,285 = 13.67%
  - Greater China
    - \$58,715 - \$31,853 = 26,862
    - \$26,862/\$31,853 = 84.33%

Alternative Example 2.3

- **Solution (cont'd)**
  - Japan
    - \$15,706 - \$15,314 = \$392
    - \$392/\$15,314 = 2.56%
  - Rest of Asia Pacific
    - \$15,093 - \$11,248 = \$3,845
    - \$3,845/\$11,248= 34.18%
  - Greater China had the largest dollar change with a \$26.9 billion increase and the largest percent change with a 84.33% increase,

2.6 Financial Statement Analysis

- Used to:
  - Compare the firm with itself over time
  - Compare the firm to other similar firms

2.6 Financial Statement Analysis (cont'd)

- Profitability Ratios
  - Gross Margin

$$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

  - Operating Margin

$$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Sales}}$$

2.6 Financial Statement Analysis (cont'd)

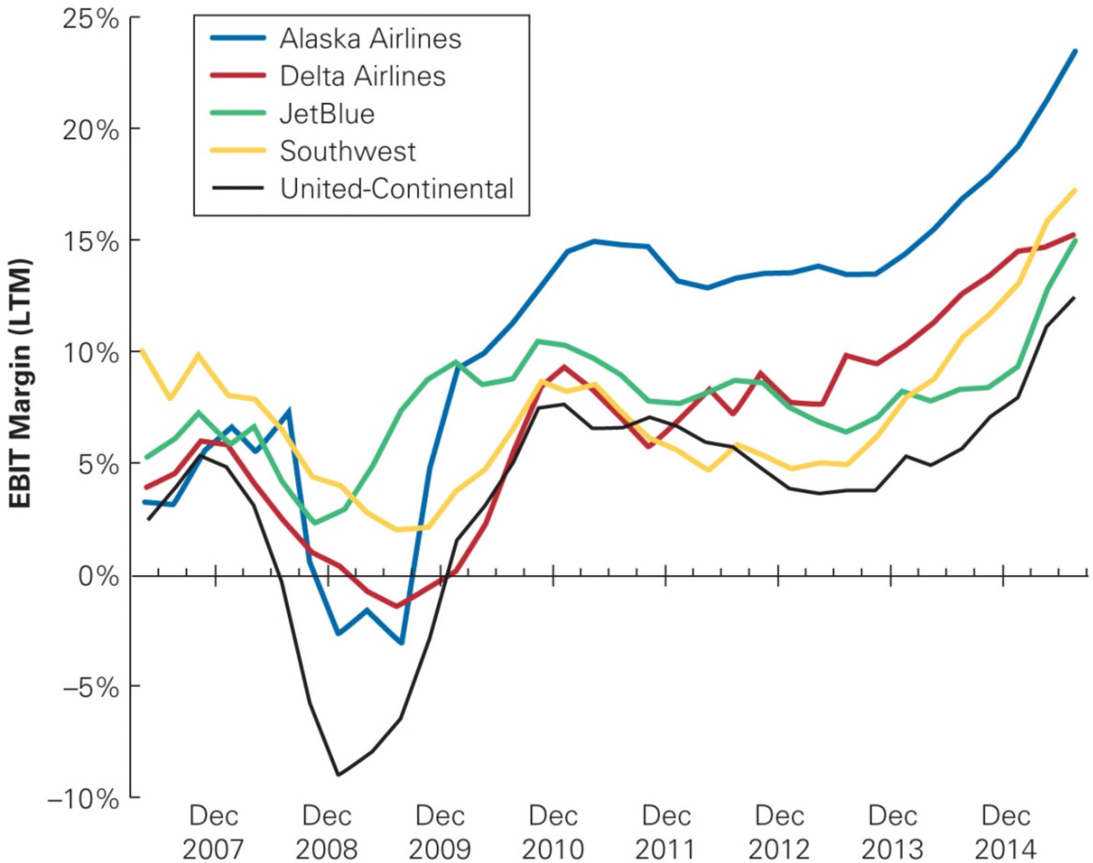
- Profitability Ratios
  - EBIT Margin

$$\text{EBIT} = \frac{\text{EBIT}}{\text{Sales}}$$

  - Net Profit Margin

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Total Sales}}$$

Figure 2.1 EBIT Margins for Five U.S. Airlines



Source: Capital IQ

2.6 Financial Statement Analysis (cont'd)

- Liquidity Ratios
  - Current Ratio
    - Current Assets / Current Liabilities
  - Quick Ratio
    - (Cash + Short-Term Investments + A/R) / Current Liabilities
  - Cash Ratio
    - Cash / Current Liabilities

Textbook Example 2.4

Computing Liquidity Ratios

Problem

Calculate Global's quick ratio and cash ratio. Based on these measures, how has its liquidity changed between 2014 and 2015?

Textbook Example 2.4 (cont'd)

Solution

In 2014, Global's quick ratio was (19.5 + 13.2)/44 = 0.74 and its cash ratio was 19.5/44 = 0.44. In 2015, these ratios were 0.83 and 21.2/48 = 0.44, respectively. Thus, Global's cash ratio remained stable over this period, while its quick ratio improved slightly. But although these liquidity measures have not deteriorated, a more worrisome indicator for investors regarding Global's liquidity might be its ongoing negative cash flow from operating and investing activities, shown in the statement of cash flows.

Alternative Example 2.4

- **Problem**
  - Based on the data on the following slide, calculate Rylan Corporation’s quick ratio and cash ratio. **Based on these measures, how has its liquidity changed between the 2015 and the 2016?**

Alternative Example 2.4 (cont'd)

- **Problem**

Balance Sheet

Assets	**2016**	**2015**
Cash	$2,000,000	$4,000,000
Short-Term Investments	$7,000,000	$6,000,000
Accounts Receivable	$20,000,000	$15,000,000
Inventory	$26,000,000	$23,000,000
Other Current Assets	$10,000,000	$9,000,000
Total Current Assets	$65,000,000	$57,000,000
Long-Term Assets	$50,000,000	$45,000,000
Total Assets	$115,000,000	$102,000,000

Liabilities	**2016**	**2015**
Accounts Payable	$10,000,000	$7,000,000
Short-Term Debt	$25,000,000	$20,000,000
Total Current Liabilities	$35,000,000	$27,000,000
Long-Term Debt	$30,000,000	$30,000,000
Total Liabilities	$65,000,000	$57,000,000
Total Equity	$50,000,000	$45,000,000
Total Liabilities and Equity	$115,000,000	$102,000,000

Alternative Example 2.4 (cont'd)

- **Solution**
  - Quick Ratio
    - 2016: ($2,000,000 + $7,000,000 + $20,000,000) / $35,000,000 = 0.83
    - 2015: ($4,000,000 + $6,000,000 + $15,000,000) / $27,000,000 = 0.93
  - Cash Ratio
    - 2016: $2,000,000 / $35,000,000 = 0.06
    - 2015: $4,000,000 / $27,000,000 = 0.15
  - Using either measure, Rylan’s liquidity has deteriorated.

2.6 Financial Statement Analysis (cont'd)

- Working Capital Ratios
  - Accounts Receivable Days

$$\text{Accounts Receivable Days} = \frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$$

  - Accounts Payable Days

$$\text{Accounts Payable Days} = \frac{\text{Accounts Payable}}{\text{Average Daily Cost of Sales}}$$

  - Inventory Days

$$\text{Inventory Days} = \frac{\text{Inventory}}{\text{Average Daily Cost of Sales}}$$

2.6 Financial Statement Analysis (cont'd)

- Working Capital Ratios
  - Accounts Receivable Turnover

$$\text{Accounts Receivable Turnover} = \frac{\text{Annual Sales}}{\text{Accounts Receivable}}$$

  - Accounts Payable Turnover

$$\text{Accounts Payable Turnover} = \frac{\text{Annual Cost of Sales}}{\text{Accounts Payable}}$$

  - Inventory Turnover

$$\text{Inventory Turnover} = \frac{\text{Annual Cost of Sales}}{\text{Inventory}}$$

2.6 Financial Statement Analysis (cont'd)

- Interest Coverage Ratios
  – EBIT/Interest
  – EBITDA/Interest
    - EBITDA = EBIT + Depreciation and Amortization

Textbook Example 2.5

Computing Interest Coverage Ratios

Problem

Assess Global's ability to meet its interest obligations by calculating interest coverage ratios using both EBIT and EBITDA.

Textbook Example 2.5 (cont'd)

Solution

In 2014 and 2015, Global had the following interest coverage ratios:

$$2014: \quad \frac{\text{EBIT}}{\text{Interest}} = \frac{7.1}{4.6} = 1.54 \quad \text{and} \quad \frac{\text{EBITDA}}{\text{Interest}} = \frac{7.1 + 1.1}{4.6} = 1.78$$

$$2015: \quad \frac{\text{EBIT}}{\text{Interest}} = \frac{10.4}{7.7} = 1.35 \quad \text{and} \quad \frac{\text{EBITDA}}{\text{Interest}} = \frac{10.4 + 1.2}{7.7} = 1.51$$

In this case Global's low—and declining—interest coverage could be a source of concern for its creditors.

Alternative Example 2.5

- **Problem**
  - Assess Rylan's ability to meet its interest obligations by calculating interest coverage ratios using both EBIT and EBITDA.

Income Statement

	2016	2015
Revenues	$500,000,000	$450,000,000
Less: Cost of Goods Sold	$225,000,000	$200,000,000
Gross Profit	$275,000,000	$250,000,000
Less: Operating Expenses	$150,000,000	$140,000,000
EBITDA	$125,000,000	$110,000,000
Less: Depreciation	$25,000,000	$22,500,000
EBIT	$100,000,000	$87,500,000
Less: Interest Expense	$10,000,000	$9,000,000
EBT	$90,000,000	$78,500,000
Less: Taxes (40%)	$36,000,000	$31,400,000
Net Income	$54,000,000	$47,100,000

Alternative Example 2.5 (cont'd)

- **Solution**
  - EBIT/Interest
    - 2016: $100,000,000 / $10,000,000 = 10.0
    - 2015: $87,500,000 / $9,000,000 = 9.72
  - EBITDA/Interest
    - 2016: $125,000,000 / $10,000,000 = 12.5
    - 2015: $110,000,000 / $9,000,000 = 12.2
  - Using either measure, Rylan’s ability to meet its is very good and improving.

2.6 Financial Statement Analysis (cont'd)

- Leverage Ratios
  - Debt-Equity Ratio

$$\text{Debt-Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

  - Debt-to-Capital Ratio

$$\text{Debt-to-Capital Ratio} = \frac{\text{Total Debt}}{\text{Total Equity} + \text{Total Debt}}$$

2.6 Financial Statement Analysis (cont'd)

- Leverage Ratios
  - Net Debt
    - Total Debt + Excess Cash & Short-Term Investments
  - Debt-to-Enterprise Value

$$\text{Debt-to-Enterprise Value Ratio} = \frac{\text{Net Debt}}{\text{Market Value of Equity} + \text{Net Debt}}$$

  - Equity Multiplier
    - Total Assets / Book Value of Equity

2.6 Financial Statement Analysis (cont'd)

- Valuation Ratios
  - P/E Ratio

$$\text{P / E Ratio} = \frac{\text{Market Capitalization}}{\text{Net Income}} = \frac{\text{Share Price}}{\text{Earnings per Share}}$$

  - Enterprise Value to EBIT

$$\text{Enterprise Value to EBIT} = \frac{\text{Market Value of Equity + Debt - Cash}}{\text{EBIT}}$$

  - Enterprise Value to Sales

$$\text{Enterprise Value to Sales} = \frac{\text{Market Value of Equity + Debt - Cash}}{\text{Sales}}$$

Textbook Example 2.6

Computing Profitability and Valuation Ratios

Problem

Consider the following data as of July 2015 for Walmart and Target Corporation (in $ billion):

	Walmart (WMT)	Target (TGT)
Sales	485.7	73.1
EBIT	26.6	4.5
Depreciation and Amortization	9.2	2.1
Net Income	16.2	2.5
Market Capitalization	235.6	52.9
Cash	9.1	2.2
Debt	48.8	12.8

Compare Walmart's and Target's EBIT margins, net profit margins, P/E ratios, and the ratio of enterprise value to sales, EBIT, and EBITDA.

Textbook Example 2.6 (cont'd)

Solution

Walmart had an EBIT Margin of $26.6/485.7 = 5.5\%$, a net profit margin of $16.2/485.7 = 3.3\%$, and a P/E ratio of $235.6/16.2 = 14.5$. Its enterprise value was $235.6 + 48.8 - 9.1 = 275.3$ billion, which has a ratio of $275.3/485.7 = 0.57$ to sales, $275.3/26.6 = 10.3$ to EBIT, and $275.3/(26.6 + 9.2) = 7.7$ to EBITDA.

Target had an EBIT margin of $4.5/73.3 = 6.2\%$, a net profit margin of $2.5/73.1 = 3.4\%$, and a P/E ratio of $52.9/2.5 = 21.2$. Its enterprise value was $52.9 = 12.8 - 2.2 = \$63.5$ billion, which has a ratio of $63.4/73.1 = 0.87$ to sales, $63.5/4.5 = 14.1$ to EBIT, and $63.5/(4.5 + 2.1) = 9.6$ to EBITDA.

Note that despite the large difference in the size of the two firms, Target trades at higher, though comparable, multiples.

Alternative Example 2.6

- **Problem**
  - Using the balance sheet in Alternative Example 2.4 and the income statement in Alternative Example 2.5, calculate Rylan Corporation’s operating margin, net profit margin, P/E ratio, and enterprise value for 2016.

Alternative Example 2.6

- **Solution**
  - EBIT Margin = \$100/\$500 = 20.00%
  - Net Profit Margin = \$54/\$500 = 10.80%
  - P/E Ratio = \$54/\$490 = 11.02
    - Recall, Rylan’s market capitalization was previously calculated to be \$490 million
  - Enterprise Value = \$490 + \$55 - \$2 = \$543

2.6 Financial Statement Analysis (cont'd)

- Operating Returns
  - Return on Equity

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Book Value of Equity}}$$

  - Return on Assets

$$\text{Return on Assets} = \frac{\text{Net Income} + \text{Interest Expense}}{\text{Book Value of Assets}}$$

  - Return on Invested Capital

$$\text{Return on Invested Capital} = \frac{\text{EBIT}\,(1 - \text{Tax Rate})}{\text{Book Value of Equity} + \text{Net Debt}}$$

Textbook Example 2.7

Computing Operating Returns

Problem

Assess how Global's ability to use its assets effectively has changed in the last year by computing the change in its return on assets and return on invested capital.

Textbook Example 2.7 (cont'd)

Solution

In 2015, Global's ROA was $(2.0 + 7.7)/177.7 = 5.5\%$, compared to an ROA in 2014 of $(1.9 + 4.6)/148.9 = 4.4\%$.

To compute the return on invested capital, we need to calculate after-tax EBIT, which requires an estimate of Global's tax rate. Because Net income = Pretax income $\times$ (1 − tax rate), we can estimate (1 − tax rate) = Net income/Pretax income. Thus, EBIT $\times$ (1 − tax rate) = $10.4 \times (2.0/2.7) = 7.7$ in 2015, and $7.1 \times (1.9/2.5) = 5.4$ in 2014.

To compute invested capital, note first that Global's net debt was $3.2 + 12.3 + 76.3 - 19.5 = 72.3$ in 2014 and $3.5 + 13.3 + 99.9 - 21.2 = 95.5$ in 2015. Thus, ROIC in 2015 was $7.7/(22.2 + 95.5) = 6.5\%$, compared with $5.4/(21.2 + 72.3) = 5.8\%$ in 2014.

The improvement in Global's ROA and ROIC from 2014 to 2015 suggests that Global was able to use its assets more effectively and increase its return over this period.

Alternative Example 2.7

- **Problem**
  - Using the balance sheet in Alternative Example 2.4 and the income statement in Alternative Example 2.5, assess how Rylan’s ability to use its assets effectively has changed in the last year by computing its return on assets and return on invested capital.

Alternative Example 2.7 (cont'd)

- **Solution**
  - Return on Assets

$$\text{Return on Assets}_{2015} = \frac{\$47{,}100{,}000 + \$9{,}000{,}000}{\$102{,}000{,}000} = 55.0\%$$

$$\text{Return on Assets}_{2016} = \frac{\$54{,}000{,}000 + \$10{,}000{,}000}{\$115{,}000{,}000} = 55.7\%$$

- ROA improved a little, indicating a slightly more efficient use of its assets.

2.6 Financial Statement Analysis (cont'd)

- The DuPont Identity

$$\text{ROE} = \underbrace{\left(\frac{\text{Net Income}}{\text{Sales}}\right)}_{\text{Net Profit Margin}} \times \underbrace{\left(\frac{\text{Sales}}{\text{Total Assets}}\right)}_{\text{Asset Turnover}} \times \underbrace{\left(\frac{\text{Total Assets}}{\text{Book Value of Equity}}\right)}_{\text{Equity Multiplier}}$$

Textbook Example 2.8

Determinants of ROE

Problem

For the year ended January 2015, Walmart (WMT) had sales of $485.7 billion, net income of $16.2 billion, assets of $203.7 billion, and a book value of equity of $85.9 billion. For the same period, Target (TGT) had sales of $73.1 billion, net income of $2.5 billion, total assets of $41.4 billion, and a a book value of equity of $14 billion. Compare these firms' profitability, asset turnover, equity multipliers, and return on equity during this period. If Target had been able to match Walmart's asset turnover during this period, what would its ROE have been?

Textbook Example 2.8 (cont'd)

Solution

Walmart's net profit margin (from Example 2.6) was $16.2/485.7 = 3.34\%$, which was just below Target's net profit margin of $2.5/73.1 = 3.42\%$. On the other hand, Walmart used its assets more efficiently, with an asset turnover of $485.7/203.7 = 2.38$, compared to only $73.1/41.4 = 1.77$ for Target. Finally, Target had greater leverage (in terms of book value), with an equity multiplier of $41.4/14 = 2.96$, relative to Walmart's equity multiplier of $203.7/85.9 = 2.37$. Next, let's compute the ROE of each firm directly, and using the DuPont Identity:

$$\text{Walmart ROE} = \frac{16.2}{85.9} = 18.8\% = 3.34\% \times 2.38 \times 2.37$$

$$\text{Target ROE} = \frac{2.5}{14} = 17.9\% = 3.42\% \times 1.77 \times 2.96$$

Note that due to its lower asset turnover, Target had a lower ROE than Walmart despite its higher net profit margin and leverage. If Target had been able to match Walmart's asset turnover, its ROE would have been significantly higher: $3.42\% \times 2.38 \times 2.96 = 24.1\%$.

Alternative Example 2.8

- **Problem**
  - Using the balance sheet in Alternative Example 2.4 and the income statement in Alternative Example 2.5, assess Rylan's profitability, asset turnover, equity multiplier, and return on equity in 2016.

Alternative Example 2.8 (cont'd)

- **Solution**
  - For 2016:
    - Net Profit Margin = \$54/\$500 = 10.80%
    - Total Asset Turnover = \$500/\$115 = 4.35
    - Equity Multiplier = \$115/\$50 = 2.30
    - ROE = \$54/\$50 – 1 = 108%

      or
    - ROE = 10.80% x 4.35 x 2.30 = 108%

Table 2.4 Key Financial Ratios for Large U.S. Firms, Fall 2015

Ratio	Range	Formula
Profitability Ratios		
Gross Margin	[28%, 42%, 65%]	$\frac{\text{Gross Profit}}{\text{Sales}}$
Operating Margin	[7%, 13%, 22%]	$\frac{\text{Operating Income}}{\text{Sales}}$
EBIT Margin	[6%, 12%, 20%]	$\frac{\text{EBIT}}{\text{Sales}}$
Net Profit Margin	[2%, 7%, 14%]	$\frac{\text{Net Income}}{\text{Sales}}$
Liquidity Ratios		
Current Ratio	[1.2x, 1.8x, 2.9x]	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
Quick Ratio	[0.7x, 1.2x, 2.0x]	$\frac{\text{Cash \& Short-term Investments} + \text{Accounts Receivable}}{\text{Current Liabilities}}$
Cash Ratio	[0.1x, 0.4x, 0.8x]	$\frac{\text{Cash}}{\text{Current Liabilities}}$
Working Capital Ratios		
Accounts Receivable Days	[32, 49, 67]	$\frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$
Accounts Payable Days	[25, 42, 62]	$\frac{\text{Accounts Payable}}{\text{Average Daily Cost of Sales}}$
Inventory Days	[24, 54, 92]	$\frac{\text{Inventory}}{\text{Average Daily Cost of Sales}}$
Interest Coverage Ratios		
EBIT/Interest Coverage	[2.9x, 6.7x, 15.8x]	$\frac{\text{EBIT}}{\text{Interest Expense}}$
EBITDA/Interest Coverage	[5.2x, 9.8x, 20.2x]	$\frac{\text{EBITDA}}{\text{Interest Expense}}$
Leverage Ratios		
Debt-Equity Ratio (book)	[21%, 60%, 121%]	$\frac{\text{Total Debt}}{\text{Book Value of Equity}}$
Debt-Equity Ratio (market)	[6%, 21%, 51%]	$\frac{\text{Total Debt}}{\text{Market Value of Equity}}$
Leverage Ratios (continued)		
Debt-to-Capital Ratio	[18%, 38%, 56%]	$\frac{\text{Total Debt}}{\text{Total Equity} + \text{Total Debt}}$
Debt-to-Enterprise Value Ratio	[–4%, 9%, 25%]	$\frac{\text{Net Debt}}{\text{Enterprise Value}}$
Equity Multiplier (book)	[1.7x, 2.5x, 4.0x]	$\frac{\text{Total Assets}}{\text{Book Value of Equity}}$
Equity Multiplier (market)	[1.0x, 1.1x, 1.5x]	$\frac{\text{Enterprise Value}}{\text{Market Value of Equity}}$
Valuation Ratios		
Market-to-Book Ratio	[1.6x, 2.9x, 5.5x]	$\frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$
Price-Earnings Ratio	[15.7x, 21.6x, 32.6x]	$\frac{\text{Share Price}}{\text{Earnings per Share}}$
Enterprise Value to Sales	[1.3x, 2.4x, 4.3x]	$\frac{\text{Enterprise Value}}{\text{Sales}}$
Enterprise Value to EBIT	[11.9x, 15.7x, 22.2x]	$\frac{\text{Enterprise Value}}{\text{EBIT}}$
Enterprise Value to EBITDA	[8.8x, 11.5x, 15.4x]	$\frac{\text{Enterprise Value}}{\text{EBITDA}}$
Operating Returns		
Asset Turnover	[0.3x, 0.6x, 1.1x]	$\frac{\text{Sales}}{\text{Total Assets}}$
Return on Equity (ROE)	[4%, 11%, 19%]	$\frac{\text{Net Income}}{\text{Book Value of Equity}}$
Return on Assets (ROA)	[–1%, 3%, 8%]	$\frac{\text{Net Income} + \text{Interest Expense}}{\text{Book Value of Assets}}$
Return on Invested Capital (ROIC)	[7%, 12%, 21%]	$\frac{\text{EBIT } (1 - \text{Tax Rate})}{\text{Book Value of Equity} + \text{Net Deb}}$

2.7 Financial Reporting in Practice

- Even with safeguards, reporting abuses still happen:
  - Enron
  - WorldCom
  - Sarbanes-Oxley Act (SOX)
  - Dodd-Frank Act

Chapter Quiz

1. 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?
2. What is a firm's enterprise value?
3. What is the difference between a firm's gross profit and its net income?
4. What is the DuPont identity?
5. What are the components of the statement of cash flows?
6. What information do the notes to the financial statements provide?